Impact of Adverse Life Events on Individuals With Low and High Schizotypy in a Nonpatient Sample

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Abstract: The aims of this study were to gain a better understanding of adverse life events connected with the development of schizotypal personality traits and, also, to examine whether subclinical schizotypy has a relationship with vulnerability to traumatic intrusions and avoidance. In a cross-sectional design, 198 undergraduate students completed the Oxford-Liverpool Inventory of Feelings and Experiences (O-LIFE), the Impact of Event Scale (IES), and Paykel’s Life Events Scale, together with other relevant scales. The number of adverse life events was significantly related to overall schizotypy measured by O-LIFE scores and positive schizotypy measured by the Unusual Experiences (UnEx) subscale. The subjective severity of life events was significantly related to Cognitive Disorganization (CogDis). Measures of positive schizotypy (UnEx and CogDis) were significantly related to the scores on the IES and on the intrusion and avoidance subscales, too. Adverse life events are associated with schizotypal personality traits, which contribute to a tendency for traumatic intrusions, even in a nonpatient sample.

Key Words: Schizotypy, O-LIFE, life events, traumatic intrusions, Impact of Event Scale


There is a growing body of evidence that psychotic symptoms form a continuum with certain experiences, beliefs, and appraisals of the healthy personality. According to the dimensional model of schizophrenia (Mason and Claridge, 2006), schizotypy is a fully dimensional trait that varies throughout the healthy population, patients with schizophrenia spectrum disorders, and patients with schizophrenia. This fully dimensional approach has been repeatedly found to be a comprehensive model to explain a range of similarities between patients with schizophrenia and healthy subjects scoring high on schizotypy scales.

Schizotypy is also regarded as a multifactorial trait, its main factors being positive schizotypy (Unusual Experiences [UnEx], strange beliefs, and magical thinking), negative schizotypy (anhedonia), and disorganized schizotypy, together with social anxiety and nonconformity (Vollaem and van den Bosch, 1995). This multifactoriality is reflected in the construction of the Oxford-Liverpool Inventory of Feelings and Experiences (O-LIFE; Mason et al., 1995).

Positive and negative schizotypy and Cognitive Disorganization (CogDis) have been found to be continuous variables in a small sample of patients with schizophrenia and matched healthy controls, whereas impulsive nonconformity has not. In the study by Cochrane et al. (2010), the UnEx subscale of the O-LIFE was proved to be the only subscale that mirrors the positive symptoms of patients with schizophrenia on the healthy population, but the same was not true for the introverted anhedonia, CogDis, or impulsive nonconformity subscales in this study (Cochrane et al., 2010).

On the one hand, a high level of schizotypy, similar to schizophrenia, is associated with a range of cognitive deficits (poorer cognitive inhibition, as measured by negative priming affect; Beech et al., 1989; Peters et al., 1994; Steel et al., 1996), a reduced distractor cueing effect, and, consequently, a reduced ability to process contextual information (Steel et al., 2002). Schizotypal characteristics have been recognized to be risk factors of developing schizophrenia later on (Miller et al., 2002). In the study of Mason et al. (2004), schizotypal personality traits were the most reliable scale-based predictors of developing a psychotic disorder later on in a sample of young people seeking help at a psychological assessment service.

On the other hand, connections with creativity and imagination, in other words, certain protective aspects of schizotypy, especially positive schizotypy, have also been recognized. Green and Williams (1999) found a significant positive correlation between schizotypy and divergent thinking. In Stoneham and Coughtry’s (2009) study, subjects with high schizotypy were found to use significantly more creative strategies in a group problem-solving situation.

There is evidence that a high level of magical thinking together with a low level of CogDis can enhance subjective well-being—for these people judge their UnEx to be more pleasant and positive than those with high CogDis. It seems that organized positive schizotypy allows people to construct an adaptive mental framework to interpret their experiences (Schofield and Claridge, 2007). At the same time, individuals with high schizotypy tend to relive their past experiences and preclude their future with a lot more sensual (especially olfactory) details, and this is accompanied by a deeper subjective feeling (Wigfield and Kamboj, 2010). This latter finding leads further to the question of reliving traumatic experiences and adverse life events.

