Schizophrenia Research: Cognition 12 (2018) 56–65

Contents lists available at ScienceDirect

Schizophrenia Research: Cognition

journal homepage: www.elsevier.com/locate/scog

Research paper

The relationship between clinical insight and cognitive and affective empathy in schizophrenia

Mia Atoui[a,*], Fatima El Jamil[a], Joseph El Khoury[b], Mark Doumit[c], Nathalie Syriani, Munir Khani[b], Ziad Nahas[d]

[a] American University of Beirut, Department of Psychology, Beirut, Lebanon
[b] American University of Beirut Medical Center, Department of Psychiatry, Beirut, Lebanon
[c] American University of Beirut, Department of Medicine, Beirut, Lebanon
[d] University of Minnesota, Department of Psychiatry, MN, USA

ARTICLE INFO

Keywords:
Cognitive empathy
Affective empathy
Clinical insight
Perspective taking
Personal distress
Empathic concern
Fantasy
Symptomatology

ABSTRACT

Background: Schizophrenia is often associated with poor clinical insight (unawareness of mental illness and its symptoms) and deficits in empathy, which are important for social functioning. Cognitive empathy has been linked to clinical insight while affective empathy and its role in insight and pathology have received mixed evidence.

Methods: Instruments assessing symptomatology (Positive and Negative Syndrome Scale; PANSS), clinical insight (Scales to assess awareness of mental disorders; SUMD), and cognitive and affective empathy were administered to 22 participants with first episode and chronic schizophrenia and 21 healthy controls. Self-report, parent-report, and performance based measures were used to assess cognitive and affective empathy (The interpersonal reactivity index; IRI/Reading the Mind in the Eyes Test/Faux Pas) to reduce bias and parse shared variance.

Results: Age of onset, gender, and symptomatology emerged as significant predictors of poor clinical insight. Additionally, the fantasy subscale of the IRI as reported by parents emerged as a positive predictor while the personal distress (parent report) subscale emerged as a negative predictor of awareness into mental illness. There were significant differences on performance-based measures of empathy between the control and schizophrenia groups.

Conclusion: Findings suggest that affective empathy is relatively intact across phases of illness whereas cognitive empathy abilities are compromised and could be targets for psychotherapy intervention.

1. Introduction

Clinical insight and empathy are two constructs that are closely related to deficits in self-awareness in schizophrenia; impacting emotional awareness, how the individual views oneself in relation to their illness, and in relation to others (Dimaggio et al., 2009). Clinical insight and cognitive and affective empathy have markedly significant predictive value in schizophrenia with larger implications on functioning capacities (Bhagyavathi et al., 2014; Didehbani et al., 2012; Pijnenborg et al., 2013; Pousa et al., 2008).

Poor clinical insight, which represents one of the core challenges of schizophrenia, is highly correlated with patients' functioning in social and daily life (Xavier F Amador and David, 2004) and is considered a predictor of long-term functioning (Chan et al., 2012; Lincoln et al., 2007). Clinical insight is described as: awareness of the illness and its symptoms, the need for treatment/medication, and understanding the psychosocial difficulties attributed to the illness (Amador et al., 1991; David, 1990). It has been theoretically associated with the negative symptomology of the illness, which reflect incapacities in experiencing emotion and "la belle indifference" which is commonly observed among patients with schizophrenia (Amador et al., 1994). Others have reported that clinical insight is negatively correlated with both severe, positive and negative symptoms (Amador and Strauss, 1993; Nakano et al., 2004). According to a meta-analysis by Mintz et al. (2003), positive, negative and especially disorganized symptoms have a significant yet small influence on clinical insight, with more severe symptoms indicating poorer levels. Furthermore, poor clinical insight has been associated with the neurocognitive profile of schizophrenia, especially the domains of executive functioning, working memory and attention (Pijnenborg et al., 2013), however, recent research has shown

* Corresponding author.
E-mail address: ma207@aub.edu.lb (M. Atoui).

https://doi.org/10.1016/j.scog.2018.02.004
Received 21 December 2017; Received in revised form 18 February 2018; Accepted 19 February 2018

more robust associations between clinical insight and several domains of social cognition such as cognitive and affective empathy (Langdon and Ward, 2008; Lysaker et al., 2011).

