Letter to the Editor

Linking childhood adversities with schizophrenia: A mediating role of the balanced time perspective

Dear Editors,

Childhood adversities are already an empirically established risk factor for an outburst of schizophrenia (e.g. Morgan and Fisher, 2007). Scientists are now calling for more research on the mechanism by which trauma contributes to schizophrenia (e.g. Trauelsen et al., 2015). The concept of 'time perspective' (TP; Zimbardo and Boyd, 1999) offers a potentially novel explanation of this phenomenon. TP is a significant predictor of many outcomes important for clinical science, including mental health (Vowinckel et al., 2017), life satisfaction (Boniwell et al., 2010) and health behaviours (Daugherty and Brase, 2010). TP can be defined as a relatively stable personality trait described as "dispositional tendencies to remain chronically oriented and manifest stable attitudes toward one or another of the three time horizons: the past, the present, or the future" (Stolarski et al., 2018, p. 613). Zimbardo and Boyd (1999) empirically distinguished between five basic temporal dimensions: Past-Negative, Past-Positive, Present-Fatalistic, Present-Hedonistic and Future. An ideal combination of these dimensions is labelled 'balanced time perspective' (BTP), defined as "the mental ability to switch effectively among TPs depending on task features, situational considerations, and personal resources" (Zimbardo and Boyd, 1999, p. 1285). BTP is characterized by a profile of high scores on Past-Positive, moderately high on Present-Hedonistic and Future and low on Past-Negative and Present-Fatalistic. Research unequivocally demonstrated its highly adaptive nature (for a review, see Stolarski et al., 2018). One of the methods for measuring BTP is the coefficient of deviation from the balanced time perspective (DBTP) (Stolarski et al., 2011), which quantifies the fit between the ideal and the individual's TP profile.

In this article we hypothesize that the association between childhood adversities and schizophrenia is partially mediated by DBTP. In particular, we posit that BTP deviates from the ideal structure because childhood trauma has the power to skew the importance of Past-Negative, Past-Positive and Present-Fatalistic TP in an individual's personality. Holman and Silver (1998) stated that trauma anchors the individual in the Past-Negative. It might trigger a vicious circle in which focusing on the Past-Negative provokes distress, which in turn motivates the individual to reflect on the past even more. The authors also argue that involvement with past traumatic events intensifies the negative affect, which in turn negatively influences perception of the current situation, reinforcing the Present-Fatalistic TP. We also hypothesize that past adversities can be projected on the present. For example, research among persons diagnosed with schizophrenia showed that the content of auditory verbal hallucinations in most cases can be linked to emotionally overwhelming experiences in the past (Corstens and Longden, 2013). Research also suggests that trauma exposure impacts the Past-Positive TP (Stolarski and Cyniak-Cieciura, 2016).

1. Methods

The study design was approved by the ethics committee of the Department of Psychology at the University of Warsaw. The clinical sample consists of 45 patients diagnosed with schizophrenia aged 19–67 years. The control group contains 45 healthy persons aged 18–72 years (for sample characteristics see supplementary data Table 1).

Childhood adversities were measured by the Childhood Experiences Questionnaire (CEQ-58) (Styła and Makoveychuk, 2018). TP was measured by a 56-item Polish version (Kozak and Mażewski, 2007) of the Zimbardo Time Perspective Inventory (ZTPI; Zimbardo and Boyd, 1999). The DBTP coefficient was calculated using the formula proposed by Stolarski et al. (2011). Poor global functioning is the overall score of the General Functioning Questionnaire (GFQ-58; Styła and Kowalski, n.d.). The diagnosis of schizophrenia is based on the criteria in the tenth revision of the *International Statistical Classification of Diseases and Related Health Problems* (ICD-10; WHO, 1992).

2. Results

The clinical and control groups proved to be similar in gender, age and place of living while there was a statistically significant difference in level of education ($p < .01$) (see also supplementary data Table 1).

The analyses showed that the clinical group in comparison to healthy individuals had a higher level of childhood adversities (t(88) = 3.05, $p < .05$, Cohen's d = 0.65), higher level of DBTP (t(88) = 4.08, $p < .001$, Cohen's d = 0.87) and poorer global functioning (t(88) = 3.71, p < .001, Cohen's d = 0.79) (see also supplementary data Table 2).

