

Childhood adversity as a moderator of the relationship between emotional reactivity and the occurrence of anxiety and depression in a non-clinical group

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Summary

Aim. The research is an attempt to confirm the role of emotional reactivity and childhood adversity in the development of anxiety and depression as well as to determine the scope of interaction between these two factors.

Material and methods. 430 participants were included in the study. The intensity of emotional reactivity was determined using the FCZ-KT Questionnaire developed by Zawadzki and Strelau. The occurrence of childhood adversity was measured using the Hardt Childhood Questionnaire. The occurrence of anxiety and depression was measured using the structured interview WHO-CIDI 3.0. The relationship between variables was analysed using the logistic regression model.

Results. A moderating role of the level of childhood adversity on the relationship of emotional reactivity and the occurrence of anxiety and depression was observed. In the group with high levels of adversity, no such relationship was observed for either of the two disorders. For low and medium levels of the moderator, different relationships for anxiety and depression were found.

Conclusions. The obtained results are only partially explained within the temperamental risk factor model. A different pattern of relationships between the intensity of the temperamental trait and the occurrence of anxiety and depression depending on the amount of reported adversity may result from the cumulative effect of the negative consequences of this type of experience.

Key words: temperament, violence, anxiety and depression

Introduction

J. Strelau suggests the existence of so-called temperamental risk factors understood as “any temperamental trait or a configuration of such traits which, in the course of an interaction with other factors, (...) increases the risk of the occurrence of behavioural disorders or pathologies, or facilitates the development of maladaptive personality” [1, p. 408]. Much data has been gathered indicating relationships between various dimensions of personality including temperament and the occurrence of psychopathology. A recent meta-analysis [2] has demonstrated relationships between dimensions distinguished in the five factor model of personality (particularly neuroticism) and anxiety and affective disorders. Relationships between the intensity of an anxious temperament measured by the TEMPS-A Questionnaire and the disorder groups mentioned above have also been indicated [3]. The dimension related to neuroticism and anxious temperament present in the Regulative Temperament Theory (RTT) by Strelau [4] is emotional reactivity (ER). It is defined as a tendency to an intensified reaction to emotional stimuli characterised by high sensitivity and low emotional immunity. Interestingly, little data has been gathered regarding the relationships between the dimensions distinguished by Strelau (including emotional reactivity) and the risk of anxiety and depression. Two smaller studies have analysed relationships between RTT traits and the occurrence of depression. The first [5] one indicates differences in terms of the intensity of all temperamental dimensions distinguished by Strelau between healthy and unhealthy groups. In the second study [6], no relationships between the intensity of depressive symptoms measured by the Beck Questionnaire and emotional reactivity were observed (such relationship was observed for two other traits – briskness and endurance). On the other hand, it has been recently indicated that emotional reactivity is the main predictor of the intensity of various anxiety symptoms [7].

Childhood adversity includes a large group of potentially harmful experiences such as emotional abuse, physical abuse, sexual abuse, neglect and other negative life events. Their impact on the development of psychological disorders has been the subject of numerous studies. For example, a recent meta-analysis [8] has confirmed a relationship between sexual abuse and both anxiety and depression.

Although the role of temperament and childhood adversity in the development of psychological disorders seems to be relatively well known, the coexistence of these two factors has been the subject of few analyses. An interaction of neuroticism and emotional violence in the development of borderline personality disorder has been indicated [9]. Nakai et al. [10] have indicated that affective temperament plays a mediating role in the relationship between childhood adversity and symptoms of depression.

Aim

The goal of our study was to confirm the role of emotional reactivity and childhood adversity in the development of anxiety and depression as well as to determine the scope of interaction between these two factors.

Material and method

Research subjects

430 people (210 women and 220 men) aged 18–52 years participated in the study ($M = 23.45$; $SD = 5.61$). Subjects were recruited through Internet advertisements. Subjects were paid 50 PLN for their participation in the study. Before consent, each participant obtained detailed information regarding the research goal and process. The Ethics Committee of the Department of Psychology of the University of Warsaw accepted the study project. The study was carried out according to the Helsinki Declaration.

Psychometric Measurement

Emotional reactivity was measured using the Formal Characteristics of Behaviour/Temperament Questionnaire (FCZ-KT) by Zawadzki and Strelau [11]. This tool is characterised by good psychometric properties. Cronbach's alpha for the emotional reactivity scale in normalising studies was 0.83 [12]. The intensity of childhood adversity was determined using a Polish version of the Childhood Questionnaire [13, 14]. This tool is retrospective and contains questions regarding the occurrence of various types of abuse of children (for example, physical violence, sexual abuse and neglect). The reliability of the measurement assessed using the test-retest method at a two year interval was $r = 0.8$. In order to determine the occurrence of psychological disorders in the studied group, a Polish version of the Composite International Diagnostic Interview (CIDI 3.0) was used [15]. The criteria set by the international statistical classification of diseases and health problems ICD-10 were followed [16]. The following disorders were diagnosed: anxiety disorder with panic attacks, agoraphobia without panic, specific phobia, social phobia, generalised anxiety disorder, post-traumatic stress disorder, mild depressive episode, moderate depressive episode and severe depressive episode without psychotic symptoms.

Statistical analysis

Relationships between the intensity of emotional reactivity and childhood adversity and the occurrence of anxiety and depression were analysed using logistic regression

analysis. Due to limitations related to the number of participants with the diagnosis of a single disorder [17], the aforementioned analysis was carried out for the occurrence of any anxiety and depressive disorder, as well as jointly for both diagnostic groups. Relationships with emotional reactivity and childhood adversity were tested for disorders occurring throughout life. The impact of age and gender was considered in each case. All calculations were carried out using the IBM SPSS 21 statistical package [18].