The leading symptom of posttraumatic stress disorder (PTSD) is the repeated involuntary intrusion of distressing trauma memories. According to the cognitive model of PTSD, patients do not remember or think of what has happened to them; they actually relive it. Sensory features of the intrusive memories are very strong, and time perspective is lost. The patients’ impression is as if they are experiencing the adverse event right at the moment and the emotions accompanying the event are exactly the same as these were at the original event. (Ehlers et al., 2004) This way, sensory impressions and emotions are dissociated from their source. Two important factors are to be mentioned in maintaining the symptoms. First of all, trauma memories are not elaborated and integrated in their context in time and place. Integration is thought to be impeded partly by the dissociation mentioned above (Ehlers and Clark, 2000). Secondly, avoidance of stimuli connected with the traumatic event and the effort to suppress conscious thoughts of the traumatic event also block the process of integration and maintain or even increase the regularity or the severity of intrusions (Davies and Clark, 1998; Ehlers and Clark, 2000).

Traumatic experiences, especially various forms of childhood abuse, have also been widely recognized as a risk factor of developing psychotic symptoms (Bebbington et al., 2004; Hardy et al., 2005; Read, 1997; Spauwen et al., 2006) and a high level of schizotypy (Startup, 1999; Steel et al., 2009). According to the longitudinal study by Spauwen et al. (2006), traumatic life events increase the expression of psychotic symptoms in youngsters both high and low on psychosis.
proneness. Steel et al. (2009) found that individuals who were categorized in the psychosis-prone group on the basis of their relatively high score on the Schizotypal Personality Scale were more than six times more likely to have experienced physical abuse and four times more likely to have been sexually abused than those not in this group.

The often cited 1989 study of Romme and Esher shed light on the fact that even the adverse events of later life (e.g., bereavement) increase the likelihood of hallucinations—even in nonpatients—and further research (Morrison and Petersen, 2003) gave more support to this statement. Steel et al. (2005) proposed an information-processing account according to which individuals with high schizotypy, similar to patients with schizophrenia, are less able to make use of contextual information surrounding target stimuli (demonstrated by the flanking letter test; Steel et al., 2002) and therefore have an information-processing style in which contextual integration is weaker. This way, adverse life events that may generate traumatic intrusions are more likely to affect individuals with high schizotypy (Steel et al., 2005), which have been a proved risk factor of developing posttraumatic stress disorder.

At the same time, Bebbington et al. (2004) suggest that people who develop a schizophreniform disorder later in life tend to be survivors of bullying or different forms of abuse more often than healthy controls. Because of their poorer social skills, they might seem more vulnerable, easier to intimidate, and less able to defend themselves. At the same time, because of their social and cognitive deficits, they are less able to seek social support, build further confirming relationships, and mentally organize traumatic material after going through an adverse life event. This way, people with more schizotypal traits are expected to have experienced more adverse life events, which they found more unpleasant and more difficult to cope with than healthy controls.

The relationship between childhood trauma and unusual perceptual experiences or hallucinations has been repeatedly interpreted as a consequence of intrusive memories of the stressful events (Hardy et al., 2005; Steel et al., 2009). It has been proposed by several studies that poor source monitoring of individuals who have schizophrenia and individuals with high schizotypy may lead the observers to think certain experiences of schizotypal personalities are schizophrenia symptoms (hallucinations) instead of actual memories of past events (Steel et al., 2009).

Relying on the analogue design, it has been argued that high positive schizotypy means vulnerability for traumatic intrusions. Holmes and Steel (2004) found that the UnEx scale of the O-LIFE was the only independent predictor of intrusions of the stressful film. They also showed that subjects scoring high on the UnEx scale reported more personal experiences of traumatic events. It is argued by the authors that high-scoring individuals with positive schizotypy are less able to integrate information within a temporal context (as shown in Steel et al., 2002) and therefore store information in a way that allows it to be triggered involuntarily. Thus, they may become overwhelmed by the content of their consciousness and become highly aroused by trying to find the meaning of their experiences but being unable to connect these to their personal life events. The more traumatic experiences they go through, the more vulnerable they become to intrusions.

Steel et al. (2008) replicated these findings in a sample of 45 survivors of road traffic accidents and gained some more empirical support for the connection of positive schizotypy measured by the O-LIFE and posttraumatic symptoms.

