The impact of mental illness on self-concept: Relationship between engulfment, cognitive insight, and depression in schizophrenia

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Background: The presence of good clinical and cognitive insight have been linked to depression in people diagnosed with schizophrenia. Clinical and cognitive insight, respectively, refer to the awareness of one's symptoms and need for treatment and to being conscious of modifications in one's reasoning processes. Engulfment, or over-identification to a sick role that becomes the patient's central identity, has been found to mediate the relationship between clinical insight and depression. However, the relationship between engulfment, cognitive insight and depression has not been investigated. Consequently, this study examined the potential mediating role of engulfment in the association between cognitive insight and depression. **Methods:** The sample consisted of 140 participants with enduring schizophrenia (diagnosed for at least 3 years). Correlation and mediation analyses were conducted to examine associations between cognitive insight, engulfment and depressive symptomatology. **Results:** Our analyses revealed that cognitive insight was significantly and positively correlated with engulfment. This association was driven by the self-reflectiveness subscale of the Beck Cognitive Insight Scale. Engulfment was significantly correlated with depression. Finally, engulfment mediated the relationship between cognitive insight, and depression. **Conclusions:** In the context of good cognitive insight, engulfment should be a target for psychological interventions aimed at lowering the risk of depression.

Keywords: cognitive insight; clinical insight; psychosis; identity; engulfment

Introduction

In people diagnosed with schizophrenia, two types of insight have been identified: cognitive insight and clinical insight. On one hand, cognitive insight, which is an aspect of metacognition, is defined as being aware of modifications in one's reasoning processes and having the ability to reflect on one's own thoughts (Beck, Baruch, Balter, Steer, & Warman, 2004) as well as how a person can make sense of complex events surrounding mental illness in an adaptive manner and to recognize that their beliefs and thoughts are fallible (Jørgensen et al., 2015; Van Camp, Sabbe, & Oldenburg, 2017). Cognitive insight is comprised of two dimensions according to Beck et al. (2004): self-reflectiveness and self-certainty. These dimensions refer to the capacity to self-reflect; and the degree of confidence and openness to feedback regarding interpretations of experiences related to one's illness. On the other hand, clinical insight is defined as the awareness of symptoms, need for treatment, and potential consequences of the disorder (Vohs, George, Leonhardt, & Lysaker, 2016). It is considered a desirable state as it is associated with greater treatment adherence, lower levels of positive and negative symptoms, better quality of life and, ultimately, better outcome overall (Amador, Strauss, Yale, & Gorman, 1991; Lepage, Bodnar, Buchy, Joober, & Malla, 2010; McEvoy et al., 1989; Mohamed et al., 2009). However, good clinical insight is also positively correlated to potential negative effects on recovery, such as depression (Buchy, Bodnar, Malla, Joober, & Lepage, 2010; Crumlish et al., 2005; Drake et al., 2004; Mohamed et al., 2008; Vohs et al., 2016). One possible explanation for this association could be that symptoms and deficits caused by schizophrenia could compromise specific processes (such as neurocognition, brain function, social cognition and metacognition) necessary to allow self-reflectivity, thus

leading to poor insight (Vohs et al., 2016). Buchy et al. (2010), Crumlish et al. (2005),

Drake et al. (2004) and Mohamed et al. (2008) explain this association by

conceptualizing poor clinical insight as a psychological defense mechanism that prevents

the individual from having to consciously deal with the negative consequences associated

with the illness. To test this possibility, a meta-analysis by Belvederi Murri et al. (2015)

focused on fifty-nine correlational studies of clinical insight and depression

symptomatology. These studies accounted for a total of 9,276 patients diagnosed with

schizophrenia spectrum disorders and the results revealed a weak but significant

correlation between the two characteristics ($p < 0.001$). Thus, individuals with good

clinical insight, and awareness of their mental illness and its consequences, would tend to

be more hopeless and depressed. Another interesting point in this correlation between

clinical insight and distress is that this link has been found to be developed when there's

presence of stigmatizing beliefs about mental illness (Vohs et al., 2016).

