

Being Deluded After Being Excluded? How Emotion Regulation Deficits in Paranoia-Prone Individuals Affect State Paranoia During Experimentally Induced Social Stress

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Emotion regulation (ER) has become a relevant construct to understanding paranoia. While the ER strategy called *expressive suppression* (e.g., poker face) may foster state paranoia by increasing arousal, another strategy called *reappraisal* (e.g., changing the perspective on situations) may reduce negative emotions and state paranoia when adaptively used. However, if reappraisal fails, this could increase paranoia. The aim of this study was to test the proposed effects of the ER strategies on state paranoia in the socially stressful situation of being excluded in paranoia-prone individuals. We conducted an experimental online study with $N=116$ participants who were randomized to a social inclusion or an exclusion condition using a virtual Cyberball ball-tossing game. They completed questionnaires on paranoia proneness and habitual ER strategies. Before and after the Cyberball task, participants rated their level of state paranoia. The impact of habitual ER strategies, paranoia

proneness, and social stress on changes in state paranoia was investigated using linear regression analysis. The three-way interaction of social stress, paranoia proneness, and habitual reappraisal use significantly predicted state paranoia, $t(114)=2.62$, $p=0.010$. The decomposition of the interaction term revealed that in the social stress condition, the impact of reappraisal on state paranoia was moderated by the level paranoia proneness. Specifically, in high paranoia-prone individuals the use of reappraisal predicted higher state paranoia. The findings regarding habitual use of suppression were not significant. Although reappraisal is generally considered a functional strategy, its use in distressing social situations seems to be impaired in persons with higher paranoia proneness. A working model of emotion dysregulation in delusions is presented and possible implications for cognitive therapy of psychosis are discussed.

Keywords: delusion; emotion regulation; expressive suppression; schizophrenia; reappraisal

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A GROWING BODY OF research is supporting the key role of negative emotions in paranoia. First, emotions such as anxiety and depression are positively associated with paranoia (Drake et al., 2004; Freeman & Garety, 1999; Johns et al., 2004; Startup, Freeman, & Garety, 2007). Second, theoretical models of paranoia propose emotional disturbances to be a pivotal factor in the development and maintenance of paranoid threat beliefs (Freeman, Garety, Kuipers, Fowler, & Bebbington, 2002). Third, changes in emotional states such as anxiety or self-worth could affect state paranoia (Lincoln, Lange, Burau, Exner, & Moritz, 2010;

Thewissen et al., 2011; Westermann & Lincoln, 2010). Nonsocial stress in paranoia-prone individuals increases negative emotions (Lincoln, Peter, Schäfer, & Moritz, 2009), but so could past or acute social stress (Ellett, Freeman, & Garety, 2008; Freeman & Fowler, 2009; Myin-Germeys, van Os, Schwartz, Stone, & Delespaul, 2001).

Social exclusion is an important type of social stress. Experiences of social exclusion can stem from the ongoing stigmatization of mentally ill persons in society. According to Angermeyer and Dietrich (2006, p. 174), "There is an observable tendency to distance oneself from people with mental disorders," for example, due to prejudices of unpredictability and danger. In addition, implicit self-stigma may lead to self-exclusion (Rüsch, Corrigan, Todd, & Bodenhausen, 2010). Also, negative interpersonal schemata such as not being accepted by relevant others accompany paranoid beliefs (Lincoln, Lange, et al., 2010). Thus, paranoid beliefs may lead to perceived, albeit not necessarily factual, social exclusion. However, regardless of the nature of social exclusion, the actual experience leads to deprivation of basic needs, such as belonging, self-esteem, and control (Williams, 2007). People with schizophrenia appear to undergo longer-lasting effects after being socially excluded compared to controls, and are more likely to experience intense negative emotions (Perry, Henry, Sethi, & Grisham, 2011). Another possible source of social stress in persons with paranoid beliefs is social anxiety (Martin & Penn, 2001) accompanied by low social rank perceptions (Gilbert, Boxall, Cheung, & Irons, 2005). Conclusively, individuals with paranoia are more likely to face socially stressful situations due to social exclusion or social anxiety, which are likely to trigger intense negative emotions and increase state paranoia.

The need for adaptive emotion regulation (ER) of negative emotions in paranoia is apparent. However, a number of studies have identified ER deficits in persons with psychosis (Livingstone, Harper, & Gillanders, 2009; van der Meer, Wout, & Aleman, 2009). More specifically, persecutory ideation and other positive symptoms seem to be associated with difficulties in regulating negative emotions, for example, impulse control problems and a lack of available ER strategies (Westermann & Lincoln, 2011).

Surprisingly, specific ER strategies have not been a target of direct investigation in the domain of paranoia so far. Two common and intensely investigated ER strategies are *reappraisal* and *expressive suppression*. Reappraisal is a cognitive regulation strategy "that involves construing a potentially emotion-eliciting situation in a way

that changes its emotional impact" (Gross & John, 2003, p. 349). Thus, reappraisal changes the initial and spontaneous appraisal of a situation prior to the full formation of the anticipated emotional response in order to modify the final emotional response. For example, instead of viewing a job interview as a potential threat for self-worth, one could reappraise it as an opportunity to get to know the company. This would be an adaptive strategy to decrease anxiety and increase more positive emotions, such as curiosity. The habitual use of reappraisal is shown to be positively associated with mental health (Gross & Munoz, 1995) and seems to be a protective factor against many forms of psychopathology (Aldao, Nolen-Hoeksema, & Schweizer, 2010). In contrast, expressive suppression describes the deliberate attempt to inhibit the expression of emotional experiences, including reducing facial affect (Gross & John, 2003; Gross & Levenson, 1997). For example, expressive suppression in a job interview would involve displaying a "poker face" and to avoid trembling. The habitual use of suppression is associated with decreased mental health and seems to be maladaptive if inflexibly used (Aldao et al., 2010). Moreover, expressive suppression is known to increase the intensity of experienced negative emotions and physiological arousal (Gross & John, 2003; Gross & Levenson, 1997).

Although these ER strategies are well investigated in healthy individuals, it is unclear what impact their habitual use has in individuals with paranoia. Expressive suppression is likely to increase state paranoia, because it is associated with the maintenance of negative emotions and the increase of physiological arousal, which could trigger paranoia according to empirical data (Lincoln, Lange, et al., 2010; Lincoln, Peter, et al., 2009; Myin-Germeys & van Os, 2007) and theoretical considerations (Freeman et al., 2002). The role of reappraisal in paranoia might be more complex. The adaptive nature of reappraisal in a range of different psychopathologies (Aldao et al., 2010) would predict reappraisal to be helpful by decreasing negative emotions and, thus, the risk of paranoid ideation. However, the adaptive use of reappraisal may be impaired by several factors in paranoia. Negative interpersonal schemata (Fowler et al., 2006; Lincoln, Mehl, et al., 2010), pre-existing threat beliefs (Freeman et al., 2002), and cognitive biases (see Freeman, 2007, for a review) may constrain the space of possible reappraisals such that adaptive ER is unlikely. In the best case, the changed interpretations of situations may be ineffective, but in the worst case, they may be adverse and serve as a precursor of paranoid thoughts. For example, the reappraisal of a job interview such as

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