The relationship between cognitive and affective empathy and clinical insight in schizophrenia has been rarely examined. The cognitive component of empathy entails the ability to assume another person's emotional perspective (perspective taking), which means understanding another person's feelings without necessarily being in the affective state of the other person (Walter, 2012). The term theory of mind (ToM) has been used by a number of researchers interchangeably with cognitive empathy in the schizophrenia literature (Baron-Cohen and Wheelright, 2004; Decety and Jackson, 2004; Shamay-Tsoory et al., 2007; Walter, 2012). Although the two concepts are essentially different, they both involve to a large extent cognitive perspective taking abilities, and ToM is seen as a needed prerequisite for cognitive empathy (Shamay-Tsoory, 2011). The term theory of mind (ToM) was originally formulated by Premack and Woodruff (1978) as the ability to make inferences about the mental states of other people, their needs and their intentions. The affective component of empathy refers more specifically to the recognition and sharing of emotional states and experiences (affective responsiveness) rather than thoughts and beliefs (Gallese et al., 2004) and is thought to be regulated by a basic emotional contagion system (Shamay-Tsoory, 2011). Higher empathic abilities among individuals with schizophrenia is suggested to be closely related to prosocial behavior, a higher tendency to agree with others, and an indication of better clinical insight (Bhagyavathi et al., 2014; Pijnenborg et al., 2013). The ability to share emotions with others, implies that an individual is able to distance himself from his own firmly held beliefs regarding oneself, and open to accept the perspective of another, regarding oneself. In order to adopt the emotional perspective of others and engage in empathic behavior, Lombardo and Baron-Cohen (2011) emphasize the importance of self-awareness. The literature has mostly investigated the relationship between the cognitive route to empathy or Theory of Mind (ToM) and clinical insight, with few studies addressing affective empathy (Bhagyavathi et al., 2014; Didehbani et al., 2012; Pijnenborg et al., 2013). In some studies, ToM has been positively associated with clinical insight, more so than symptomatology and other cognitive deficits (Bora et al., 2007; Langdon and Ward, 2008; Lysaker et al., 2011; Quee et al., 2011); while two studies have not found any relation between ToM and clinical insight (Drake and Lewis, 2003; Stewart et al., 2010). Bora et al. (2007) reported that ToM explained 22.5% to 29.9% of the variance in clinical insight scores. Pijnenborg et al. (2013), were one of the first to examine the affective component of empathy and found it to be more strongly associated with clinical insight than cognitive empathy. The results of this study showed that affective empathy explained 45% of the variance in clinical insight.

The research investigating the relationship between empathy and clinical insight continues to be constrained by inconsistent use and interpretation of the measures (e.g. contagion, cognitive empathy, affective empathy, ToM which is at times also divided into cognitive and affective components), and has neglected reporting important clinical variables. Moreover, cognitive and affective empathy and clinical insight in first episode versus chronic schizophrenia have not yet been investigated. We set out to investigate the association between cognitive and affective empathy on one hand, and clinical insight on the other, across first episode and chronic patients with schizophrenia.

2. Aims

The current study sought to investigate the relationship between cognitive and affective empathy and clinical insight. We predicted both cognitive and affective empathy to be associated with clinical insight. We hypothesized that affective empathy will account for significant variance in clinical insight (Pijnenborg et al., 2013), specifically on the measure of awareness of mental disorder dimension (SUMD1), independent of the shared variance with cognitive empathy, while controlling for gender, age of onset, and symptomatology. A second aim was to examine and confirm that differences exist between individuals with schizophrenia and healthy controls on the variables of cognitive and affective empathy, specifically poorer empathy among the schizophrenia group. A third exploratory aim was to examine the differences in clinical insight and empathy between first episode and chronic schizophrenia participants.

3. Materials and methods

3.1. Participants

A total of 43 participants; 22 individuals with a diagnosis of schizophrenia and 21 healthy control individuals took part in this study. All procedures and materials were approved by the Institutional Review Board responsible for Social and Behavioral Sciences research at the American University of Beirut, Lebanon and were submitted as part of a Master's Thesis for the first author.

The patient group had a mean age of 29.91 (sd = 11.19) and was comprised mostly of males (N = 17). All patients had received a diagnosis of schizophrenia as per DMS-5 criteria (American Psychiatric Association, 2013) by an experienced psychiatrist and a clinical psychologist. Patients were recruited through convenience sampling consisting of individuals presenting for outpatient visits at the outpatient department clinics as part of the Department of Psychiatry at the American University of Beirut Medical Center (AUBMC). Exclusion criteria for the patient group included: mental retardation, brain injury, neurological disorder, and/or substance abuse in the last 6 months. All patients were taking an antipsychotic medication at the time of the interview. Ninety one percent of the sample was living with their family (either one or both parents), only two participants were living on their own. The majority had received their diagnosis > 3 years prior (N = 13) and were classified as chronic patients. The rest (N = 9) were classified as First Episode Psychosis (FEP) having experienced their first psychotic episode within the past three years. Some studies have used a cut-off of more than two years to categorize patients with chronic schizophrenia (Green et al., 2012; Zanello et al., 2009), while others have used a cut-off of at least three years (Konstantakopoulos et al., 2014; Whitford et al., 2006). The larger margin was considered in this study. The control group had a mean age of 21.62 (sd = 2.39) with an age range between 18 and 27. Controls consisted mostly of females (N = 16), all of which were single and living with their parents. Controls were recruited through convenience and snowball sampling from the researcher's community (AUB and AUBMC) and the majority (85.75%) were university students with 82% enrolled/completed their bachelor's degree. One participant held a Master's degree, one was enrolled in a PhD program (1st year) and one was in 12th grade. Inclusion criteria for the control group were no current or previous diagnosis of schizophrenia or other psychiatric disorder, no family history of schizophrenia and no brain injury or neurological disorder.

