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Psychiatric framing affects positive but not negative schizotypy scores in psychology and medical students

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ABSTRACT

When testing risk for psychosis, we regularly rely on self-report questionnaires. Yet, the more that people know about this condition, the more they might respond defensively, in particular with regard to the more salient positive symptom dimension. In two studies, we investigated whether framing provided by questionnaire instructions might modulate responses on self-reported positive and negative schizotypy. The O-LIFE (UK study) or SPQ (New Zealand study) questionnaire was framed in either a "psychiatric", "creativity", or "personality" (NZ only) context. We tested psychology students (without taught knowledge about psychosis) and medical students (with taught knowledge about psychosis; UK only). We observed framing effects in psychology students in both studies: positive schizotypy scores were lower after the psychiatric compared to the creativity instruction. However, schizotypy scores did not differ between the creativity and personality framing conditions, suggesting that the low scores with psychiatric framing reflect defensive responding. The same framing effect was also observed in medical students, despite their lower positive schizotypy scores overall. Negative schizotypy scores were not affected by framing in either study. These results highlight the need to reduce response biases when studying schizotypy, because these might blur schizotypy-behaviour relationships.

1. Introduction

Schizotypy is a multidimensional personality construct that is argued by many to lie on a continuum, with full-blown psychosis representing the extreme end (Claridge and Birchall, 1978; Meehl, 1962; Verdoux and van Os, 2002). Reflecting patient symptoms, schizotypy dimensions consistently separate positive (magical ideation, unusual perceptual experiences) and negative (e.g. social and physical anhedonia, social withdrawal) schizotypy (Chan et al., 2016; Ettinger et al., 2015; Kwapil et al., 2008; Lenzenweger, 2006). Schizotypy has been likened to an 'attenuated' form of schizophrenia, and therefore provides a model for schizophrenia-related cognitive and neurophysiological deficits in a more accessible, medication-free nonclinical population (see Kwapil and Barrantes-Vidal, 2015 for a recent overview). Psychotic symptoms in clinical populations are most commonly assessed through structured interviews, whereas schizotypy in the general population is most commonly assessed through self-report measures such as the Oxford-Liverpool Inventory of Feelings and Experiences (O-LIFE; Mason et al., 1995; Mason and Claridge, 2006), or the Schizotypal Personality Questionnaire (SPQ; Raine, 1991; see Mason, 2015 for a recent comprehensive overview on these and other schizotypy questionnaires). Such self-report questionnaires tap the same subjective experiences as the interview techniques used in patient samples (Eaton et al., 1991; Raine, 1991), and have good predictive validity (Barrantes-Vidal et al., 2013; Chapman et al., 1994; Gooding et al., 2005).

Given that there is a strong genetic component in psychosis, it is paradoxical that patient relatives often present with *normal to low rates of positive* schizotypy (e.g. Appels et al., 2004; Bora and Veznedaroglu, 2007; Calkins et al., 2004; Claridge et al., 1983; Clementz et al., 1991; Compton and Chien, 2008; Katsanis et al., 1990; Landin-Romero et al., 2016; Tarbox et al., 2012). Potentially, relatives report unexpectedly low positive schizotypy scores because of a defensive response[1] tendency when asked about unusual experiences of the kind associated with the illness seen in the overtly psychotic family member (e.g. Claridge et al., 1983; Katsanis et al., 1990; Yaralian et al., 2000). This reasoning could explain why children of parents with schizophrenia

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[1] The defensive responding interpretation is speculative and made with due caution. For clarity and ease of reading, we will nevertheless use the term to describe unexpectedly low positive schizotypy scores.

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(age range 9–22 years) show elevated positive schizotypy scores when compared with those of controls (Keshavan et al., 2008; see also Vollema et al., 2002): children might yet be free from defensive response tendencies due to a relative unawareness that one's own positive schizotypal experiences might be reminiscent of psychiatric illness.

Following this reasoning, we would expect defensive response tendencies only for high salient (positive) but not for low salient (negative) illness-associated symptoms (see also Cornblatt et al., 2003), and particularly in people who are familiar with the illness. An over-proportional focus on positive symptoms would explain why negative schizotypy scores are comparable (Appels et al., 2004; Compton and Chien, 2008; Yaralian et al., 2000), or even higher (Bora and Veznedaroglu, 2007; Calkins et al., 2004; Clementz et al., 1991; Katsanis et al., 1990) in relatives of patients with schizophrenia compared to those of controls. Motivation to deny illness-associated symptoms also seems understandable when negative public opinions about schizophrenia are taken into account (e.g. Turkey: Boke et al., 2007; UK: Clement and Foster, 2008).