The results of the study by Marzillier and Steel (2007) in a sample of 50 patients who experienced a traumatic event seeking psychological assistance extend previous knowledge to clinical population. They found individuals with high schizotypy to be especially vulnerable to traumatic intrusions and other posttraumatic stress symptoms, such as hypervigilance and avoidance.

In regard to connections of schizotypy and mood disorders, it has been found that depressive and anxious symptoms can be more closely associated with positive than with negative schizotypy. Lewandowski et al. (2006) argue that, in addition to positive schizotypy, anxiety and depression involve deregulation of negative affect, whereas negative schizotypy involves a diminution of affective response. Similarly, Marzillier and Steel (2007) found positive schizotypy to be positively connected with low positive- and positive-others, high negative- and negative-others beliefs, and therefore higher levels of anxiety and depression in their clinical sample.

In summary, it has been proposed that stressful life events increase the likelihood of developing schizophreniform pathology, and there is some evidence that this connection can be found regarding schizotypal personality traits too. At the same time, the cognitive dysfunctions and difficulties of social contacts associated with schizotypal personality make it even harder for these people to work through the effects of adverse life events and make them even more vulnerable for posttraumatic symptoms. Therefore, we intended to test the following hypotheses:

1. Our first hypothesis was that schizotypy, especially positive schizotypy measured by UnEx, is associated with high rates of traumatic intrusions, more so than negative schizotypy measured by introverted anhedonia.

2. Our second hypothesis was that a larger number of adverse life events that were rated as severe by individuals is connected with schizotypal personality traits, especially positive schizotypy measured by UnEx.

3. On the basis of the findings by Lewandowski et al. (2006) and Marzillier and Steel (2007), we hypothesized that self-reported depressive and anxious thoughts and feelings correlate positively with positive schizotypy but not with negative schizotypy.

In the study of posttraumatic intrusions in nonclinical samples, we had three choices, all of which have been used in this field: a) the analogue design (e.g., Holmes and Steel, 2004), b) selecting survivors of a traumatic event concerning a large population (e.g., earthquake, flood; e.g., Steel et al., 2008), or c) asking people to think of a certain traumatic event of their lives that they selected themselves (e.g. Merkelbach and Giesbrecht, 2006; Startup, 1999) or that was determined specifically by the researchers. Following one of the first two would have meant more conceptual clarity of trauma and traumatic intrusion as described in the ICD-10 (World Health Organization, 1992) and the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV) (American Psychiatric Association, 2000), whereas adopting design number 3 meant the advantage of reaching a larger sample and working with more personally significant material. Studies relying on the same design refer to a wide range of adverse life events as “traumatic,” even though these do not necessarily fulfill the exact ICD-10 and DSM-IV criteria of a trauma (e.g., bereavement or emotional abuse [Morrison and Petersen, 2003]), bullying [Campbell and Morrison, 2007], “something terrible happening to others” [Spauwen et al., 2006]), and find that these actually function in people’s lives in the same way as the traumatic events that fulfill the taxonomic criteria.

METHODS

Ethics

Ethical approval for this study was obtained from the Regional and Institutional Scientific and Research Ethics Committee (Regionális

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Impact of Event Scale

The 15-item Impact of Event Scale (IES; Horowitz et al., 1979; Hungarian translation, Annus et al., 2005), which measures subjective stress caused by adverse life events, contains two factors: intrusions (seven items) and avoidance (eight items). The subjects were asked to think about a severe traumatic life event and rate on a 4-point frequency scale how often in the last week they had experienced descriptions by the items (0, not at all; 1, rarely; 3, sometimes; 5, often; Perczel Forintos et al., 2005; Sundin and Horowitz, 2002). In a meta-analysis of 18 different studies, internal consistencies were found to be high for both subscales, with a mean alpha of 0.86 (range, 0.72–0.92) for Intrusions and a mean alpha of 0.82 (range, 0.65–0.90) for avoidance (Sundin and Horowitz, 2003). Scores on the IES have a possible range of 0 to 75, with higher scores indicating more intrusions and avoidance in relation to a past adverse life event.

In our sample, very good internal consistencies were found for IES total (Cronbach’s α = 0.88) and for the intrusions subscale (Cronbach’s α = 0.89); and good internal consistencies, for avoidance (Cronbach’s α = 0.756; Table 1).

