



Subjective experience of emotions and emotional empathy in paranoid schizophrenia



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ABSTRACT

Unlike the cognitive dimensions, alterations of the affective components of empathy in schizophrenia are less well understood. This study explored cognitive and affective dimensions of empathy in the context of the subjective experience of aspects of emotion processing, including emotion regulation, emotional contagion, and interpersonal distress, in individuals with schizophrenia and healthy controls. In addition, the predictive value of these parameters on psychosocial function was investigated. Fifty-five patients with paranoid schizophrenia and 55 healthy controls were investigated using the Multifaceted Empathy Test and Interpersonal Reactivity Index, as well as the Subjective Experience of Emotions and Emotional Contagion Scales. Individuals with schizophrenia showed impairments of cognitive empathy, but maintained emotional empathy. They reported significantly more negative emotional contagion, overwhelming emotions, lack of emotions, and symbolization of emotions by imagination, but less self-control of emotional expression than healthy persons. Besides cognitive empathy, the experience of a higher extent of overwhelming emotions and of less interpersonal distress predicted psychosocial function in patients. People with schizophrenia and healthy controls showed diverging patterns of how cognitive and emotional empathy related to the subjective aspects of emotion processing. It can be assumed that variables of emotion processing are important moderators of empathic abilities in schizophrenia.

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1. Introduction

Empathy, in its broad definition, includes any phenomenon by which an individual comes to understand and/or to feel the emotional state of another through direct perception or imagination. The extreme ends of this spectrum are emotional contagion, the automatic affective resonance without self-other distinction (Hatfield and Rapson, 1998), and cognitive empathy, the understanding of others by engaging one's own representations (Preston and Hofelich, 2012) which might bear some overlap with theory of mind, the purely cognitive process of mental state inferencing (Premack and Woodruff, 1978). Empathy in the narrow sense, or "true empathy", refers to other-directed, vicarious affective responses, and requires a clear distinction between self and other. In addition, empathy depends on emotion regulation, cognitive control and non-social cognitive functioning (Decety and Jackson, 2004; Pickup, 2008).

Impairments of social cognition and empathic attunement to the social world belong to the core features of schizophrenia and seem to be highly predictive for functional outcome (Minkowski, 1953; Bora et al., 2006; Brüne, 2005a; Fett et al., 2011). However, existing evidence mainly focuses on theory of mind and the cognitive aspects of empathy in schizophrenia, while affective empathy (Derntl et al., 2009; Achim et al., 2011) and the affective preconditions of empathic attunement have drawn attention not so frequently (Brüne, 2005b). While some studies suggest alterations of emotional contagion (Falkenberg et al., 2008) and emotion regulation in schizophrenia (Van der Meer et al., 2009; Badcock et al., 2011; Kimhy et al., 2012), no research has systematically focused their relationship with empathy.

This is noteworthy, as the interplay between human social and emotional behaviors and also between affect regulation and mentalizing has been an important topic of research (Fonagy et al., 2002; Ochsner, 2008; Schipper and Petermann, 2013).

This study set out to investigate the cognitive and affective dimensions of empathy in the context of the subjective experience of aspects of emotion processing, including self-rated emotion regulation (Van der Meer et al., 2009; Llerena et al., 2012; Morris et al., 2012; Strauss et al., 2013), emotional contagion (Hatfield and

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Rapson, 1998; Falkenberg et al., 2008; Manera et al., 2013) and personal distress in social situations (Davis, 1983; Achim et al., 2011) in a sample of remitted patients with schizophrenia compared to matched healthy controls. In addition, we aimed to determine associations of empathy, emotional experience and contagion with functional outcome, symptoms and illness characteristics in patients.

Empathic functioning and various aspects of emotion processing were investigated using a set of behavioral empathy assessments – the Multifaceted Empathy Test (Dziobek et al., 2008)—as well as self-report questionnaires addressing subjective empathic functioning (Interpersonal Reactivity Index; Davis, 1983), dimensions of emotional experience (Subjective Experience of Emotions Scale; Behr and Becker, 2004) and emotional contagion (Emotional Contagion Scale; Doherty, 1997) together with clinical ratings and a neuropsychological test battery.