The results also revealed that there are statistically significant correlations in entire sample between childhood adversities and DBTP (r(88) = 0.461, $p < .01$), childhood adversities and poor global functioning (r(88) = 0.571, $p < .01$), childhood adversities and diagnosis of schizophrenia (r(88) = 0.309, p < .01), DBTP and poor global functioning (r(88) = 0.581, $p < .01$), DBTP and diagnosis of schizophrenia (r(88) = 0.399, p < .01) (see also supplementary data Table 3).

The mediation analyses confirmed that DBTP is a statistically significant mediator of the relationship between childhood adversities and (A) global functioning (29% of the total effect was due to the indirect pathway through DBTP) and (B) diagnosis of schizophrenia (37% of the total effect could be accounted for by the indirect effect of DBTP) (see Fig. 1).
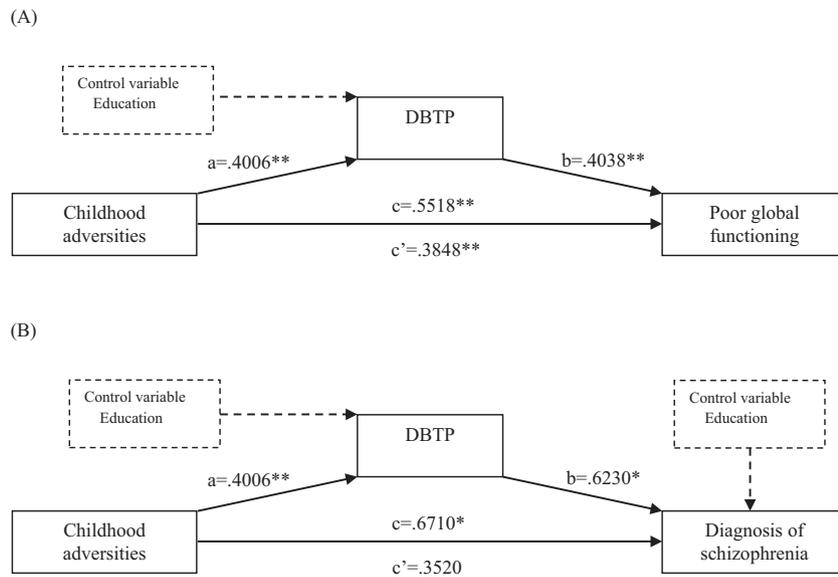
(A)

(B)

Fig. 1. Deviation from balanced time perspective (DBTP) as a mediator*** between childhood adversities and (A) poor global functioning; Effect = 0.1617, Bootstrapped S.E. [Boot SE] = 0.0573, Bootstrapped Lower Confidence Interval [LLCI] = 0.0666, Bootstrapped Upper Confidence Interval [ULCI] = 0.2887, the ratio of indirect to total effect = 0.2930 and (B) diagnosis of schizophrenia; Effect = 0.2495, Boot SE = 0.1588, LLCI = 0.0149, ULCI = 0.6352, the ratio of indirect to direct effect = 0.3718. *$p < .05$, **$p < .001$, ***Mediation effects were verified using a test based on bootstrap sampling, repeating the process 10,000 times. We considered four sociodemographic items of data as potential covariates (gender, age, place of living and level of education).

3. Discussion

To our knowledge this is the first empirical report exploring the relationship between childhood trauma, TP and schizophrenia. This research indicated that persons diagnosed with schizophrenia have a less balanced time perspective profile (higher DBTP) than healthy individuals, specifically they are 'locked' in the past and also geared to perceive the present in a fatalistic way.

The study confirmed the hypothesis that the link between childhood adversities and schizophrenia can be mediated by DBTP. BTP can be viewed as a psychological regulatory system of emotional and thought processing that allows a person to self-regulate even when confronted with extreme life adversities (Stolarski et al., 2018). Thus, from the perspective of the vulnerability-stress model of schizophrenia, we may hypothesize that individuals prone to psychosis when confronted with childhood trauma develop maladaptive biases in their TP profile. As a consequence, later in life the inevitable stressful events cannot be handled optimally, provoking excessive stress that may cause psychotic symptoms.

The results are limited by the correlational design of this study. However we believe that the TP theory opens up new perspectives on understanding the causes of schizophrenia. Further research is therefore necessary on the link between the clinical science and TP theory.

Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.schres.2019.05.021.

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