3.2. Materials

3.2.1. Insight assessment

1. ***Scales to Assess Unawareness of Mental Disorders SUMD*** (Xavier Francisco Amador and Strauss, 1993).The SUMD is a commonly used semi-structured interview to assess past and present insight in schizophrenia and other mental disorders. The SUMD measures the following three dimensions: global awareness of illness (SUMD1), awareness of the effect of medication (SUMD2), and awareness of the social consequences of the illness (SUMD3) resulting in three different scores. Items are rated from 1 to 5; the lower scores indicating better insight. The SUMD was administered by one of the researchers who was blinded to participants' symptomatology.

Table 1
Reliability analysis of interpersonal reactivity index subscales (healthy controls).

Scale	Cronbach's alpha	N of items
IRI perspective taking subscale	0.85	7
IRI fantasy subscale	0.63	7
IRI empathic concern subscale	0.65	7
IRI personal distress subscale	0.75	7

3.2.2. Empathy assessment

2. ***The Interpersonal Reactivity Index IRI*** (Davis, 1980). The IRI is a commonly used self-report instrument consisting of four subscales that measure the cognitive and affective components of empathy. Four scores are calculated rather than one, two scores measure cognitive empathy (perspective taking and fantasy), while two other scores (empathic concern and personal distress) measure affective empathy. The IRI was completed by the participants (Self report SR) and a parent (Parental report PR); a means of reducing biases associated with self-reports. Higher scores indicate better empathy. Due to very low reliabilities in the patient sample the two cognitive empathy scales were dropped from further analysis (Cronbach's $\alpha = 0.47$ & 0.53 for perspective taking and fantasy subscales, respectively). Refer to Table 1 for scale reliabilities in the healthy group and Table 2 for scale reliabilities in the patient group.
3. ***Reading the Mind in the Eyes Test - revised version*** (Baron-Cohen et al., 2001). The Reading the Mind in the Eyes Test (RMET) is a performance based measure that assesses a person's ability to identify mental states and make inferences about the emotions of others by looking at the eye region of people in 36 photographs. Participants are given a choice between four options describing the mental state of the person in the photograph. Higher scores indicate better mentalizing (ToM).
4. ***Faux-Pas (FP) Test*** (Baron-Cohen et al., 1999). The Faux Pas Test is a theory of mind test that assesses an individual's ability to identify a "faux pas" which is an awkward or embarrassing social situation between two speakers that may result in an unintended emotional state for one of two persons in a social conversation. In this research it was used as a performance based measure to assess cognitive empathy. Participants listen to a series of 20 stories, (10 with a faux pas, and 10 without) and are asked to detect whether there was a faux pas or not, and to identify the feelings of one of the characters (the victim of the faux pas) in the story. It provides 5 scores, including Faux Pas detection score, understanding inappropriateness score, intentions score, belief score, and Empathy score. Higher scores indicate better cognitive empathy.

Table 2
Reliability analysis of the scales and subscales (patient group).

Scale	Cronbach's alpha	N of items
IRI perspective taking subscale (SR)	0.47	7
IRI fantasy subscale (SR)	0.53	7
IRI empathic concern subscale (SR)	0.78	7
IRI personal distress subscale (SR)	0.71	7
IRI perspective taking subscale (PR)	0.82	7
IRI fantasy subscale (PR)	0.65	7
IRI empathic concern subscale (PR)	0.78	7
IRI personal distress subscale (PR)	0.65	7
PANSS positive scale	0.80	7
PANSS negative scale	0.91	7
PANSS GP scale	0.76	16
PANSS total (composite)	0.90	30

3.2.3. Clinical assessment

5. ***Positive and Negative Syndrome Scale (PANSS)*** (Kay et al., 1987). The PANSS is a 30-item clinician rated, semi-structured interview consisting of 5 factors including: positive, negative, cognitive, emotional discomfort and hostility. PANSS is rated on a Likert scale from 1 to 7, with scores ranging from 30 to 210, lower scores indicate less symptoms, while higher scores indicate more symptoms. The PANSS was completed by a trained clinician that was blinded to the participants' clinical insight scores. A PANSS composite score was calculated by summing the means on the three PANSS subscales (positive symptomatology, negative symptomatology, and general psychopathology).

The (IRI), (FP) test and RMET were translated to Arabic using the back-translation methodology and piloted on a sample of 20 bilingual undergraduate students to check for their readability and comprehensibility (Daouk-Öyry and McDowal, 2013; Van de Vijver and Leung, 1997).

4. Procedure

The current study employed a survey design whereby a series of questionnaires, namely the Interpersonal Reactivity Index (IRI) self-report and parent report, and a demographic/clinical information sheet, were administered to the participants. Two clinicians separately administered the Scale of Unawareness of Mental Disorder (SUMD), and the Positive and Negative Syndrome Scale (PANSS). Participants also completed 2 behavioral tasks assessing empathy; the RMET and the Faux Pas Test (FP). Administration of the battery took an average of 2 h. All participants signed the consent forms and completed the battery of tests in one session.

Statistical analyses were carried out using Statistical Package for Social Sciences (SPSS) version 16.0.

4.1. Demographics and correlations

Comparisons between patient and control groups on age, years of education, and gender were conducted using the Mann-Whitney *U* test for independent samples due to non-normality of the age and years of education variables. Pearson's chi-square was used to compare gender across both groups. Bivariate correlations were also run for the SUMD, PANSS, IRI, FP, and RMET scores and subscores.