The O-LIFE

The 104-item O-LIFE (Mason et al., 1995) has four subscales: UnEx (30 items), measuring positive schizotypy; CogDis, measuring attention and concentration deficits, poor decision making, and social anxiety (24 items); introverted anhedonia, measuring negative schizotypy (27 items); and impulsive nonconformity, measuring impulsive, antisocial, and eccentric forms of behavior (23 items; Mason and Claridge, 2006). Subjects are asked to decide whether they agree with each statement of the questionnaire, and “yes” answers on positive items and “no” answers on negative items equally score 1. “No” answers on positive items and “yes” answers on negative items score 0. Scores on the O-LIFE have a possible range of 0 to 104, with higher scores indicating more schizotypal traits. At the examination of psychometric properties of the O-LIFE, Mason et al. (1995) found good to very good internal consistencies for all four subscales, Cronbach’s alphas ranging from 0.77 to 0.89.

The basis of the Hungarian translation was the appendix of the article by Mason and Claridge (2006), where all 104 items were listed. It was translated into Hungarian by the first and the second author and then translated back into English by a Hungarian native speaker living in an English-speaking environment.

TABLE 1. Descriptive Statistics and Internal Consistencies of the Main Variables for the Whole Sample

<table>
<thead>
<tr>
<th>Variable</th>
<th>Minimum Values</th>
<th>Maximum Values</th>
<th>Mean (SD)</th>
<th>Cronbach’s α</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (N = 198), yrs</td>
<td>18</td>
<td>31</td>
<td>20.47 (1.95)</td>
<td></td>
</tr>
<tr>
<td>No. stressful life events (n = 197)</td>
<td>0</td>
<td>11</td>
<td>3.42 (2.24) (median, 3; interquartile range, 2–5)</td>
<td>0.873</td>
</tr>
<tr>
<td>Severity of stressful life events (n = 195)</td>
<td>0</td>
<td>5</td>
<td>2.93 (1.11)</td>
<td></td>
</tr>
<tr>
<td>STAI-T (n = 190)</td>
<td>22</td>
<td>66</td>
<td>41.52 (9.59)</td>
<td>0.715</td>
</tr>
<tr>
<td>BDI (n = 190)</td>
<td>0</td>
<td>32</td>
<td>4.68 (5.98)</td>
<td></td>
</tr>
<tr>
<td>IES intrusions (N = 198)</td>
<td>0</td>
<td>21</td>
<td>8.02 (5.84)</td>
<td>0.890</td>
</tr>
<tr>
<td>IES avoidance (N = 198)</td>
<td>0</td>
<td>24</td>
<td>8.24 (6.16)</td>
<td>0.756</td>
</tr>
<tr>
<td>IES total (N = 198)</td>
<td>0</td>
<td>41</td>
<td>16.27 (10.99)</td>
<td>0.880</td>
</tr>
<tr>
<td>O-LIFE UnEx (N = 198)</td>
<td>0</td>
<td>25</td>
<td>9.21 (5.15)</td>
<td>0.777</td>
</tr>
<tr>
<td>O-LIFE introvertive anhedonia (N = 198)</td>
<td>0</td>
<td>19</td>
<td>5.28 (3.68)</td>
<td>0.748</td>
</tr>
<tr>
<td>O-LIFE CogDis (N = 198)</td>
<td>0</td>
<td>22</td>
<td>9.00 (4.92)</td>
<td>0.774</td>
</tr>
<tr>
<td>O-LIFE impulsive nonconformity (N = 198)</td>
<td>0</td>
<td>17</td>
<td>7.40 (3.40)</td>
<td>0.624</td>
</tr>
<tr>
<td>O-LIFE total (N = 198)</td>
<td>6</td>
<td>63</td>
<td>31.32 (12.30)</td>
<td>0.829</td>
</tr>
</tbody>
</table>

BDI indicates Beck Depression Inventory–shortened version.
In our sample, the internal consistency of the O-LIFE was very good (Cronbach’s α = 0.829), and for the subscales, it was acceptable to good (Cronbach’s alphas ranging from 0.624 to 0.777). The exact results are reported in Table 1.