These observations suggest that motivation to deny salient psychiatric symptoms biases self-reported schizotypy scores, just as psychological and/or financial factors seemingly distort self-report in a personally favourable direction in other domains (e.g. pain assessment: Robinson et al., 1997, self-esteem: Forsman, 1993, and drug abuse: Carey, 2002). In a previous study using the Chapman scales (Chapman et al., 1976; Eckblad and Chapman, 1983), Mohr and Leonards (2005) showed in French and English speaking participants that positive, but not negative schizotypy scores were lower in a group of psychology students who were informed that the questionnaire assesses traits related to psychosis as compared to a group who were informed that the questionnaire assesses traits related to creativity. These results seem to support the hypothesis of defensive responding. The study, however, did not control for knowledge of psychosis, and could not distinguish whether the framing conditions caused defensive responding in one group (psychosis instruction) or enhanced endorsement of schizotypal traits in the other (creativity).

In two independent studies (Bristol, UK; Wellington, New Zealand), we asked psychology students and medical students (UK only) to complete schizotypy measures. We used two widely-used schizotypy measures to maximise generalizability of our findings: the O-LIFE in the UK study, and the SPQ in the NZ study. We used the Unusual Experiences (UE) factor of the O-LIFE and the Cognitive-Perceptual (CP) factor of the SPQ to assess positive schizotypy; and the Introvertive Anhedonia (IA) factor of the O-LIFE and the Interpersonal (IP) factor of the SPQ to assess negative schizotypy. We note that the positive schizotypy construct is very similar on the two measures, but their negative constructs diverge somewhat, with the SPQ including subscales related to suspiciousness and social anxiety.[2]

The questionnaires were introduced either within a creativity context, a psychiatry context, or a neutral personality context (NZ only). The first year psychology students had not yet received formal teaching on psychosis or schizotypy, while the medical students had just received a series of lectures on schizophrenia. We expected defensive responding in the psychiatry versus creativity context for positive schizotypy in both groups, but expected medical students to also score relatively lower overall on negative schizotypy (given their more specific knowledge). The inclusion of a "personality" context in the NZ study allows us to further probe the mechanism of framing. If the framing effect is driven by defensive responding in a psychiatric context (and not enhanced endorsement of schizotypal traits in a creativity context), we would expect scores in the creativity and personality framing conditions not to differ.

[2] Unpublished data from our lab (N = 428) shows the correlation between the two positive subscales to be .83, and between the two negative subscales to be .76 (Hedley et al., in prep).

2. Methods

2.1. UK study

2.1.1. Participants

Of the 180 undergraduate students, 99 were first-year psychology students (*mean age*: 19.57 years, ± *SD*: 3.96 years, 64 women) without formal teaching of abnormal psychology and 81 were third-year medical students (aged 21.68 years ± 3.17 years, 42 women) who had just received two hours of lectures on schizophrenia. The medical students also received clinical training as part of hospital placements. All participants received questionnaires (see below for details) in a classroom setting (psychology students in a whole-year group lecture, medical students in three separate small group lectures with about 30 students per class). We were constrained to opportunistic sampling; therefore the experimenters were unable to control the assignment to conditions *a priori*. The questionnaires were handed out at the end of the lecture with minimal instructions; students were simply invited to complete the questionnaires on a voluntary basis. Those willing to participate filled in the questionnaires and handed them to the waiting researcher directly on completion; returning the questionnaire constituted informed consent. The study was approved by the local Ethics committee.

2.1.2. Self-report schizotypy questionnaire

Schizotypy was assessed with the O-LIFE (Mason et al., 1995), a validated 104-item questionnaire assessing schizotypy in terms of four dimensions: positive schizotypy is assessed by 30 items pertaining to Unusual Experiences (UE, maximum score 30, items include *'Are your thoughts sometimes so strong that you can almost hear them?'*), and negative schizotypy by 27 items assessing Introvertive Anhedonia (IA, maximum score 27; items include *'Have you had very little fun from physical activities like walking, swimming or sports?'*). Additional subscales assess Cognitive Disorganization and Impulsive Non-conformity. As we have no specific hypotheses about these subscales we do not report them here. Participants indicate whether the given statements are true or false, and the number of positive responses (some items are reversely formulated) is summed so that higher scores indicate higher schizotypy. The O-LIFE demonstrates good test-retest and internal reliability (Burch et al., 1998; Fonseca-Pedrero et al., 2015). Normative values can be found in Mason et al. (1995) and Mason and Claridge (2006).

For the purpose of the current study, we prepared a booklet for each participant that contained the instructions followed by the O-LIFE. Specifically, we added a new front page (see also Mohr and Leonards, 2005): In half of the cases, the front page contained the 'psychiatry' instructions and in the other half the 'creativity' instructions. The psychiatry condition instructions read: 'You are participating, as a healthy control subject, in a study which investigates the relationship between lateral preferences and psychotic thought in patients with first-episode schizophrenia'. The creativity condition instruction read: 'You are participating in a pilot study on the relationship between lateral preferences and personality style as a likely indicator for creativity.'

2.1.3. Return rate and final sample

Of the original 180 individuals returning the questionnaires, 177 responses (119 female) were available for analysis, after questionnaires with missing information were removed (see also Mohr and Leonards, 2005): 97 psychology students (68 women), of whom 52 received psychiatry framing (35 women) and 45 received creativity framing (33 women); and 80 medical students (51 women), of whom 38 received psychiatry framing (25 women) and 42 received creativity framing (26 women).