The link between cognitive insight and depressive symptomatology has received less

attention in the literature than the link between clinical insight and depressive

symptomatology. Recently, research has mostly focused on exploring cognitive insight

in schizophrenia and its relationship to other concepts; however, more studies are needed

to increase understandings of its impact. The relevance of exploring this relationship

stems from the notion that good cognitive insight is necessary in order to have good

clinical insight (Beck et al., 2004; Cooke et al., 2010). Palmer, Gilleen, and David (2015)

conducted a meta-analysis on cognitive insight, which totaled 1356 patients with

diagnoses of schizophrenia, schizoaffective disorder or first episode psychosis.

Specifically, this meta-analysis identified a significant, albeit small ($r = .178$, $p < .01$), positive correlation between cognitive insight (BCIS total) and depressive symptoms. Despite the relatively small correlation, its effect size (BDI-II: $r = .256$, $p < .001$; CDS: $r = .135$, $p < .03$) was similar in magnitude to that of clinical insight and mood. This meta-analysis also found a significant positive correlation for the SRS, but not the SCS. To explain these results, the authors proposed that self-certainty may only be positively associated with cognition (IQ, memory, total cognition). Furthermore, it is hypothesized that self-reflectiveness is associated with mood and is more amenable to treatment. The authors theorize that people with low mood tend to focus more on the details in front of them rather than on their knowledge, while people with elevated mood who tend to use their pre-existing beliefs and self-knowledge (Lerner & Keltner, 2000; Palmer et al., 2015; Schwarz, 2000). Thus, people with low mood tend to reflect more on their decisions by using the information available to them than people with elevated mood, who tend to rely on what they already know. This could explain the association between depressive symptoms and the extent to which one uses self-reflection; although, these hypotheses remain to be tested.

The concept of engulfment may partly explain the relationship between depressive symptomatology and insight (Norman, Windell, Lynch, & Manchanda; Williams & Collins, 2002) for both clinical and cognitive constructs. The process of engulfment involves the attribution of a sick or patient role to oneself, which progressively becomes the individual's central identity. A person who is more engulfed sees oneself as being first and foremost a psychiatric patient, at the expense of other roles and in turn, this

perception can negatively impact self-esteem. Engulfment is thus seen as an undesirable state, as it correlates positively with hopelessness and low self-esteem, and negatively with self-efficacy (McCay & Seeman, 1998). Hence, a person who has greater awareness of their illness may be more likely to become engulfed in the role of being sick. Indeed, Williams and Collins (2002) observed a significant positive correlation between good clinical insight and a high level of engulfment in individuals diagnosed with schizophrenia. However, the association between cognitive insight and engulfment has not yet been studied. Considering that cognitive insight refers to a patient's ability to self-reflect, the degree of certainty they have about their beliefs is thus a prerequisite to having good clinical insight. Some studies have also shown that the ability to self-reflect is necessary in order to be able to reject self-stigma (Firmin, Luther, Lysaker, Minor, & Salyers, 2016; Nabors et al., 2014). Nabors et al. (2014) have found that a better capacity to resist stigma is associated with a higher capacity of metacognition and explain this finding with the hypothesis that one must be able to construct a complex and integrated idea of themselves, others and pre-existing stigma, which involves cognitive capacities such as self-reflection, in order to manage to reject stigma. It is thus important to explore these two different types of insight in order to get a better understanding of their effects and mutual contribution to illness and recovery.

Accordingly, the current study examines the relationships between cognitive insight, depressive symptomatology, and engulfment in a sample of patients with enduring schizophrenia. In line with prior results related to clinical insight, we hypothesize that cognitive insight will be positively correlated with engulfment. We also

aim to replicate the known positive association between engulfment and depressive

symptoms (McCay & Seeman, 1998; Pruß, Wiedl, & Waldorf, 2012). Finally, we offer a

mediation model between cognitive insight, engulfment, and depressive symptomatology

(see figure 1). In this model, we propose that cognitive insight influences depressive

symptoms through the engulfment process.