### Spielberger Trait-State Anxiety Inventory, Trait Subscale

The Spielberger Trait-State Anxiety Inventory, trait subscale (STAI-T; Spielberger, 1970; Hungarian translation, Sipos and Sipos, 1978), is a widely used 20-item scale for measuring personal tendency for anxiety. Every item is rated on a 4-point Likert scale, with 1 indicating almost never; 2, somewhat; 3, often; and 4, almost always. Eight of the 20 items are reversed, and, in these cases, scores are also reversed, with 1 indicating almost always; 2, often; 3, somewhat; and 4, almost never (Kopp and Fórizs, 1993). Total scores on the STAI-T have a range of 20 to 80, with higher scores indicating more trait anxiety (Pereczel Forintos et al., 2005).

In a few recent studies in which the STAI-T was applied to nonpsychiatric samples, the internal consistency was found to be very good (Cronbach’s α = 0.86, Dunn et al., 2012, and Cronbach’s α = 0.89, Lander et al., 2012).

In our sample, the internal consistency of this scale was very good (Cronbach’s α = 0.873; Table 1).

### Beck Depression Inventory—Shortened Version

The nine-item Beck Depression Inventory (BDI)—shortened version (Beck and Beck, 1972; Hungarian shortened version, Kopp and Fórizs, 1993) has been designed to measure cognitive, emotional vegetative, and behavioral signs of depression (Kopp and Fórizs, 1993). It is not the exact translation of the shortened version of the BDI by Beck and Beck (1972), but it is very similar to that. Each item is rated from 1 to 4, with 1 indicating that the symptom is not experienced and 4 indicating that the symptom is permanently experienced. Total scores on the BDI—shortened version have a possible range of 9 to 54, with higher frequencies indicating more severe depressive symptoms. Scores of the BDI—shortened version can be converted to the original BDI (Beck et al., 1961) scores using the following template:

\[
(\text{BDI—shortened version scores} - 9) \times 2
\]

Rózsa et al. (2001), in their study of the psychometric properties of the BDI—shortened version, reported that it had a strong correlation (r = 0.92, n = 101, p < 0.0001) with the original BDI (Beck et al., 1961). In their sample, the BDI—shortened version had very good internal consistency (Cronbach’s α = 0.83). In our sample, the internal consistency of the BDI—shortened version was proved to be a little lower but still good (Cronbach’s α = 0.715; Table 1).

### Statistical Analysis

The data were processed by SPSS 15.0 for Windows (SPSS Inc, 2006). Cronbach’s alphas were used to describe the internal consistencies of the applied scales. Descriptive statistics were reported. Sex differences were tested using independent-samples t-tests and Mann-Whitney’s U-test. Bivariate relationships of the study variables were tested using Pearson’s correlation coefficients. Multivariate relationships between schizotypy, adverse life events, and posttraumatic symptoms were assessed using multiple regression analyses. When the assumption of normality was violated, Box-Cox transformation was used. Levels of significance were set at α = 0.05.

### RESULTS

Statistical analysis was performed on the basis of the data of the 198 subjects, 114 (57.6%) of which were women. The mean (SD) age was 20.47 (1.96; range, 18–31) years.

Descriptive statistics of the main variables can be seen in Table 1. The men and the women did not differ significantly with regard to age (t[196] = 0.97, p = 0.336, Cohen’s d = 0.139), self-reported depressive symptoms (t[188] = −0.117, p = 0.907, Cohen’s d = −0.017), STAI-T score (t[188] = −1.913, p = 0.057, Cohen’s d = −0.279), IES total score (t[196] = −0.967, p = 0.335, Cohen’s d = −0.138), trauma-related intrusions (t[196] = −1.650, p = 0.101, Cohen’s d = −0.236) avoidance (t[196] = −0.167, p = 0.868, Cohen’s d = −0.024), O-LIFE total score (t[196] = −1.138, p = 0.256, Cohen’s d = −0.125), and introvertive anhedonia (t[196] = −0.146, p = 0.884, Cohen’s d = −0.02). The women reported significantly more stressful life events (Mann-Whitney’s U-test = 3892.5; z = −2.184; p = 0.029; mean rank difference, 17.71) and rated these to be more distressing (t[196] = −2.376, p = 0.018, Cohen’s d = −0.339) than did the men and scored higher on UnEx (t[196] = −2.059, p = 0.041, Cohen’s d = −0.294) and CogDis (t[196] = −2.042, p = 0.043, Cohen’s d = −0.291). On the other hand, the men scored significantly higher on impulsive nonconformity (t[196] = 2.243, p = 0.026, Cohen’s d = 0.32).

