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Research paper

Affective reactivity to daily life stress: Relationship to positive psychotic and depressive symptoms in a general population sample

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ABSTRACT

Introduction: Increased affective reactivity to daily life stress has been found in individuals with psychosis and depression, and in those at risk for these conditions. Because depressive and psychotic symptoms often co-occur, increased affective reactivity in these disorders may be explained by the presence of depressive symptoms, psychotic symptoms, or both. Therefore, we examined whether affective reactivity to daily stress is related to positive psychotic symptoms, independently of depressive symptoms, and vice versa.
Methods: We used data from an intensive sampling study in the general population (n = 411), with three measurements a day (t = 90). The following subjective stressors were assessed: appraisal of activities, appraisal of social interactions, and experienced physical discomfort. Affective reactivity was conceptualized as both the positive affect (PA) and negative affect (NA) response to these stressors. By means of mixed model analyses, it was examined whether affective reactivity was independently related to depressive and/or positive psychotic symptoms.
Results: The PA response to activities and NA response to social interactions were negatively and positively related to depressive symptoms, respectively, independent of psychotic symptoms. In contrast, no (in)dependent association was found between positive psychotic symptoms and affective reactivity to any of the daily life stressors. These findings were confirmed in a subsample with increased symptoms.
Limitations: The prevalence of positive psychotic symptoms was relatively low in this general population sample.
Conclusions: Increased affect reactivity predicts depressive symptoms, but not positive psychotic symptoms. Affective reactivity may still facilitate the development of psychotic symptomatology via its impact on depressive symptoms.

1. Introduction

Psychosis and depression are both characterized by affective disturbances. These disturbances have been examined in-depth in daily life in experience sampling (ESM) studies (de Vries and Csikszentmihalyi, 2006). ESM studies have consistently shown that individuals with psychosis display increased responses of positive affect (PA) and negative affect (NA) to daily life stress (as measured by appraisal of negative or stressful situations), sometimes referred to as increased emotional/affective reactivity (Myin-Germeys et al., 2003, 2005, 2001). Similar patterns have been found in family members of individuals with psychotic illness (Myin-Germeys et al., 2001). In addition, increased NA reactivity to daily life stress was associated with persistence of psychotic experiences over time (Collip et al., 2013) and being at ultra-high risk for psychosis (Palmier-Claus et al., 2012). Increased affective reactivity has therefore been termed an endophenotype of psychosis (Myin-Germeys and van Os, 2007).

Affective reactivity has been studied in relation to depression as well. The available evidence suggests that individuals with depression show increased affective reactivity to daily life stress, to both perceived negative situations and perceived stressful events (Bylsma et al., 2011; Myin-Germeys et al., 2003; van Winkel et al., 2015), especially NA responses. It must be noted that one study did not find this (Peeters et al., 2003). Furthermore, individuals at increased risk for depression

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indexed by heightened genetic risk or known risk factors for depression display this characteristic as well (Schneiders et al., 2006; Suls and Martin, 2005; Wichers et al., 2007). Finally, increased NA responses to daily life stress predicted the development of depressive symptoms several months later (Wichers et al., 2009). Based on the available evidence, it seems that affective reactivity, and NA reactivity in particular, is a vulnerability marker for both domains, rather than an endophenotype for either psychosis or depression.

Although affective reactivity is associated with increased symptomatology in both domains, it is not known whether it is associated with subclinical psychotic symptoms, independently of depressive symptoms, and vice versa. The co-occurrence of depressive and psychotic symptoms at both subclinical and clinical level is very high (Gaudiano and Zimmerman, 2013; House et al., 1987; Sartorius et al., 1974; Wigman et al., 2012), and symptoms of one disorder predict development of symptoms of the other disorder, at all levels of severity (Demjaha et al., 2012; Häfner et al., 2005, 2008; Kaymaz et al., 2012; Lin et al., 2015; van Rossum et al., 2011; Yung et al., 2004). Hence, the relationship between psychotic and depressive symptoms is bidirectional and complex. Therefore, the pathway from affective reactivity to psychopathology may run specifically via depressive symptoms or psychotic symptoms, instead of both. Results from a study in female twins from the general population indirectly support the idea that increased affective reactivity is facilitating depressive symptoms, which in turn provoke psychotic symptoms (Kramer et al., 2012). Specifically, the influence of childhood trauma on the development of psychotic-like symptoms was larger in individuals with increased genetic liability for depression, and this effect was mediated by depressive symptoms, not affective reactivity, when these variables were assessed simultaneously.