Figure 1. Mediation model between cognitive insight, engulfment, and depression
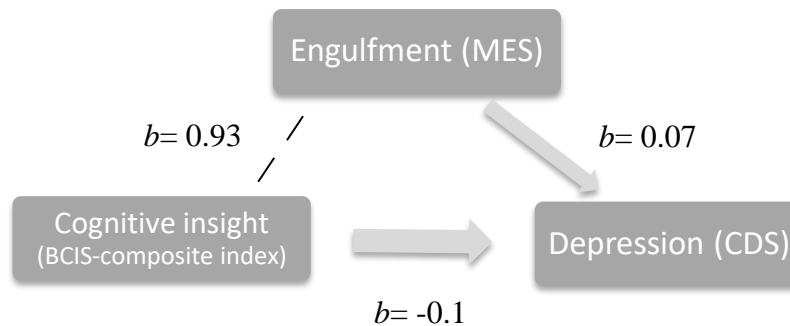
$F_{(2,136)} = 14.05$, $p < .001$, $R^2 = 0.17$

Methods

Participants

One hundred and sixty-five participants (113 men, 52 women) aged 18-50 years

diagnosed with a non-affective psychotic disorder and receiving a minimum of three

years of pharmacological treatment for psychosis (enduring phase of illness) were

recruited. The recruitment was part of a larger study on the psychological and

neurobiological determinants of insight in people diagnosed with schizophrenia, from

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different outpatient units at the Douglas Mental Health University Institute in Montreal, Canada, and from external mental health resources within the same catchment area. A screening interview was conducted to determine the age of onset and duration of illness while diagnosis, number and duration of hospitalizations and prescribed medications at the time of assessment were confirmed by medical chart review. Participants were English or French speaking, had no other current serious physical medical problems and were all receiving outpatient psychiatric care, except for 11 of them who were receiving inpatient psychiatric care. Exclusion criteria were: very poor performance (two standard deviations below the group mean) on a battery of neuropsychological tests; a lifetime history of a medical or neurological condition known to affect cognition (such as a head injury with loss of consciousness or fetal alcohol syndrome); a family history of hereditary neurological disorders; or a diagnosis of substance dependence to alcohol or other substance (current or within the past three months). In this sample, all participants were prescribed antipsychotics (Aripiprazole n=28, Clopomarzine n=2, Clozapine n=40, Flupentixol n=5, Fluphenazine n=2, Haloperidol n=9, Loxapine n=12, Lurasidone n=1, Methotrimeprazine n=1, Olanzapine n=26, Paliperidone n=29, Perphenazine n=1, Pimozide n=2, Quetiapine n=37, Risperidone n=16, Trifluoperazine n=1, Ziprasidone n=4 and Zuclopentixol n=6) except for two participants. Information regarding prescribed medication wasn't available for six patients in this sample. Other medication such as antidepressants and anxiolytics were commonly prescribed among the participants (Alprazolam n=1, Amitriptyline n=1, Bupropion : n=9, Citalopram n=13, Clonazepam n=19, Diazepam n=1, Divalproex n=17, Duloxetine n=1, Escitalopram n=3, Lamotrigine n=9, Lithium n=9, Lorazepam n=22, Mirtazapine n=1, Oxazepam n=1, Paroxetine n=1,

Pregabalin n=7, Sertraline n=1, Trazodone n=4, Velafaxine n=13). Co-occurring

diagnoses in our sample included: personality disorders (11), eating disorder (1),

depression (1) and obsessive-compulsive disorder (1). Of the 165 individuals recruited,

only 140 were included in the final sample since 25 met exclusion criteria for the

following reasons: primary diagnosis other than a non-affective psychotic disorder (3);

less than three years of pharmacological treatment for psychosis (2); comorbid fetal

alcohol syndrome (1); prior serious head injury (1); currently met criteria for substance

dependence (4); unable to adequately or reliably answer interview or self-report questions

(4); poor performance on neuropsychological tests (2); voluntary withdrawal from study

(6); and finally, the insight or engulfment questionnaires were not completed (2).