4.2. Hierarchical regression for clinical insight

In order to test hypothesis two, a hierarchical multiple regression analysis was performed to examine whether affective empathy would account for significant variance in clinical insight, specifically, awareness of mental disorder (SUMD1), independent of shared variance with cognitive empathy, and controlling for gender, age of onset and symptomatology.

The outcome variable was awareness of mental disorder (SUMD1). The variables *Gender*, *Age of Onset*, and *PANSS Composite score* were entered as control variables in the first block of the regression using the Enter method given the established association in the literature between these variables and awareness of mental illness. In the second block the following predictor variables were entered in a forward stepwise method: All 4 subscale scores of the parental—report of the IRI and 2 affective empathy subscales from the self-report (IRI self-report for cognitive empathy were dropped due to very low reliability < 0.65), the RMET, and the Faux Pas Empathy score. These two blocks were defined to assess the contribution of measures of cognitive and affective empathy to the prediction of clinical insight beyond that of the control variables.

Table 3
Sample demographics and clinical characteristics.

Group	Statistic	Age	Years of education	IRI-PT (SR)	IRI-FS (SR)	IRI-EC (SR)	IRI-PD (SR)	RMET	FauxPas (detection)	FauxPas (inappropriateness)	FauxPas (intentions)	FauxPas (belief)	FauxPas (empathy)
Schizophrenia	N	22.00	22.00	22.00	22.00	21.00	22.00	21.00	21.00	21.00	21.00	21.00	21.00
	Mean	29.91	15.73	2.44	2.12	3.01	1.97	22.43	27.57	13.71	12.95	13.52	13.33
	Median	26.00	16.00	2.50	2.07	3.00	1.86	23.00	25.00	12.00	13.00	13.00	13.00
	Std. deviation	11.20	2.49	0.61	0.74	0.56	0.82	5.81	8.58	4.15	4.26	4.14	4.14
	Range	36.00	12.00	2.57	3.00	2.14	3.00	21.00	26.00	13.00	13.00	14.00	13.00
Healthy controls	N	21.00	21.00	21.00	21.00	21.00	21.00	21.00	20.00	20.00	20.00	20.00	20.00
	Mean	21.62	17.00	2.95	2.44	3.16	1.87	26.57	35.10	17.45	17.05	17.40	17.10
	Median	21.00	17.00	2.86	2.43	3.29	1.86	27.00	38.00	18.00	18.50	18.50	18.00
	Std. deviation	2.40	1.30	0.63	0.61	0.48	0.64	2.60	5.06	2.52	2.96	2.66	2.75
	Range	9.00	7.00	2.29	2.57	1.71	2.29	10.00	20.00	10.00	10.00	10.00	11.00
Nonparametric tests (schizophrenia-control)	Mann-Whitney U	124.00	122.50	124.00	164.50	182.00	213.50	120.50	103.50	99.50	92.50	93.00	93.50
	Z	−2.63	−2.76	−2.62	−1.62	−0.97	−0.43	−2.53	−2.81	−2.91	−3.08	−3.07	−3.07
	Asymp. Sig. (2-tailed)	0.01	0.01	0.01	0.11	0.33	0.67	0.01	0.01	0.00	0.00	0.00	0.00

4.3. Group differences

Due to heteroscedasticity and non-normality of the data, the Mann-Whitney *U* test for independent samples was used to compare the healthy and schizophrenia groups as well as the chronic and acute groups on the following variables: All 4 subscales of the IRI (SR) version, the RMET, Faux Pas (FP) Detection Score, FP Understanding Inappropriateness, FP Intention score, and FP Empathy score.

5. Results

5.1. Socio-demographics

Patient and control groups were significantly different on gender ($\chi^2(1) = 12.29$, $p < 0.001$), age ($z = -2.63$, $p < 0.009$) and years of education ($z = -2.76$, $p < 0.006$) but not on educational level ($\chi^2(4) = 3.81$, $p > 0.05$). Sample demographics and clinical characteristics are presented in Table 3.

5.2. Correlational analyses

Table 4 displays correlational analysis between clinical insight, cognitive and affective empathy measures and the PANSS positive, negative, general psychopathology, and composite scores among the patient group. A significant correlation was found between the parental report of Fantasy (FS-PR) and SUMD3 ($r = -0.46$, $p < 0.031$). Significant correlations were also found between the parental reports of perspective taking (PT-PR) and fantasy (FS-PR) ($r = 0.44$, $p < 0.043$), as well as empathic concern (EC-PR) and personal distress (PD-PR) ($r = 0.45$, $p < 0.038$). The parental and self-repot measures of Fantasy did moderately correlate ($r = 0.48$, $p < 0.025$). A significant negative correlation between the self-reports of perspective taking (PT-SR) and personal distress (PD-SR) ($r = -0.55$, $p < 0.008$) was also found, however the last two results should be taken with consideration of the very poor reliability of the PT and FS self-report scales. No significant correlations were found between clinical insight, the self-report, or performance-based measures of empathy.

