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The impact of loneliness on paranoia: An experimental approach



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ABSTRACT

Background and objectives: Loneliness is a common problem in patients with schizophrenia, and may be particularly linked with persecutory ideation. Nevertheless, its role as a potential risk factor in the formation and maintenance of persecutory delusions is largely unexplored.

Methods: Loneliness was experimentally manipulated using a false-feedback paradigm in a non-clinical sample (n=60). Change in state paranoia was compared between the induction of increased loneliness, the induction of reduced loneliness and a control condition. Distinct associations between pre-post scores of loneliness and state paranoia were examined at three (medium/high/low) levels of proneness to psychosis across the experimental conditions.

Results: Reduction of loneliness was associated with a significant reduction of present paranoid beliefs, while induction of loneliness lead to more pronounced paranoia on trend significance level. Moreover, proneness to psychosis significantly moderated the impact of loneliness on paranoia. Persons with a pronounced level of proneness to psychosis showed a stronger reduction of paranoid beliefs as a consequence of a decrease in loneliness, than less prone individuals.

Limitations: A limitation is the small size of our sample, which may have limited the power to detect significant within-group changes in state paranoia in the high-loneliness condition and changes in loneliness in the low-loneliness condition.

Conclusions: The findings support the feasibility of the experimental design to manipulate loneliness and suggest that loneliness could be a cause of paranoia. However, the findings need to be confirmed in high risk samples to draw conclusions about the role of loneliness in the genesis of clinically relevant levels of paranoia and derive implications for cognitive behaviour therapy.

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1. Introduction

In clinical practice, one of the most frequent problems patients with psychosis mention is "feeling lonely". This is supported by several findings: in comparison to non-clinical controls, patients with psychosis are up to six times more likely to report having felt lonely in their life (Kimhy et al., 2006; Meltzer et al., 2013). Moreover, symptoms of psychosis have been found to be closely related with loneliness in studies based on university samples (Riggio & Kwong, 2009), online samples (Jaya et al., 2015) and in epidemiological studies in the general population (Stain et al., 2012;

Sündermann, Onwumere, Kane, Morgan, & Kuipers, 2014; Van der Werf, van Winkel, van Boxtel, & van Os, 2010).

Loneliness can be defined as "distressful consciousness of an inner distance to other humans and thus as a desire for satisfying and meaningful relations" (Schwab, 1997). According to this definition, it is important to differentiate between loneliness and the status of being alone (Peplau & Perlman, 1982; Perlman & Peplau, 1981). Thus, loneliness is a more subjective, emotional, and cognitive appraisal of a person's position in his/her social environment rather than the pure absence of social support or social networks (Macdonald, Hayes, & Baglioni, 2000).

Although feelings of loneliness and paranoia seem to be clearly related, the nature of their relationship remains unclear. On the one hand, data suggest that loneliness is related to less pronounced recovery cross-sectionally (Roe, Mashiach-Eizenberg, & Lysaker, 2011) and longitudinally (Angell & Test, 2002). On the

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other hand, in clinical practice, patients perceive loneliness as causal to psychosis rather than as just being a consequence (Angermeyer & Klusmann, 1988; Zafar et al., 2008). To the best of our knowledge, there are no experimental studies that have examined the question of causality. Although results of experimental studies that induced social exclusion in non-clinical controls by a Cyber-Ball-experiment suggest a causal role of social exclusion in paranoia (Kesting, Bredenpohl, Klenke, Westermann, & Lincoln, 2013) and social exclusion and loneliness are closely linked, whether loneliness plays a causal role in the formation of paranoia is still unknown.

Moreover, it is unclear so far whether individuals who are more prone to psychotic experiences are more vulnerable to the consequences of loneliness. This seems likely, as individuals with a more pronounced level of proneness to psychosis were also found to be more sensitive towards social distress (DeVylder et al., 2012; Kesting et al., 2013). In line with the continuum model of psychosis (Van Os, Linscott, Myin-Germeys, Delespaul, & Krabbendam, 2009) and related risk factors these individuals could be expected to cope less appropriately with loneliness and thus show more paranoid symptoms.

The present study used an experimental procedure to induce high or low levels of loneliness in a sample of non-clinical individuals in order to test whether (1) the induction of loneliness increases non-clinical paranoia and (2) the reduction of loneliness reduces paranoia and the association between loneliness and paranoia is moderated by proneness to psychosis (3).