Prior to participation in the study, potential participants were explained the project

in detail. Those who agreed to participate then signed an informed consent form in

accordance with the Douglas Mental Health University Institute human ethics review

board.

Assessments

The Modified Engulfment Scale (MES; McCay & Seeman, 1998) was administered to

measure the degree of development of deviant or sick roles - with the exclusion of other

roles - in response to the experience of mental illness. Items of the MES include

affirmations such as: "Right now, I am no longer the person I was before getting ill",

"Friends and family see me as just a "mental patient"" and "I will always be different

from others because of my psychiatric illness". This self-report questionnaire contains 32

items rated on a 5-point Likert scale ranging from 1 (completely false) to 5 (completely true). Higher scores reflect a higher level of engulfment. This scale has good construct validity and reliability, with a reliability coefficient of 0.91, as measured in a sample of 100 patients diagnosed with schizophrenia (McCay & Seeman, 1998). The French version of the MES used for this study was created through translation by three members of our team at the Douglas Mental Health University Institute in Montreal. First, two bilingual psychologists translated the English version of the scale into French (forward translation). The French version of this scale were then compared to one another, and the discrepancies were discussed between the translators in order to create the pre-final version. Finally, another bilingual member of the team translated the pre-final French version back to English (back translation). This English version was compared to the original scale to verify the accuracy of the translation.

Cognitive insight was assessed with the 15-item self-report Beck Cognitive Insight Scale (BCIS; Beck et al., 2004). The two subscales scores (Self-reflectiveness and self-certainty) as well as the composite index (Self-certainty subtracted from self-reflectiveness) were computed. The self-reflectiveness subscale measures the capacity to reflect on one-self, on one's ideas and on one's potential bias. The self-certainty subscale measures the level of confidence in one's own ideas and interpretations, without it being impacted by other interpretations or information. Each question is rated on a 4-point Likert scale ranging from 0 (do not agree at all) to 3 (agree completely). A score of 3 or lower indicates poor cognitive insight, a score between 4 and 9 indicates moderate cognitive insight and a score over 10 indicates high cognitive insight (Penney, Sauvé,

Joober, Malla, & Lepage, 2019). This scale has good validity in measuring cognitive insight in people diagnosed with schizophrenia (coefficient α: 0.68 for the self-reflectiveness scale and 0.60 for the self-certainty scale) (Beck et al., 2004). The BCIS was translated and validated in French by Favrod, Zimmermann, Raffard, Pomini, and Khazaal (2008).

The level of depressive symptoms was assessed by the Calgary Depression Scale (CDS; D. Addington, Addington, & Schissel, 1990) The CDS is a 9-item interviewer-rated scale. Each question is rated on a 4-point scale from 0 (absent) to 3 (severe) and higher scores indicate a greater severity of depressive symptom. This scale has good fidelity, validity and internal reliability (coefficient α: 0.79) The CDS of our sample was similarly reliable (α: 0.69). (Addington, Addington, Maticka-Tyndale, & Joyce, 1992). It was translated and validated in French by Lançon, Auquier, Reine, Toumi, and Addington (1999).

Other measures were used to assess the eligibility of the participants. These scales and diagnostic instruments include: the Structured Clinical Diagnosis for Axis-I disorders–DSM-IV (SCID-I-patient version; First, Spitzer, Gibbon, & Williams, 2002), the Scale for the Assessment of Positive Symptoms (SAPS; Andreasen, 1984), to assess positive symptoms, the Scale for the Assessment of Negative Symptoms (SANS; Andreasen, 1982), to assess negative symptoms, the Wechsler Abbreviated Scale of Intelligence (WASI; Wechsler, 1999), to evaluate the intelligence quotient (Le Système canadien de

surveillance des maladies chroniques (SCSMC)) and the CogState battery (Pietrzak et al., 2009) to assess cognitive capacities.

