



Cognitive emotion regulation in patients with schizophrenia: Evidence for effective reappraisal and distraction



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ABSTRACT

Negative emotions trigger psychotic symptoms, according to a growing body of evidence. Thus, there is a need for effective emotion regulation in schizophrenia. Reappraisal is an effective, cognitive emotion regulation strategy in healthy individuals. However, it is an open research question whether individuals with schizophrenia have difficulties in successfully applying reappraisal. This study experimentally tests the efficacy of reappraisal compared to distraction in patients with schizophrenia and non-clinical controls. An experimental design with group as between-subject factor (non-clinical controls versus patients with schizophrenia) and emotion regulation during anxiety induction as within-subject factor (reappraisal, distraction, no regulation). Seventeen patients with schizophrenia and 27 healthy participants were instructed to respond to anxiety-inducing stimuli by either using reappraisal, distraction or by just watching. Both reappraisal and distraction were effective in down-regulating anxiety, compared to no regulation. The main effect of group and the interaction of emotion regulation condition and group were not significant indicating that the efficacy of both cognitive emotion regulation strategies was independent of group. Patients with schizophrenia are able to apply reappraisal successfully under experimental conditions. Conclusions are limited by the small sample size of this pilot study. Clinical implications for cognitive behavioral therapy for psychosis are discussed.

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1. Introduction

1.1. Schizophrenia and stress reactivity

The vulnerability-stress-model proposes that stress can trigger psychotic symptoms in people with a high risk for schizophrenia (Nuechterlein and Dawson, 1984). Several lines of research support this model. Life events often precede the onset of psychotic symptoms and increase relapse risk (Bebbington et al., 1993; Norman and Malla, 1993; Lawrie et al., 2001), and social stress triggers paranoid beliefs even in nonclinical populations (Kesting et al., 2013). Also, people with schizophrenia experience more intensive stress in the face of daily hassles, which reflects a heightened stress reactivity (Myin-Germeys et al., 2001). A growing body of experimental and longitudinal evidence reveals that specific emotions such as anxiety can trigger psychotic

symptoms (Lincoln et al., 2010; Westermann and Lincoln, 2010; Thewissen et al., 2011) and that the effect of stress on psychotic-like experiences is mediated by negative emotions, according to findings in nonclinical populations (Lincoln et al., 2009). Taken together, these findings suggest that negative emotions have the potential to trigger psychotic symptoms.

1.2. Emotion regulation

Emotion regulation refers to processes by which people try to influence which emotions they have, when they have them, how intensively they perceive them and how they express them (Gross, 1998). Gross (1998) postulated a process model of emotion regulation. The model differentiates between antecedent-focused and response-focused strategies. Antecedent-focused strategies regulate an emotional response before it is fully generated and response-focused strategies operate when an emotional response is already developed.

Reappraisal, distraction and expressive suppression are among the best studied emotion regulation strategies (Ochsner and Gross, 2005; Sheppes and Meiran, 2007; McRae et al., 2010). According to

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the process model, reappraisal and distraction are antecedent-focused emotion regulation strategies. In contrast, expressive suppression is a response-focused strategy (Gross, 1998, 2002). Reappraisal is a strategy that evaluates a situation in a way which reduces or changes the generation of an emotional response (Gross, 1998). Distraction is the shifting of attention to non-emotional stimuli or aspects of a situation (e.g., filling working memory with non-emotional information) (Norman and Malla, 1993). In contrast, expressive suppression consists of inhibiting expressive behavior (Gross, 1998). A body of evidence indicates a better social, affective and cognitive outcome of reappraisal than expressive suppression (Gross, 2002; Henry et al., 2008). Distraction also seems to be an effective emotion regulation strategy (Hoeksma and Morrow, 1992; Ochsner and Gross, 2005; McRae et al., 2010), but there is evidence to suggest that reappraisal is more effective in down-regulating negative affect (McRae et al., 2010).

1.3. Difficulties in emotion regulation in patients with schizophrenia

Several studies indicate that patients with schizophrenia and participants with heightened proneness to psychotic symptoms have difficulties using emotion regulation strategies (Henry et al., 2007, 2008; Van der Meer et al., 2009; Kimhy et al., 2012; Strauss et al., 2013; Westermann et al., 2013; Lincoln et al., 2014). The majority of studies focused on the habitual use of reappraisal in patients with schizophrenia and used self-report questionnaires. These studies did not yield consistent results. Two studies indicate that patients with schizophrenia use suppression more frequently than reappraisal compared to healthy controls (Van der Meer et al., 2009; Kimhy et al., 2012), and three other studies reported no differences in the habitual use of reappraisal between patients with schizophrenia and healthy controls (Henry et al., 2008; Perry et al., 2011; Badcock et al., 2011).