2. Methods

2.1. Participants

Participants were 60 healthy individuals who were recruited via advertisements and received either the chance to participate in a voucher lottery (equivalent to an amount of € 30) or a confirmation of attendance to complete curriculum requirements at university. Exclusion criteria were a life-time diagnosis of a mental disorder as assessed with the Structured Clinical Interview for DSM-IV (SCID, Wittchen, Wunderlich, Gruschwitz, & Zaudig, 1997), which was transferred to the Diagnostic and Statistical Manual of Mental Disorders, 5th edition (DSM-5).

All participants were assessed separately in an examination room by an investigator (bachelor student of psychology). In line with the study of Adam and Galinsky (2012) the experiment or wore a white lab-coat to underline his or her role as an expert. This was done to enhance the scientific focus and render the experimental feedback more trustworthy as has been found in previous research (Rehman, Nietert, Cope, & Kilpatrick, 2005). In order to mask the experimental manipulation, participants first received the information that the purpose of the study was the evaluation of a new questionnaire. All participants signed informed consent. The local ethics committee approved the study.

2.2. Design and procedure

The experimental design is partly based on an experiment by Wildschut and colleagues (2006) who investigated the impact of loneliness in individuals with nostalgia. However, we extended the original design by adding a second experimental group (low loneliness condition). The experimental design of this study is depicted in Fig. 1.

First, participants completed the baseline set of questionnaires assessing socio-demographic data, state paranoia (Paranoia Checklist, PCL; Freeman, Garety, Bebbington, et al., 2005), proneness to psychosis (Community Assessment of Psychic Experiences,

CAPE; Stefanis et al., 2002), and a manipulation check for loneliness.

Second, participants were randomly assigned to three experimental group conditions (see Fig. 1): high loneliness (HL; n=18), low loneliness (LL; n=21), and control group (CG; n=21), using a set of randomized numbers (*www.random.org*).

Third, loneliness was manipulated in two stages: I. Individuals received a condition-specific version of the University of California LA loneliness scale (UCLA, German adaption, Schwab, 1997) with modified items. In the HL condition, participants received items such as "I sometimes feel isolated from others." (see Appendix 1) and were expected to strongly endorse those items resulting in a high sum score of loneliness. Participants in the LL condition received items such as "I always feel isolated from others." and were expected to strongly disagree with them. The CG received the original version of the UCLA items (e.g. "I feel isolated from others."). In stage II. participants received manipulated feedback on the sum scores from the investigator who purportedly compared participants' results with fictional normative scores that revealed them to be extraordinary high (HL), low (LL) or normal (CG), e.g. for HL: "Compared to 1800 persons of your age, gender, and educational level this represents an extremely high loneliness score. That means that only 17 percent of the comparison group is lonelier than you. The majority is more satisfied than you with their level of social contacts, friends, and loved ones." In the LL participants received an opposed feedback and in the CG a neutral feedback, respectively. Following recommendations by Wildschut et al. (2006) participants were then asked to write down their thoughts on the expert's feedback. This was done to enhance the manipulation of loneliness.

Fourth, participants completed questionnaires on state paranoia and the manipulation check of loneliness. Finally, participants were fully debriefed on the purpose of the study.

2.3. Measures

In line with previous studies (Lincoln, Hohenhaus, & Hartmann, 2013; Westermann & Lincoln, 2011) the frequency subscale of the Community Assessment of Psychic Experiences (CAPE, Stefanis et al., 2002) a 42-item self-report questionnaire, was used to assess life-time proneness to psychosis. The CAPE was developed in order to assess psychotic experiences in the general population in line with the continuum hypothesis of psychosis (Van Os et al., 2009). It has also shown promising results in detecting high risk individuals (Mossaheb et al., 2012).

State paranoia was assessed with a modified version of the Paranoia Checklist (PCL, Freeman et al., 2005) that consists of 18 items and was constructed in order to measure paranoia in a non-clinical population. As in other experimental studies on paranoia (Hartmann, Sundag, & Lincoln, 2014; Lincoln et al., 2013), we used a state-adapted version of the subscale paranoia frequency with a modified answer format (visual analogue scale).

Increase/decrease in loneliness was measured with a manipulation check item (see Wildschut et al., 2006) in order achieve a precise and economic measure of loneliness without revealing the actual construct of interest. The manipulation check item ("Right now I feel a bit lonely.") was rated on a ten point Likert scale ranging from 1 "I strongly disagree" to 10 "I strongly agree".

2.4. Statistical analyses

In order to assess whether the manipulation of loneliness was successful and to test its impact on state paranoia (H1 and H2), we first compared baseline and post assessment scores of the loneliness manipulation check item and state paranoia within each

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