2. Methods

2.1. Participants

The study was approved by the local ethics committee; subjects gave written informed consent. Fifty-five stabilized in- and outpatients diagnosed with paranoid schizophrenia according to DSM-IV-TR (Saß et al., 2003) were recruited from the Department of Psychiatry, Charité Universitätsmedizin Berlin. Diagnosis was confirmed using the Structured Clinical Interview for DSM-IV (SCID-I; First et al., 1995; German version: Wittchen et al., 1997). Symptom severity was assessed with the Positive and Negative Syndrome Scale (PANSS; Kay et al., 1987); global assessment of functioning (GAF; Saß et al., 2003) was performed in patients. Five PANSS subscores according to Lançon et al. (2000) were calculated to allow for a better differentiation between negative and depressive symptoms, together with the estimation of excitation, positive and cognitive symptoms. A number of 69 healthy individuals who were recruited by newspaper advertisements and screened by a psychiatrist (C.M.) with a structured interview (M.I.N.I.; Sheehan et al., 1998). Fifty-five healthy participants were chosen to match the clinical sample ($n=55$) on a 1:1 basis according to age, gender, verbal intelligence and education. Exclusion criteria for both groups were DSM-IV axis-I or axis-II disorders (except schizophrenia for patients); controls reporting axis-I mental disorders in their first-degree relatives were also excluded. Participants' characteristics are displayed in Table 1.

2.2. Measures

2.2.1. The Multifaceted Empathy Test (MET)

The Multifaceted Empathy Test (MET; Dziobek et al., 2008) allows for the separate assessment of cognitive and emotional empathy. Initially developed for individuals with Asperger syndrome, (Dziobek et al., 2008), this is the first study using the MET in a sample of patients with schizophrenia. While the original MET also differentiates between emotional reactions to the depicted person and context as well as between explicit emotional empathy (the ability to share the displayed emotion) and levels of unspecific arousal, we used a modified version restricted to parameters of interest in schizophrenia studies, i. e. the scales for cognitive and explicit emotional empathy regarding the emotional state of persons. Forty photographs showing people in positively and negatively emotionally charged situations are presented. Participants are instructed to identify with the protagonist and to “feel into” the pictured emotions. To assess 1) ‘cognitive empathy’ (MET-CE), subjects are required to infer the emotional mental states of the protagonist and to select one out of four mental state descriptors. To assess 2) ‘emotional empathy’ (MET-EE), subjects are asked to rate their own tendency to share the specific emotion on a visual analog scale ranging from 0 to 9 (0 = not at all, 9 = very much). All participants received a short training before testing to ensure comprehension of the instruction.

2.2.2. The Interpersonal Reactivity Index (IRI)

The Interpersonal Reactivity Index (IRI; Davis, 1983); German translation: ‘Saarbrücker Persönlichkeitsfragebogen’, SPF; Paulus, 1992) is a self-report questionnaire assessing various aspects of empathic responding. It comprises 28-items answered on a five-point Likert scale ranging from “Does not describe me well” to “Describes me very well”. The measure has four subscales, each made up of seven different items. Construct validity of the IRI scales was supported in several studies (Davis, 1983). Three relevant dimensions of the broader concept of empathic responding were used for analysis: ‘Perspective taking’ (“I believe that there are two sides to every question and try to look at them both.”) refers to the tendency to spontaneously adopt the point of view of others and to reason about their mental

states. The ‘empathic concern’ scale (“I am often quite touched by things that I see happen”) comprises respondents’ pro-social feelings of warmth and compassion for others. ‘Personal distress’ (“Being in a tense emotional situation scares me”) measures self-oriented feelings of anxiety and discomfort in response to the distress of others.