In one experimental investigation, patients with schizophrenia were able to apply reappraisal successfully (Perry et al., 2012). However, findings from another study indicate that the habitual use of reappraisal is associated with higher state paranoia in paranoia-prone individuals under conditions of stress (Westermann et al., 2012a). Westermann et al. (2012b) even hypothesized that reappraising threatening situations may generate delusion-like thoughts in delusion-prone individuals. In their study, healthy participants with different levels of delusion-proneness watched anxiety evoking pictures and applied either reappraisal or suppression as emotion regulation strategy. The participants with higher delusion-proneness were less successful in applying reappraisal in anxiety evoking situations and less reappraisal success was associated with higher conviction in delusion-like thoughts.

Difficulties in using reappraisal might stem from general difficulties using cognitive or attentional change strategies, for example due to neuropsychological deficits in schizophrenia (Fioravanti et al., 2005). Strauss et al. (2013) used an experimental task where participants (healthy controls and patients with schizophrenia) viewed unpleasant and neutral pictures during EEG recording. Before each unpleasant picture either a negative or neutral audio description was played. The neutral description of the negative pictures (reappraisal) was the emotion regulation condition for the participants. For patients, in contrast to controls, the index for emotion regulation did not differ between conditions. This was interpreted by the authors as a neurophysiologic indicator for emotion regulation difficulties in patients with schizophrenia. This study suggests that patients with schizophrenia find it difficult to reappraise situations even if a specific reappraisal is given.

To sum up, a growing body of experimental and longitudinal research suggests that negative emotions trigger psychotic

symptoms and that there are emotion regulation difficulties in schizophrenia especially concerning reappraisal. A causal link between negative emotions and psychotic symptoms raises the possibility that difficulties in emotion regulation support the formation of psychotic symptoms, whereas adaptive emotion regulation might prevent symptom formation. Consequently, research has focused on emotion regulation in schizophrenia in recent years.

1.4. Open research questions

A growing body of research indicates differences in the ability to regulate emotions between patients with schizophrenia and healthy controls. Furthermore, some researchers have argued that the difficulties to effectively use reappraisal strategies might be related to delusion formation. However, to put this assumption to test, experimental studies are needed that compare groups with and without schizophrenia in their ability to down-regulate emotions using reappraisal. Because it has been argued that the difficulties in using reappraisal might partially stem from general difficulties using cognitive strategies (e.g. due to working memory deficits), a meaningful control condition should include another antecedent-focused cognitive emotion regulation strategy (Gross, 1998). If, indeed, schizophrenia is related to specific difficulties in reappraisal over and above the effect of cognition, one would expect reappraisal to be less effective than distraction.

The present study thus investigates the two emotion regulation strategies reappraisal and distraction in patients diagnosed with schizophrenia. There is evidence to suggest that both strategies are useful to regulate negative emotions in healthy people (Hoeksma and Morrow, 1992; Gross and John, 2003; Gerin et al., 2006; McRae et al., 2010). We hypothesize that (1) reappraisal and distraction reduce anxiety in healthy controls compared to the control condition (no emotion regulation) and that (2) in patients with schizophrenia reappraisal is less effective than distraction.

2. Methods

2.1. Participants

Forty-seven people took part in the study after providing informed consent. Of these, 44 participants could be analyzed. We had to exclude participants either because they terminated study participation before the experimental paradigm ($n=2$) or because of missing data due to technical problems ($n=1$). The clinical group consisted of 17 patients diagnosed with paranoid schizophrenia (7 females, 10 males) with a mean age of $M=40.41$ years ($SD=11.52$; range 24–61). All patients but one were taking antipsychotic drugs, the mean chlorpromazine equivalent was $M=421.08$ ($SD=619.25$; range 30–2500). Fifteen patients had a history of psychological therapy (88.24%). The non-clinical control group consisted of 27 participants (14 females, 13 males) without current mental disorders; (Structured Clinical Interview-I (SCID-I) screening negative; Wittchen et al., 1997). A history of mental disorders was not assessed in the control group. These participants had a mean age of $M=37.89$ ($SD=10.93$; range 21–62). The non-clinical controls were recruited by advertisements; the patients were recruited by advertisements and from previous studies. The SCID-I interview (Wittchen et al., 1997) was used to assess diagnoses in both samples. The participants from both groups were paid for participation (patients: 30 Euros, non-clinical controls: 25 Euros). They had to be between 18 and 69 years old and fluid in German. A general exclusion criterion was – for ethical reasons – the clinical or subclinical presence of arachnophobia or a blood or syringe phobia due to the stimuli in the emotion induction

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