Statistical analyses

For two participants, a single item was missing on the MES; the group mean for the respective items was subsequently imputed. In order to test our hypothesis, a series of Spearman correlational analyses were used to examine the associations between cognitive insight, depression symptomatology and engulfment. Spearman correlation tests were used because data from the CDS was not normally distributed with a skewness of 1.4 (SE=0.2) and a kurtosis of 2.26 (SE=0.4). All statistical tests' assumptions were verified and the Bonferroni correction was applied to adjust p-values for multiple comparisons. After correlation analyses, a simple mediation analysis was conducted to test the model proposed in Figure 1 using the PROCESS macro (version 3) implemented in SPSS (Hayes, 2018). The indirect effect of cognitive insight on depression symptoms through engulfment was tested using 95% percentile confidence intervals computed using 5,000 bootstrap samples. Separate analyses using the composite score and the different subscale scores of the cognitive insight scale were ran to verify whether the effect was primarily driven by self-reflectiveness or by self-certainty.

Results

Sociodemographic and clinical characteristics

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A description of sociodemographic and clinical characteristics of the sample is listed in Table 1. Our sample was comparable to other samples from the literature on most of sociodemographic and clinical characteristics (such as years of education, age of onset, age, socioeconomic status, sex, average score of the BCIS, etc.) (Ekinci, Ugurlu, Albayrak, Arslan, & Caykoylu, 2012; Gray, McMahon, & Gold, 2013; Rabany, Weiser, Werbeloff, & Levkovitz, 2011). However, our sample presented lower levels of positive and negative symptoms of schizophrenia and lower levels of depressive symptoms than the other samples of similar sizes and composition (Ekinci et al., 2012; Rabany et al., 2011). Our sample also showed subjectively lower IQ levels than other samples (Gray et al., 2013). The majority of participants were outpatients at the time of assessment (90%) and the mean stay per previous hospitalizations was of 82 days. Our sample exhibited low to moderate levels of depressive symptomatology. Also, 61% of our participants where French speaking and completed the assessments in French. As the French version of the MES is not validated, an independent sample T-test was performed to ensure the absence of any significant differences between French and English speakers. There were no significant differences between the two groups (p>0.05).

Insert Table 1 here

Correlations between cognitive insight, engulfment and depression symptomatology

Results of the correlation analyses are presented in Table 2 and revealed a significant positive association between the BCIS index and the MES. Upon analysis of two factors

of the BCIS, engulfment was positively correlated with self-reflectiveness (r=0.29; p<0.001), but not with self-certainty (r=-0.11; p=0.18). As expected, engulfment was also significantly and positively correlated with depressive symptoms as measured with the CDS (r=0.38; p<0.001). Depressive symptoms and the two subscales of the BCIS; however, were not significantly correlated (SRS: r= -0.01; p=0.92; SCS: r=-0.01; p=0.91).

Insert Table 2 here

Mediation analyses between cognitive insight, engulfment and depression symptomatology

Results of the first mediation analysis (F(2,136) = 14.05, p < .001, R2 = 0.17) revealed that the composite score of cognitive insight and depression symptoms had a significant correlation when engulfment was included in the model (*b*= -0.1, *t*= -2.29, *p*=0.02). However, this relationship was not significant once engulfment was removed from the model. As presented in the model, this suggests that people who have better cognitive insight also have lower levels of depression symptoms when compared to individuals with statistically equal engulfment scores. Cognitive insight significantly predicted engulfment (*b*= 0.93, *t*=3.49, *p*<0.001), which in turn significantly predicted depressive symptom levels (*b*= 0.07, *t*= 5.24, *p*< 0.001). The R^2 value indicates that the mediation model illustrated in Figure 1 explained 17% of depression symptom's variance. The positive *b* coefficient for engulfment indicates that, as engulfment increases, depression

symptomatology severity also increases. Similarly, the positive *b* coefficient for cognitive insight indicates that, as cognitive insight increases, engulfment increases. There was a significant indirect effect of cognitive insight on depression symptomatology through engulfment (*b*= 0.06, 95% CI [.02, .11]), although, this represents a relatively small effect size (completely standardized b = 0.12, 95% CI [.04, .20]).