SUMD1 was significantly positively correlated with PANSS positive ($r = 0.63$, $p < 0.002$), negative ($r = 0.46$, $p < 0.032$), and composite scores ($r = 0.60$, $p < 0.003$). Similarly, SUMD2 was significantly correlated with PANSS positive ($r = 0.56$, $p < 0.007$), negative ($r = 0.45$, $p < 0.037$), and composite scores ($r = 0.51$, $p < 0.015$). SUMD3 was significantly correlated with all PANSS subscales; PANSS positive ($r = 0.60$, $p < 0.003$), negative ($r = 0.65$, $p < 0.001$), general psychopathology ($r = 0.49$, $p < 0.021$), and composite scores ($r = 0.71$, $p < 0.001$).

Parental report of Perspective Taking was significantly negatively correlated with the PANSS positive ($r = -0.510$, $p < 0.015$), general psychopathology ($r = -0.49$, $p < 0.022$), and PANSS composite scores ($r = -0.54$, $p < 0.009$).

The RMET was significantly positively correlated to the faux pas subscales of detection score ($r = 0.45$, $p < 0.045$), understanding inappropriateness ($r = 0.48$, $p < 0.034$), and empathy ($r = 0.462$, $p < 0.040$).

5.3. Hierarchical regression for clinical insight

The models aimed at assessing the contribution of measures of cognitive and affective empathy to the prediction of clinical insight beyond that of the control variables. In the first block/step of the model, Gender, Age of Onset, and PANSS composite score were entered using the Enter method in SPSS's (version 24) *Linear Regression* option. The model was significant with an $R^2 = 0.534$ (F-change = 0.008). In the second step, the Fantasy (Parental Report) variable emerged as a positive predictor of insight, and the model accounted for 74.5% of the variance in SUMD1 (F-change = 0.004). The 3rd step added Personal

Table 4
Pearson Correlations among the Schizophrenia Group.

Variable	IRI-PT (SR)	IRI-FS (SR)	IRI-EC (SR)	IRI-PD (SR)	IRI-PT (PR)	IRI-FS (PR)	IRI-EC (PR)	IRI-PD (PR)	SUMD1	SUMD2	SUMD3	RMET	FauxPas (detection)	FauxPas (inappropriateness)	FauxPas (intentions)	FauxPas (belief)	FauxPas (empathy)
IRI-PT (SR)	1																
IRI-FS (SR)		1															
IRI-EC (SR)			1														
IRI-PD (SR)	−0.549**			1													
IRI-PT (PR)					1												
IRI-FS (PR)		0.476*			0.435*	1											
IRI-EC (PR)							1										
IRI-PD (PR)							0.446*	1									
SUMD1 (awareness of mental disorder)									1								
SUMD2 (effect of medication)									0.802**	1							
SUMD3 (consequence of mental disorder)						−0.459*			0.871**	0.822**	1						
RMET												1					
FauxPas (detection score)												0.453*	1				
FauxPas (understanding inappropriateness)												0.476*	0.987**	1			
FauxPas (intentions)													0.945**	0.947**	1		
FauxPas (belief)													0.969**	0.966**	0.965**	1	
FauxPas (empathy)												0.462*	0.966**	0.958**	0.914**	0.931**	1

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

Table 5
Model summary[d].

Model	R	R square	Adjusted R square	Std. error of the estimate	Change statistics					Durbin-Watson
					R square change	F change	df1	df2	Sig. F change	
1	0.731[a]	0.534	0.441	1.254	0.534	5.726	3	15	0.008	
2	0.863[b]	0.745	0.672	0.960	0.211	11.594	1	14	0.004	
3	0.903[c]	0.816	0.745	0.847	0.071	5.012	1	13	0.043	2.306

[a] Predictors: (constant), age of onset, gender, PANSS (composite score).
[b] Predictors: (constant), age of onset, gender, PANSS (composite score), IRI-Fantasy (PR).
[c] Predictors: (constant), age of onset, gender, PANSS (composite score), IRI-fantasy (PR), IRI-personal distress (PR).
[d] dependent variable: SUMD1 (awareness of mental disorder).

Table 6
Coefficients[a].

Model		Unstandardized coefficients		Standardized coefficients	t	Sig.	Collinearity statistics	
		B	Std. error	Beta			Tolerance	VIF
1	(Constant)	−2.608	1.302		−2.002	0.064		
	PANSS (composite score)	0.361	0.101	0.631	3.558	0.003	0.989	1.011
	Gender	0.608	0.656	0.164	0.926	0.369	0.992	1.008
	Age of onset	0.087	0.039	0.396	2.237	0.041	0.992	1.009
2	(Constant)	0.157	1.286		0.122	0.905		
	PANSS (composite score)	0.261	0.083	0.456	3.140	0.007	0.865	1.156
	Gender	1.528	0.570	0.412	2.679	0.018	0.770	1.299
	Age of onset	0.078	0.030	0.356	2.616	0.020	0.984	1.016
	IRI-fantasy (PR)	−1.109	0.326	−0.556	−3.405	0.004	0.683	1.464
3	(Constant)	−0.700	1.197		−0.585	0.568		
	PANSS (composite score)	0.194	0.079	0.340	2.462	0.029	0.743	1.345
	Gender	1.088	0.540	0.293	2.015	0.065	0.668	1.498
	Age of onset	0.096	0.028	0.440	3.499	0.004	0.897	1.115
	IRI-fantasy (PR)	−1.324	0.303	−0.664	−4.372	0.001	0.614	1.627
	IRI-personal distress (PR)	0.711	0.318	0.345	2.239	0.043	0.595	1.682

[a] Dependent variable: SUMD1 (Awareness of mental disorder).