Correlations of the main variables can be seen in Table 2. The O-LIFE CogDis subscale had strong correlations with the STAI-T (0.751, p < 0.001) and the BDI (0.601, p < 0.001). O-LIFE total was also strongly correlated with anxiety (0.568, p < 0.001) and the BDI (0.520, p < 0.001). The STAI-T had a strong relationship with the BDI (0.654, p < 0.001). The STAI-T and the BDI had significant correlations of medium effect size with O-LIFE introvertive anhedonia (0.416, p < 0.001, and 0.425, p < 0.001, respectively), and the STAI-T had a medium effect size correlation with the whole IES scale (0.378, p < 0.001) and both subscales: IES intrusions (0.349, p < 0.001) and IES avoidance (0.343, p < 0.001). Medium effect size correlations were found between O-LIFE total and IES total (r = 0.401, p < 0.001). Correlations of O-LIFE CogDis with the IES (r = 0.359, p < 0.001).

#### Table 2. Correlations of the Main Variables

<table>
<thead>
<tr>
<th></th>
<th>Age</th>
<th>IES Intrusions</th>
<th>IES Avoidance</th>
<th>IES Total</th>
<th>STAI-T (n = 190)</th>
<th>BDI (n = 190)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>1</td>
<td>−0.147**</td>
<td>−0.066</td>
<td>−0.115</td>
<td>−0.06</td>
<td>−0.05</td>
</tr>
<tr>
<td>O-LIFE UnEx</td>
<td>−0.104</td>
<td>0.282**</td>
<td>0.282**</td>
<td>0.308**</td>
<td>0.189**</td>
<td>0.230**</td>
</tr>
<tr>
<td>O-LIFE IntrAnhed</td>
<td>0.036</td>
<td>0.143*</td>
<td>0.273**</td>
<td>0.229**</td>
<td>0.416**</td>
<td>0.425**</td>
</tr>
<tr>
<td>O-LIFE CogDis</td>
<td>−0.116</td>
<td>0.334**</td>
<td>0.323**</td>
<td>0.359**</td>
<td>0.751**</td>
<td>0.601**</td>
</tr>
<tr>
<td>O-LIFE ImpNonc</td>
<td>−0.023</td>
<td>0.146*</td>
<td>0.145*</td>
<td>0.164*</td>
<td>0.162*</td>
<td>0.139</td>
</tr>
<tr>
<td>O-LIFE total</td>
<td>−0.089</td>
<td>0.348**</td>
<td>0.386**</td>
<td>0.401**</td>
<td>0.568**</td>
<td>0.520**</td>
</tr>
<tr>
<td>STAI-T</td>
<td>−0.06</td>
<td>0.348**</td>
<td>0.343**</td>
<td>0.378**</td>
<td>0.654**</td>
<td>—</td>
</tr>
<tr>
<td>BDI</td>
<td>−0.05</td>
<td>0.258**</td>
<td>0.287**</td>
<td>0.289**</td>
<td>0.654**</td>
<td>—</td>
</tr>
</tbody>
</table>

* N = 198.
** ImpNonc indicates impulsive nonconformity; IntrAnhed, introvertive anhedonia.
*p < 0.05.
* *p < 0.001.
p < 0.001), IES Intrusions (r = 0.334, p < 0.001), and IES Avoidance (r = 0.323, p < 0.001) were also in the medium range. There was a medium effect size correlation between UnEx and IES total (r = 0.308, p < 0.001). Small effect size correlations were found between UnEx and IES Intrusions (r = 0.282, p < 0.001) and IES Avoidance (r = 0.282, p < 0.001) and between introvertive anhedonia and IES Avoidance (r = 0.273, p < 0.001) and IES total (r = 0.229, p < 0.001). As was expected, impulsive nonconformity had no significant correlation with IES total or either of the IES subscales.