The present study examined whether the association between affective reactivity to daily life stress and psychotic symptoms (psychotic experiences with clinical impact, Van Os et al., 2009), was independent of co-occurring depressive symptoms. Conversely, it was examined whether the association between affective reactivity to daily life stress and depressive symptoms was independent of psychotic symptoms. We did so by means of an intensive diary study, in a large sample from the general population. In addition, because symptom levels in the general population may be rather low, we tested the relationship in a subsample of individuals with higher levels of depressive and psychotic symptoms as a sensitivity analysis. Because of the general population sample, the focus was specifically on the preclinical phase. In this phase, symptoms are hypothesized to be mild and non-specific and symptoms of different domains are thought to more often occur together, compared to more severe levels of expression where psychopathology is assumed to be more crystallized into different clinical disorders, as suggested according to the clinical staging model (e.g. McGorry et al., 2006). We focused specifically on positive psychotic symptoms (e.g. hallucinations, delusions, paranoia), because research has shown that increased reactivity to daily life stress is particularly associated to the positive symptoms of psychosis (Lataster et al., 2013; Myin-Germeys and van Os, 2007). Similar to previous studies, the current study focused on affect reactivity to two external stimuli (i.e. activities, social interactions). In addition, we wanted to explore the relevance of affective reactivity to a more internal stimulus as well, specifically physical discomfort. Physical discomfort may be misinterpreted by individuals with psychotic experiences (Reeves and Torres, 2003), who therefore may show increased affective response to this stimulus.

2. Methods

2.1. Procedure and sample

The HowNutsAreTheDutch (HND) sample was recruited from the general population of the Netherlands by means of a crowdsourcing procedure. Using radio broadcasts, television, local podium discussions, newspapers, and magazines, people were invited to participate in our research on mental health as a dimensional and dynamic phenomenon. To do so, people had to visit the website www.HoeGekIs.nl to assess themselves on their mental health in a cross-sectional study and/or in a longitudinal diary study. All details on the aims of the HND study, the procedures, the participants, and the measures are provided elsewhere (van der Krieke et al., 2015). The current study concerns the diary study, in which participants completed assessments in their natural environments, thrice a day for 30 days, resulting in a maximum of 90 assessments per individual. Assessments were prompted at equidistant time points with a six-hour interval in between, with the exact time points depending on participants' sleep-wake schedule. Participants received a text message on their mobile phone with a link to a questionnaire. They were asked to fill out the questionnaire immediately after the alert, or, if impossible, within one hour, after which the questionnaire could no longer be accessed.

The present sample is selected from the 975 individuals who took part in the "HowNutsAreTheDutch" diary study between May 22nd, 2014 (launching date of the diary study) and May 22nd, 2016 (end of second-year wave of the diary study). The inclusion criteria for the current study were an age of at least 18, and having filled out cross-sectional questionnaires on depressive symptoms, psychotic experiences, and sociodemographics,. Of these 975 diary participants, 411 (42%) fulfilled these inclusion criteria and were included in the present study.

The HND study protocol was assessed by the Medical Ethical Committee of the University Medical Center Groningen. The committee judged the protocol to be exempted from review by the Medical Research Involving Human Subjects Act (in Dutch: WMO) because it concerned a non-randomized open study targeted at anonymous volunteers in the general public (registration number M13.147422).

2.2. Measures

2.2.1. Baseline measures

2.2.1.1. Sociodemographic factors. Participants provided information on their age (birth year and month), gender, relationship status (No/Yes), relationship duration, and education level. Education was subdivided in the categories: no primary education (= 1), primary education (= 2 to 4), vocational education (= 5 to 6), higher education (= 7), master degree and PhD (= 8).

2.2.1.2. Symptoms of depression. Mood over the past week was assessed with the Depression, Anxiety, and Stress Scale (DASS), which is known to be sensitive to subthreshold symptoms (de Beurs et al., 2001; Lovibond and Lovibond, 1995). The DASS scales consist of 42 self-report items, with 14 items per scale. In the present study, we used the Depression scale, which assesses dysphoria, hopelessness, devaluation of life, self-deprecation, lack of interest/involvement, anhedonia, and inertia. Each item was rated on a four-point Likert scale ranging from "Did not apply to me at all" (= 0) to "Applied to me very much, or most of the time" (= 3). The items were summed, hence possible scores ranged between 0 and 42. The internal consistency of the depression scale proved to be good in this sample (alpha = 0.98, Wardenaar et al., Submitted for publication).

2.2.1.3. Positive psychotic symptoms. Subclinical psychotic experiences were assessed with the Community Assessment of Psychic Experience (CAPE, Stefanis et al., 2002). The CAPE is a 42-item self-report questionnaire that measures three symptom dimensions: positive psychotic experiences (20 items), negative psychotic experiences (14 items) and depressive feelings (8 items). We used the positive psychotic experiences dimension only, because increased affective reactivity to daily life stress is particularly associated to the positive symptoms of psychosis. Another reason for not including the depression dimension is that it has much overlap with the depression scale of the DASS. Each item of the CAPE assesses both frequency and secondary distress, which