2.2.3. The Emotional Contagion Scale (ECS)

The Emotional Contagion Scale (ECS; Doherty, 1997); German translation by Falkenberg (2005) is a questionnaire addressing the tendency to automatically synchronize with the expressions of others and to experience other-generated emotions. Contagion to five basic emotions (love: “I melt when the one I love holds me close”, happiness: “Being with a happy person picks me up when I’m feeling down”, fear: “I notice myself getting tense when I’m around people who are stressed out”, anger: “It irritates me to be around angry people”, and sadness: “If someone I’m talking with begins to cry, I get teary-eyed”) is measured by 15 items on a five-point Likert scale. Within the validation sample, a two-factor solution with a positive subscale consisting of the love and happiness items and a negative subscale consisting of the fear, anger, and sadness items was established; reliability and construct validity in comparison to a variety of measures were proven (Doherty, 1997).

2.2.4. The Subjective Experience of Emotions Scale (SEE)

The Subjective Experience of Emotions Scale (SEE; Behr and Becker, 2004) is a 42-item-self-report questionnaire. It comprises seven dimensions of the subjective experience of emotion processing: (a) ‘congruence’ (“All my emotions have the right to be just as they are”: acceptance of emotions), (b) ‘overwhelming emotions’ (“I’m so full of emotions that I can hardly stand it”: overload of aversive feelings), (c) ‘lack of emotions’ (“I don’t often feel my inner world”: emotional numbing), (d) ‘symbolization of emotion by bodily experience’ (“When I make decisions, I rely on my bodily feelings”: awareness of bodily correlates of emotion), (e) ‘symbolization by imagination’ (“In order to cope with stress it often helps me to focus on my daydreams”: positive regard for inner mental processes), (f) ‘regulation of emotions’ (“Most of the time I know how to calm down when I’m heated up”: ability to regulate one’s own moods), and (g) ‘self-control’ (“When things are bubbling up inside me, unfortunately people around me can tell at once”: suppression of emotional expression). Validation studies have reported a Cronbach’s α between 0.66 and 0.88. The SEE demonstrates convergent and divergent validity with conceptually similar and dissimilar measures (Behr and Becker, 2002; Watson and Lilova, 2009).

2.2.5. General cognitive function

As empathy is impacted by non-social cognition (Pickup, 2008), a multiple choice vocabulary test (Mehrfachwortschatztest, MWT-B; Lehrl et al., 1995) was applied to estimate verbal comprehension as a measure of ‘premorbid’ intelligence. The Wisconsin Card Sorting Test was used to assess executive function like abstract reasoning, concept formation and response adaptation to changing contextual contingencies (Heaton, 1981).

2.2.6. Statistical calculations

Statistical calculations were carried out as indicated in the results section using IBM PASW Statistics 20[®]. Statistical significance was defined at a two-sided $p < 0.05$. All variables apart from WCST categories and total errors were normally distributed. Group differences were determined by t -tests (two-sided); the impact of neurocognition was controlled by use of multivariate analyses of covariance (MANCOVA) and linear regression analysis as explained in the results section. For this purpose, a cognition composite score was formed by summation of z -scores of verbal IQ, WCST perseveration score and education years across both samples. To compare sub-samples with high or low empathic abilities with respect to parameters of emotional experience within each group, z -scores for MET-‘cognitive empathy’ and IRI ‘perspective taking’ as well as for MET-‘emotional empathy’ and IRI ‘empathic concern’, respectively, were calculated separately in both samples and added to create a ‘cognitive empathy composite’ (CEC) and an ‘emotional empathy composite’ (EEC) score. CEC and EEC scores were then split along the median to differentiate ‘low’ versus ‘high’ cognitive and emotional ‘empathizers’ in both groups. Partial correlation analyses including alpha-level adjustment (Bonferroni) and estimation of Fischer’s z values between groups were performed as indicated in the result section and in table legends.

3. Results

3.1. Empathy measures: MET and IRI

In the behavioral task (MET) significant group differences regarding ‘cognitive empathy’ (MET-CE) were found at initial t -testing (data not shown). MET-‘emotional empathy’ (EE) showed no group differences. Internal consistency was acceptable (Cronbach’s α ,

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