The BDI scores were significantly related to IES total (r = 0.298, p < 0.001) and both subscales (intrusions: r = 0.258, p < 0.001; avoidance: r = 0.287, p < 0.001); however, the effect sizes were small. The correlation of small effect size was the lowest, in the case of O-LIFE total as dependent (r = 0.230, p < 0.001). Age had no significant relationship with any of the variables.

Regression analysis of the connection of anxiety and depression with the O-LIFE and the subscales revealed that the STAI-T (R² = 0.562, F = 58.924, df = 188, p < 0.001) and BDI (R² = 0.331, F = 13.923, df = 189, p < 0.001) scores both had a significant relationship with CogDis (for STAI-T: β = 0.742, t = 12.739, p < 0.001, and for BDI: β = 0.498, t = 6.927, p < 0.001). There was also a significant connection between the BDI and introvertive anhedonia (β = 0.139, t = 2.091, p = 0.03; Table 3).

Regression analyses of the O-LIFE and the subscales relating to the IES and the subscales showed that UnExf (β = 0.196, t = 2.688, p = 0.008) and CogDis (β = 0.239, t = 3.039, p = 0.003) were significantly related to IES total (R² = 0.17, F = 9.943, df = 197, p < 0.001). The same result emerged with IES Intrusions as dependent (R² = 0.14, F = 7.891, df = 197, p < 0.001; UnEx: β = 0.177, t = 2.377, p = 0.018; CogDis: β = 0.264, t = 3.296, p < 0.001). These two schizotypy (UnEx: β = 0.183, t = 2.480, p = 0.014; CogDis: β = 0.176, t = 2.222, p = 0.027) scales together with introvertive anhedonia (β = 0.163, t = 2.218, p = 0.028) had a significant relationship, with IES Avoidance as dependent (R² = 0.16, F = 8.981, df = 197, p < 0.001). There was no significant change in these results even after corrections for sex and age (Table 4).

Regression analyses of number and severity of adverse life events relating to the O-LIFE and its subscales showed that, in the case of O-LIFE total as dependent (R² = 0.06, F = 6.457, df = 194, p = 0.002), subjective severity of life events was a significant predictor (β = 0.205, t = 2.862, p = 0.005), and for CogDis as dependent (R² = 0.06, F = 6.181, df = 194, p < 0.001), subjective severity was also significant (β = 0.201, t = 2.807, p = 0.006). For UnEx as dependent (R² = 0.08, F = 7.908, df = 194, p < 0.001), the number of adverse life events (β = 0.251, t = 3.524, p < 0.001) was significant. According to our results, the number and the severity of life events did not seem to have a significant relationship with introvertive anhedonia (R² = 0.002, F = 0.163, df = 194, p = 0.850) and impulsive nonconformity (R² = 0.019, F = 1.895, df = 194, p = 0.153; Table 5).

**DISCUSSION**

Our intention was to gain a better understanding of the interconnections of stressful life events, schizotypal personality traits, and posttraumatic symptoms such as intrusion and avoidance. In our bivariate analyses, we mainly got the results expected based on the literature in this field. We found that O-LIFE CogDis had a strong connection with trait anxiety and depression scores, and this was supported by our regression analyses as well, which is not a surprise because it is meant to be a somewhat related phenomenon to trait anxiety and depression. Total schizotypy scores were also highly correlated with trait anxiety and depression. A similarly strong connection appeared between trait anxiety and depression scores. The STAI-T and the BDI were both moderately correlated with introvertive anhedonia, which is contrary to our expectations, on the basis of Lewandowski et al. (2006). Still, it might be understandable because introvertive anhedonia, together with emotional numbing, contains items measuring lack of joy for life. Trait anxiety was moderately correlated with the IES total and subscale; this result can be understood on the basis of the fact that posttraumatic symptoms are considered to be symptoms of an anxiety disorder. As expected, on the basis of previous results (e.g., Marzillier and Steel, 2007), total schizotypy scores were moderately correlated with posttraumatic symptoms, but of the four subscales, somewhat surprisingly, CogDis had the strongest positive connection to the IES total and subscales. UnEx had a moderate positive correlation with IES