When the mediation analysis was conducted using only the self-reflectiveness subscale from the BCIS, similar results were obtained. The indirect effect of self-reflectiveness on depression symptoms through engulfment was significant (b = .08, 95% CI [.04, .15]) and of a small effect size (completely standardized b = 0.12, 95% CI [.06, .19]). Interestingly, the indirect effect of cognitive insight's composite score seemed to be completely driven by self-reflectiveness, given that the indirect effect for self-certainty was not significant (b = -03, 95% CI [-.09, .03]) and represented an even smaller effect (completely standardized b = -.04, 95% CI [-.11, .03]).

Discussion

In the current study, we tested the possibility of a correlation between the concepts of cognitive insight, engulfment and depression. We also explored whether engulfment mediated the relationship between cognitive insight and depression symptomatology. The results suggested two interesting findings. First, the self-reflectiveness dimension of cognitive insight was significantly and positively associated with engulfment. This association was specific to this dimension, as the correlation between engulfment and self-certainty was not significant. Furthermore, greater engulfment was significantly

associated with higher levels of depressive symptoms, which replicates previous findings in the literature (McCay & Seeman, 1998; Pruß et al., 2012). These results demonstrate that better cognitive insight could play an important role in depressive symptomatology for people diagnosed with schizophrenia, either by triggering the emergence of depressive symptoms or in consequence of those symptoms.

The second finding concerns the results of the mediation analyses. The analyses that were conducted in this study revealed that engulfment mediates the relationship between cognitive insight, especially the self-reflectiveness component, and depressive symptomatology. Furthermore, when engulfment was removed from the model, the relationship between cognitive insight and depressive symptomatology was no longer significant. This result suggests that engulfment plays a key role in this relationship. The mediation model relating cognitive insight, engulfment and depression replicates a previous mediation model between clinical insight, engulfment and depression from a study by S. Konsztowicz and Lepage (2019) and supports Vohs et al. (2016)'s study who found that clinical insight and distress in mental illness were correlated when stigma was present. This supports the hypothesis that clinical and cognitive insight interact in a similar manner with engulfment and depression in people diagnosed with schizophrenia.

Moreover, the capacity to reflect on oneself and to recognize unusual thought processes and experiences could lead individuals diagnosed schizophrenia to view themselves as ill and, thus think that illness is central to the image that they have of themselves. In other words, self-reflectiveness can be considered as a key component in

the development of an engulfed self. It has been shown that good cognitive insight is necessary in order to have good clinical insight (Beck et al., 2004; Cooke et al., 2010). This means that the capacity to self-reflect (cognitive insight) is linked to a good clinical insight. We propose herein that engulfment may represent a process in which a person focuses quasi-exclusively on a unidimensional representation of one's self, and thereby relates to one's ability to self-reflect. Hence, the greater the capacity to self-reflect, the more likely it would be that an individual would become engulfed by his/her role as a sick person. Specifically, better self-reflectiveness could mean that these individuals are more likely to 1) perceive their primary role in life as being a patient, 2) endorse stereotypes and stigma about their illness, both of which lead to higher ratings of engulfment. Further testing is required in order to test these hypotheses. Nonetheless, it is an encouraging new path of reflection on lesser-known concepts.