Distress (Parental Report) and accounted for 81.6% of the variance in awareness explaining an additional 7.1% of the variance in SUMD1 (F-change = 0.043) (see Table 5). However, Personal distress (PR) emerged as a significant negative predictor ($\beta = 0.345$, $p < 0.043$), while gender became no longer significant ($p = 0.065$) (see Table 6 for coefficient table).

5.4. Group differences

Healthy controls and schizophrenic participants did not differ on their self-reporting on the IRI except for perspective taking ($z = -2.62$, $p < 0.009$) which as mentioned before has a very low reliability and was dropped from the analysis. However, the schizophrenia and control groups did differ on the Faux Pas Tests ($p < 0.005$, see Table 3) and the RMET ($z = -2.53$, $p < 0.011$).

5.5. Differences between chronic and acute schizophrenics

Those diagnosed < 3 years ago did not significantly differ from chronic patients on any of the measures. However, there was a trend towards significance on the Faux Pas test scores ($0.053 < p < 0.089$) with clearly higher median and mean statistics for the acute group, while the RMET did reflect a similar trend, it also was not significant ($Mdn_{Acute} = 24$, $Mdn_{Chronic} = 20.5$, $p = 0.111$. refer to Table 7).

6. Discussion

We report an association between affective empathy (Personal distress-PR), cognitive empathy (Fantasy-PR), and clinical insight (SUMD1). The personal distress subscale of the IRI-affective empathy scales contributed to an additional 7.1% of explained variance in awareness of mental disorder, beyond those predicted by measures of cognitive empathy (IRI- parental assessment of their children's fantasy), age of onset, gender and PANSS composite score. Although our first hypothesis was supported by the significance of the personal distress subscale, a part of the affective empathy scale, we would expect more differences in performance based measures with a greater sample size. Overall, these results suggest that cognitive empathy is central to awareness of mental illness, but one's emotional reactions and their ability to feel with others may also play a role in clinical insight. Associations between cognitive empathy and clinical insight have been consistently reported in previous studies (Bora et al., 2007; Konstantakopoulos et al., 2014; Langdon and Ward, 2008; Ng et al., 2015). This study however adds the relevance of proxy affective empathy measures, more specifically the parents' assessment of their offspring's personal distress and ability to react to others in crisis.

Researchers have so far posited that understanding the feelings, thoughts, and motives of others facilitates self-reflective processes, which in turn allow individuals to better understand themselves and become aware of their illness (Decety and Sommerville, 2003; Gallagher and Meltzoff, 1996). Research has shown that being transported emotionally into the life of fictional characters is correlated with greater empathy over time and enhances performance on theory of mind tasks (Bal and Veltkamp, 2013), which in turn may improve clinical insight. On the other hand, studies that have found elevated affective empathy or mirroring abilities in schizophrenia spectrum disorders posit that this ability to empathize is necessary for the development of psychosis through the misattribution to others,

Table 7
Statistics.

Group			Age	Years of education	IRI-PT (SR)	IRI-FS (SR)	IRI-EC (SR)	IRI-PD (SR)	IRI-PT (PR)	IRI-FS (PR)	IRI-EC (PR)	IRI-PD (PR)	PANSS-positive
Acute	N	Valid	9.00	9.00	9.00	9.00	8.00	9.00	9.00	9.00	9.00	9.00	9.00
	Mean		21.56	15.89	2.48	2.27	2.95	1.84	1.73	1.83	2.33	2.33	2.60
	Median		21.00	16.00	2.43	2.29	2.86	1.43	2.00	1.86	2.29	2.14	2.43
	Std. deviation		2.19	0.78	0.58	0.83	0.49	0.98	1.20	0.90	0.87	0.59	1.16
	Range		6.00	2.00	1.86	3.00	1.71	2.57	3.71	2.57	3.14	1.57	3.71
Chronic	N	Valid	13.00	13.00	13.00	13.00	13.00	13.00	13.00	13.00	13.00	13.00	13.00
	Mean		35.69	15.62	2.42	2.02	3.04	2.07	1.45	1.74	2.32	1.85	3.05
	Median		34.00	16.00	2.57	1.86	3.14	1.86	1.29	1.71	2.71	1.71	3.14
	Std. deviation		11.29	3.23	0.65	0.69	0.62	0.72	0.85	0.83	0.94	0.83	1.15
	Range		35.00	12.00	2.57	2.29	2.00	2.43	2.43	2.57	3.14	3.00	3.29
Nonparametric tests (acute-chronic)	Mann-Whitney U		8.50	56.50	56.50	43.00	44.00	49.50	50.50	57.50	55.50	35.00	43.00
	Z		0.00	0.89	0.89	0.30	0.56	0.55	0.59	0.95	0.84	0.12	0.30
	Asymp. Sig. (2-tailed)		0.00	0.90	0.90	0.32	0.60	0.56	0.60	0.95	0.85	0.13	0.32