**TABLE 3. Results of Linear Regression Analyses**

<table>
<thead>
<tr>
<th>Independent Variable</th>
<th>β</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>134.057</td>
<td>&lt;0.001</td>
<td></td>
</tr>
<tr>
<td>UnEx</td>
<td>−0.097</td>
<td>−1.788</td>
<td>0.075</td>
</tr>
<tr>
<td>CogDis</td>
<td>0.742</td>
<td>12.739</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Introvertive anhedonia</td>
<td>0.099</td>
<td>1.827</td>
<td>0.069</td>
</tr>
<tr>
<td>Impulsive nonconformity</td>
<td>−0.042</td>
<td>−0.796</td>
<td>0.427</td>
</tr>
<tr>
<td>R² = 0.562, F = 58.924, df = 188, p &lt; 0.001</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**TABLE 4. Results of Linear Regression Analyses**

<table>
<thead>
<tr>
<th>Independent Variable</th>
<th>β</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>2.665</td>
<td>0.008</td>
<td></td>
</tr>
<tr>
<td>UnEx</td>
<td>0.196</td>
<td>2.688</td>
<td>0.008</td>
</tr>
<tr>
<td>CogDis</td>
<td>0.239</td>
<td>3.039</td>
<td>0.003</td>
</tr>
<tr>
<td>Introvertive anhedonia</td>
<td>0.090</td>
<td>1.227</td>
<td>0.221</td>
</tr>
<tr>
<td>Impulsive nonconformity</td>
<td>0.026</td>
<td>0.373</td>
<td>0.710</td>
</tr>
<tr>
<td>R² = 0.17, F = 9.943, df = 197, p &lt; 0.001</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Dependent variables: the STAI-T and the BDI shortened version.
the results of several studies in the field (Bebbington et al., 2004; Campbell and Morrison, 2007), higher schizotypy scores (O-LIFE total) were correlated with higher levels of depression and anxiety, and this relationship was especially strong in the case of CogDis. However, the correlations between the UnEx subscale and the STAI-T and the BDI were relatively low. Contrary to our expectations, depressive and anxious symptoms were positively correlated with introvertive anhedonia. One explanation for this can be that, unlike Marzillier and Steel (2007), we used a healthy sample in which schizotypal traits and depressive and anxious symptoms were all subclinical.

### CONCLUSIONS

It can be concluded that in thinking about schizotypy, we must consider its multifactoriality, which is expressed in the different factors of the different schizotypy questionnaires, for example, in the O-LIFE. Apart from the positive-negative dichotomy, it seems to be important to differentiate between organized and disorganized (positive) schizotypy, which can determine the level of psychological functioning, especially cognitive processing and, as a consequence of this, the subjective evaluation of life events for the individuals. This way, the level of organization or disorganization can determine the person's system of beliefs about the self and the world, which is closely connected with his/her mental health and well-being. Further investigations can be conducted to gain more understanding of the role CogDis plays in the expression and functioning of schizotypal personality traits on the subclinical and the clinical level.

At the same time, it is important to conclude that the larger number of traumatic life events (even in the everyday sense of "traumatic") is a factor that, apart from other important determinants such as genetics and biological abnormalities, is associated with schizotypal personality traits, which, on the long-term, can make people more vulnerable to triggers of schizophreniform symptoms.
On the whole, even in a nonpatient sample, we can suppose a tendency for a vicious circle. It is possible that the more adverse life events people experience, the more they tend to develop certain schizotypal characteristics. The more distressing they find these experiences, the more they tend to become disorganized. At the same time, our results lead us to the conclusion that the more disorganized people are, the more difficult they find it to cope with distressing experiences.

LIMITATIONS

As a limitation of our study, it must be mentioned that the IES was used in a nonclinical sample in a retrospective way and that the types of traumatic events recalled differed a lot. There was also a remarkable difference in the length of time elapsed since the traumatic event. It must be mentioned as a limitation that our cross-sectional design did not allow establishing causal relationships. Further research is needed to study the relationships between schizotypy, adverse life events, and posttraumatic symptoms in a longitudinal design.

In our study, stressful life events were assessed by Paykel’s Life Events Scale, and we gained no information about the exact time, length, and circumstances of the adverse life events marked by the individuals. Despite the limitations, our results highlight the connections between schizotypal traits, adverse life events, and posttraumatic symptoms.

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DISCLOSURES

The authors declare no conflict of interest.

REFERENCES


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