Additionally, decreasing engulfment severity could potentially help prevent negative outcomes linked with good cognitive insight, namely depressive symptomatology, while maintaining the gains of improved cognitive insight, such as better adherence to treatment. Following this line of reasoning, McCay et al. (2006) developed a group intervention aimed at reducing engulfment in people experiencing first-episode psychosis.. This intervention was compared to treatment as usual in a randomized controlled trial. Results showed a reduced level of engulfment and increased levels of hope and quality of life (McCay et al., 2006). However, they found no improvements in self-concept, self-esteem, self-efficacy nor stigma. Another intervention aiming at improving insight in schizophrenia and focusing on other related concepts, such

as stigma, personal narrative and metacognition, was developed by Pijnenborg et al. (2019). This intervention is found to show improvement in insight, however the authors state that further research is needed to better understand the underlying mechanism (Pijnenborg et al., 2019).

Other interventions focusing on stigma in mental illness have been developed, such as Roe et al. (2014) who studied the effect of narrative enhancement and cognitive therapy (NECT) on self-stigma and have found that this intervention was efficient at reducing self-stigma in serious mental illness. Yanos, Lucksted, Drapalski, Roe, and Lysaker (2015) reviewed interventions targeting self-stigma in mental illness and found that psychoeducation was integrated in all approaches in other to develop the ability to reject stigma rather than internalizing stigma about one's mental illness. Another interesting finding from their study concerns cognitive techniques which were used in most interventions in order to fight stigmatizing thoughts and beliefs (Yanos et al., 2015).

The current study aimed to better understand engulfment and its impact on other variables, as it could aid the development of interventions of the same nature as the one mentioned previously. In fact, a pilot study to test a new intervention consisting of individualized therapy targeting engulfment in people diagnosed with schizophrenia was conducted at our laboratory at the Douglas Mental Health University Institute. Results from this pilot study show that following therapy, patients had reduced levels of engulfment, a more adaptive recovery style, a higher level of self-esteem and a lower level of self-stigmatisation (Susanna Konsztowicz, Gelencser, Otis, Schmitz, & Lepage,

2021). These results are promising for the development of targeted interventions and illustrate the importance of furthering knowledge on engulfment and its impact on different variables.

In addition to this, our results confirm that increased engulfment levels are positively associated with higher levels of depressive symptoms, and this occurs within a large sample size. These results are also in accordance with previous findings (McCay & Seeman, 1998), which serves to further support the existence of such an association. The higher levels of depressive symptoms exhibited by the participants may be explained by the loss of important roles, relationships, and activities that a person experiences while being engulfed in the role of a patient with schizophrenia. People with schizophrenia who become engulfed by their illness tend to become demoralised and live lives that are more limited in many domains, namely work, leisure and social interactions (Lally, 1989; McCay & Seeman, 1998). When the representation of the self becomes illness-bound, all activities in that person's life begin to revolve around being ill. Ultimately, this may result in a disregard, or even neglect, of other important and more positive parts or roles in life. In turn, this can lead to feelings of hopelessness, resulting in a more depressed mood (Lally, 1989).

In summary, our findings emphasize the importance of considering engulfment in the development of interventions targeting cognitive insight, as it linked to increased levels of depressive symptoms. Considering the existing relationship between engulfment, both clinical and cognitive insight, as well as depressive symptomology,

interventions targeting engulfment offer a promising treatment avenue. Developing therapies geared towards the improvement of engulfment could serve to improve quality of life and self-esteem, as well as diminish negative effects of depression, in individuals diagnosed with schizophrenia.

Despite previous findings in the literature, our study did not reveal a significant association between cognitive insight and depressive symptoms (Palmer et al., 2015). Results could have been influenced by the fact that our sample did not exhibit significant levels of depressive symptomatology, which may have masked the association between cognitive insight and depression symptomatology. Another possibility lies in the methodology, namely the use of the CDS as a measure of depression. Indeed, in Palmer et al. (2015)'s study, the correlation between the SRS and the Beck Depression Inventory-II had a medium effect size ($r = .256$, $p < .001$) while the correlation between the SRS and the CDS had only a small effect size ($r = .135$, $p < .03$). This could be explained by the difference in the administration of the scale (CDS is clinician administered while BDI-II is self-report) or by the fact that the BCIS and BDI-II were developed by the same team of researchers and thus the constructs they measure might be more correlated.