Group	PANSS-negative	PANSS-GP	PANSS-composite	SUMD1	SUMD2	SUMD3	RMET	FauxPas (detection)	FauxPas (inappropriateness)	FauxPas (intentions)	FauxPas (belief)	FauxPas (empathy)
Acute	9.00	9.00	9.00	9.00	9.00	9.00	9.00	8.00	8.00	8.00	8.00	8.00
	2.35	2.62	7.57	2.33	1.89	2.00	24.67	31.75	15.75	15.00	15.63	15.75
	1.57	2.63	6.79	1.00	1.00	1.00	24.00	34.50	16.50	15.50	17.00	16.50
	1.59	0.85	3.26	1.73	1.54	1.73	5.61	8.17	3.85	4.41	3.74	3.41
	4.43	2.88	10.16	4.00	4.00	4.00	18.00	21.00	9.00	12.00	9.00	8.00
Chronic	13.00	13.00	13.00	13.00	13.00	13.00	12.00	13.00	13.00	13.00	13.00	13.00
	2.66	2.51	8.23	2.77	2.38	2.62	20.75	25.00	12.46	11.69	12.23	11.85
	2.29	2.38	8.52	3.00	3.00	3.00	20.50	24.00	12.00	11.00	12.00	12.00
	1.27	0.80	2.56	1.83	1.26	1.50	5.59	8.05	3.95	3.79	3.96	3.93
	3.43	2.81	7.96	4.00	3.00	4.00	19.00	24.00	11.00	11.00	12.00	13.00
Nonparametric tests (acute-chronic)	46.50	53.00	45.00	51.00	45.00	45.50	31.50	25.00	26.00	28.50	27.50	26.00
	0.42	0.71	0.37	0.59	0.33	0.35	0.11	0.05	0.06	0.09	0.07	0.06
	0.43	0.74	0.39	0.65	0.39	0.39	0.11	0.05	0.06	0.09	0.08	0.06

particularly for positive symptomatology (Abu-akel and Bailey, 2000; Quintana et al., 2001).

Personal distress (PR) experienced in response to the suffering of others (a measure of affective empathy), emerged as a negative predictor rather than a positive predictor of clinical insight. The personal distress subscale of the IRI has been typically associated with heightened scores among individuals with schizophrenia, which is also reflected in our data although not significantly (Bonfils et al., 2016). Affective empathy, which leads to a heightening of personal distress, may be counterproductive to self-reflective processes and better insight. Additionally, heightened personal distress, especially for first-episode schizophrenics may precede later deficits in empathic concern and cognitive empathy (Achim et al., 2011). Other researchers have also suggested that personal distress may represent an aspect of emotional dysregulation rather than an experiencing of empathy (Horan et al., 2015).

The performance-based measures did not significantly contribute to the model; however, the parents' relevant assessment of both cognitive and emotional empathy is echoed by the significant differences on the Faux Pas test and RMET between schizophrenia patients and healthy controls. It also echoes the literature's recommendation of not relying on patients' own self-reports. This is also evident in the poor reliabilities of some of the self-report scales in the schizophrenia group but not the healthy group. Of note, the Faux pas and RMET was the only test to pick up on significant differences between the control group and the schizophrenia group and showed trends towards significance for the Faux Pas between chronic and acute participants.

The RMET could be considered a measure of affective ToM and therefore associated with affective empathy (for associations between RMET & inferior frontal gyrus (IFG) or IFG & affective empathy, see: Overgaauw et al., 2014; Rominger et al., 2016; Sato et al., 2016; Schulte-Rüther et al., 2007; Shamay-Tsoory et al., 2009). Empathic processes could be related to two different empathic systems; an early emotional contagion system followed by a more deliberative and advanced cognitive perspective taking system (De Waal, 2007; Preston and de Waal, 2001). This is supported by Shamay-Tsoory et al. (2009) who provided evidence for the double dissociation between affective and cognitive empathy. Although, short of lesions to these specific areas both processes can be considered to constantly and dynamically influence each other as our minds try to infer the world around us (EPIC: Barrett and Simmons, 2015). Additionally, these processes are very difficult to parse as evidenced by the uni-dimensionality of the test (Preti et al., 2017; Vellante et al., 2013). The different outcomes of both affective empathy measures (i.e. RMET and personal distress) exemplify the heterogeneity of measures of affective empathy and/or ToM and the difference between performance based and self-or-other report measures (Bonfils et al., 2016). Similarly, because the Faux Pas test is based on “story-telling” and does not depend on facial and bodily cues to assess the Faux Pas committed in the story, it could be considered to reflect more cognitive empathy processes. The mixed evidence and the significant differences between healthy and schizophrenic participants on the performance-based measures cautions us on how these measures should be interpreted. Whether we interpret them as proxy measures of a concept as general as ToM or empathy or a reflection of the level of distress they feel in response to distress in others has practical implications on social functioning, therapy, and the self (Bhagyavathi et al., 2014; Didehbani et al., 2012; Pijnenborg et al., 2013).

In line with our hypothesis, we found clinical insight, to be positively correlated with symptomatology and the PANSS composite score. Positive and negative symptoms were positively correlated with all three dimensions of clinical insight. These findings are in line with most research conducted to investigate these relationships (Mingrone et al., 2013; Mintz et al., 2004; Monteiro et al., 2008; Mutsatsa et al., 2006). The correlation between positive symptomatology and clinical insight has been one of the more consistent relationships reported in the literature and many have linked poorer clinical insight with the loosening in associations and difficulties with cognitive reasoning that occur during periods of positive symptomatology (Rossell et al., 2003). Others have considered poor insight and positive psychopathology to be opposite sides of the same coin whereby loss of reality testing understandably indicates the loss of one's sense of self and therefore difficulty recognizing that illness-related symptoms are the generation of one's own mind (Mingrone et al., 2013). Recent studies have also implicated poor affective theory of mind in the formation of hallucinations, blurring the lines between self and other, and hence allowing for the attribution of hallucination to the “wrong self” (Lam et al., 2014; McCormick et al., 2012; Rominger et al., 2016).

This study found cognitive empathy to be associated with one or more symptomatology profiles. Greater positive symptom severity or global psychopathology was associated with poorer perspective taking as reported by the parent. Similarly, most studies have more consistently found cognitive components of empathy to correlate with clinical symptoms (Brüne, 2005; Frith, 2004). The acutely psychotic individual even if able to cognitively engage the perspective of others is likely to misinterpret or ascribe faulty intentions to others (Frith, 2004). Ofir-Eyal et al. (2014), tested two different models using structural equation modeling (SEM) and found more support for an integrative mediating model of affective and cognitive empathy that shows negative psychiatric symptoms mediated the relationship between emotion recognition and social quality of life. More importantly, the integrative mediating model, as opposed to the parallel process model of affective and cognitive empathy, posits that cognitive empathy is contingent upon affective empathy. Although this is not conclusive evidence of the dependent interplay between these two components of empathy it illustrates their dependency on each other and a possible third component related to identifying emotions (tripartite model of empathy: Zaki and Ochsner (2012)).

Our results though correlational in nature, may imply that deficits in cognitive empathy are more compromised during symptomatic periods of the illness versus symptom free periods. This again raises the question as to whether deficits in cognitive empathy constitute “*state*” versus “*trait*” specific characteristics of schizophrenia. Our results may also imply that symptom-free periods could be especially important for therapeutic intervention in terms of enhancing skills such as perspective taking and reflectivity.

A final aim of this study was to investigate clinical insight, cognitive and affective empathy between patients with first episode and chronic schizophrenia. Both groups were not significantly different on any of the above-mentioned variables, with some trends towards significance on performance-based measures. These findings, in addition to the literature, may suggest that early intervention targeting empathy may help in preventing deterioration of empathic abilities across time. Examining empathy across phases of illness has received little attention in the literature. The scarce studies available have suggested the cognitive component of empathy, specifically perspective taking, to be more affected in individuals with chronic schizophrenia versus those with first episode, and affective empathy to be rather unaffected by duration of illness (Achim et al., 2011; Montag et al., 2007).

7. Limitations

The size of our sample and the gender differences across the patient and control group remain the biggest limitations of this study. The use of translated scales which have not been validated in the Arabic language is another major limitation to the findings of this study, and thus some subscales of self-reported measures had low reliabilities, specifically the perspective taking subscale (self-report) which was one of the models' independent variables. The use of a third-party report of empathy serves as both an advantage and a limitation. Many findings of this study are based on parental reporting of empathic abilities of participants, however correlations between parent and self-report measures were comparable.

8. Conclusion

Our study found that clinical insight is associated with cognitive and affective empathy. This could point towards novel avenues of therapy; perhaps focusing on fantasy, perspective taking and ToM exercises to bridge the gap and elevate the deficit in "mentalizing" and self-awareness. The feelings of empathy towards fictional characters among individuals with schizophrenia may hold implications not only in improving empathy and insight, but also doing so in ways that would preserve the individual's dignity and mitigate self-stigma to avoid the back-firing effects of increased insight. Fiction and fantasy may be used to help individuals not only become more aware of themselves and their illness, but also to avoid engaging in self-stigma because of this awareness. However, this is based on parents' assessment albeit in a relationally close and socially supportive culture. Designing and testing such avenues is a must to help people with schizophrenia achieve better social functioning. This is especially important in the patient-therapist and patient-caregiver relationship as trust and understanding are pivotal for improvement in social functioning and may be model relationships upon which to build others (Andersen and Chen, 2002).

Contributors

There are no contributors involved in this research project.

Role of funding source

There were no funding sources involved in this research project.

Conflicts of interest

There are no conflicts of interest involved in this research study.

Acknowledgements

Special thanks to the Chairperson and faculty members at the Department of Psychiatry at the American University of Beirut Medical Center who provided the setting for this research to take place. We would also like to thank Mrs. Lucy Tavitian, for her assistance in the translation of this research scales. We would like to acknowledge the Psychological Assessment Center (PAC) at the Department of Psychiatry at the American University of Beirut Medical Center headed by Dr. Pia Zeinoun for their provision of needed testing material.

Finally, we would also like to thank Drs. Nadia Slobodenjunk and Dr. Alaa Hijazi for their guidance on this research project.

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