Limitations and conclusion

The current research has some limitations. First, cross-sectional data does not allow for interpretation of directionality. Second, our sample had modest rates of depression and

little variability in scores, with most participants exhibiting relatively low levels of depression. Other potential mediators could be treatment with antidepressant or antipsychotics and could explain this modest depression rate. Third, the measures used for engulfment and cognitive insight were both self-report scales. As such, it is unknown whether this modality had any effect on the findings, such as misinterpretation of the questions, random answers, etc. Fourth, the effect sizes in this study were relatively small. This could be explained by the fact that other variables such as stigmatisation, past depression, etc., could also predict the level of depressive symptomatology. Another explanation for the small effect sizes could be the sample composition of the study. For instance, the depression levels of the sample were low, as previously mentioned. Fifth, since the premises of this study relies mostly on articles in English and from North-American or European countries, it is subject to the geographical bias. Sixth, there is a lack of demographic details on ethnicity of the participants in this study. As there could possibly be a difference on variables from an ethnic group to another, this data could have provided valuable information. This may also have helped to ensure that the results would be generalizable to a broader and more heterogeneous population. Finally, given that the design was cross-sectional, there is a risk of common variance bias, meaning that there is a risk that the variance observed in our results could be attributable to the instruments used to measure the concepts, rather than actual variance in those concept. Nevertheless, these findings highlight the importance of addressing engulfment in therapies aimed to improve insight in individuals with schizophrenia. Researchers may choose to integrate the concept of engulfment in their future studies in order to address

the risk of increased engulfment and depression symptomatology when seeking to develop interventions with the objective of improving cognitive insight.

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Table 1 Demographic, Clinical, and Cognitive Insight Measures

	Mean	SD	Range
Demographic Characteristics			
Age	35.7	7.9	18-50
Years of Education	11.3	2.6	4-22
Full IQ[a]	94.7	14.2	66-134
	n	**%**	
Sex			
Male	103	73	
Female	38	27	
Family Socioeconomic Status			
Lower to Lower Middle	47	33.3	
Middle	47	33.3	
Upper Middle to Upper	22	15.6	
Unknown	25	17.8	
Diagnosis			
Schizophrenia	100	70.9	
Schizoaffective disorder	30	21.3	
Unconfirmed/unknown	11	7.8	
	Mean	SD	Range
Duration of illness in years (n=139)	13.3	7.9	3-37
# of hospitalizations (n = 130)	4.9	4.2	0-22
Clinical Measures			
SAPS Total	18.7	16.9	0-60
SANS Total (excluding attention items)	23.0	10.1	0-51
BCIS total	13.4	5.6	-10-22
Self-reflectiveness (SRS) subscale total	13.4	4.2	3-26
Self-certainty (SCS) subscale total	8.1	3.5	0-16
MES total	87.3	17.9	33-136
CDS Total	2.9	2.9	0-15

N=140
[a]IQ score estimated as per Wechsler Abbreviated Scale of Intelligence (WASI)
SAPS: Scale for the Assessment of Positive Symptoms; SANS: Scale for the Assessment of Negative Symptoms; CDS: Calgary Depression Scale; BCIS: Beck Cognitive Insight Scale; MES: Modified Engulfment Scale
When data is missing, total sample is indicated in ( )
Bonferroni corrections (0.05/10=0.005) were applied.

Table 2: Correlation Coefficient between BCIS Subscales, MES and CDS

	MES total	CDS Total	SCS Total	SRS Total	BCIS total
MES total	-	.377**	-0.114	.289**	.245**
CDS Total		-	0.01	-0.009	-.029
SCS Total			-	-0.08	-.661**
SRS Total				-	.764**
BCIS total					-

N=141

MES: Modified Engulfment Scale; CDS: Calgary Depression Scale; SCS: Self-certainty subscale; SRS: Self-reflectiveness subscale; BCIS: Beck Cognitive Insight Scale

**: Statistically significant following Bonferoni correction