Results

The occurrence of anxiety and affective disorders in the studied group was observed with the following frequency:

1. For anxiety disorders: panic disorder – 4%; agoraphobia without panic disorder – 5.1%; specific phobia – 30.2%; social phobia – 14%; generalised anxiety disorder 7%; posttraumatic stress disorder – 10.2%;
2. For affective disorders: mild depressive episode – 3%; moderate depressive episode – 10.7%; mild depressive episode without psychotic symptoms – 9.3%.

The rate of comorbidity of anxiety and affective disorders in the study group was 14.9%. The average level of emotional reactivity was 9.62 (SD = 4.78) and childhood adversity was 2.86 (SD = 2.59).

In the first stage of the analysis a block variant of logistic regression was used: in the first block, demographic variables as well as emotional reactivity and childhood adversity were introduced; in the second, an interactive variable as multiplication of explanatory variables (emotional reactivity and childhood adversity) was introduced. Table 1 shows regression coefficients obtained for the individual variables in step one and two (data regarding age and gender has been left out).

Table 1. Regression coefficients in the logistic regression model with interactive variables

	Predictors	Block 1					Block 2				
		B	95%CI Exp(B)	Wald	df	p	B	95%CI Exp(B)	Wald	df	p
Anxiety	ER	0.086	1.04–1.14	13.7	1	***	0.11	1.05–1.19	10.93	1	**
	CA	0.064	0.98–1.16	2.4	1	ns	0.16	0.96–1.44	2.34	1	ns
	ERxCA						-0.01	0.98–1.01	1.01	1	ns
Depression	ER	0.089	1.04–1.15	10.63	1	***	0.094	1.01–1.12	5.46	1	*
	CA	0.11	1.03–1.22	6.25	1	*	0.13	0.89–1.46	1.11	1	ns
	ERxCA						0	0.98–1.02	0.03	1	ns
All Disorders Jointly	ER	0.078	1.03–1.13	11.28	1	**	0.08	1.02–1.16	5.76	1	*
	CA	0.13	1.04–1.24	8.58	1	*	0.14	0.93–1.42	1.58	1	ns
	ERxCA						0	0.98–1.02	0.01	1	ns

CA – Childhood adversity; ER – Emotional reactivity

The data analysis shows that after introducing the interactive variable in the explanation of the occurrence of depression as well as all disorders jointly, the variable related to childhood adversity ceases to be significant. The impact of emotional reactivity is in turn diminished. These results suggest the existence of a moderating effect on the impact of the temperamental variable by the level of childhood adversity. In order to verify this assumption the variable related to early childhood adversity was recoded into three groups: (1) people with a low level of childhood adversity (between 0 and 1; $M = 0.43$; $SD = 0.5$; $N = 159$ including 71 women and 88 men); (2) people with moderate levels of childhood adversity (between 2 and 4; $M = 2.94$; $SD = 0.82$; $N = 171$ including 88 women and 83 men); and (3) people with high levels of childhood adversity (between 5 and 16; $M = 6.6$; $SD = 2$; $N = 100$ including 51 women and 49 men). The intensity of emotional reactivity was as follows – for the group (1) $M = 8.6$; $SD = 4.8$; for the group (2) $M = 9.75$; $SD = 4.7$; for the group (3) $M = 11$; $SD = 4.5$. A logistic regression analysis with age, gender and emotional reactivity as predictors was carried out for each of these groups. Table 2 shows the values of regression coefficients for the temperamental variable.

Table 2. **Regression coefficients in the logistic regression model with division of participants by level of childhood adversity**

		Anxiety	Depression	All Disorders Jointly
Low Level of CA	B	0.11	0.07	0.09
	95%CI Exp(B)	1.03–1.2	0.97–1.19	1.02–1.18
	Wald	7.77	1.9	6.29
	df	1	1	1
	p	**	ns	*
Moderate Level of CA	B	0.08	0.12	0.07
	95%CI Exp(B)	1.01–1.16	1.04–1.22	1–1.16
	Wald	4.78	7.93	4.2
	df	1	1	1
	p	*	**	*
High Level of CA	B	0.08	0.08	0.08
	95%CI Exp(B)	0.98–1.2	0.97–1.2	0.97–1.2
	Wald	2.43	2.07	2.03
	df	1	1	1
	p	ns	ns	ns

CA – Childhood adversity; 95%CI – Confidence interval; Wald – Wald coefficient

The results indicate that the moderator of the relationship between emotional reactivity and anxiety and depression is the number of childhood adversity. In the case of a large number of such experiences, the temperamental variable plays no role. In the case of a small or moderate level of childhood adversity, for anxiety disorders and disorders in general, a relationship between the intensity of reactivity and the occurrence of a psychopathology can be observed. For depressive disorders, the role of temperament is also not visible in the case of low levels of childhood adversity.

Discussion

The goal of the analysis was to confirm the role of emotional reactivity and childhood adversity in the development of anxiety and depression as well as to determine the scope of interaction between these factors. The results confirm the role of emotional reactivity in the development of anxiety indicated among others by Strelau and Zawadzki [7]. Interestingly, the significance of the studied temperamental trait is also visible in the development of the other analysed group. No relationship between emotional reactivity and depressive disorders has been observed in the analyses carried out thus far [5, 6]. However, it must be noted that this study was carried out based on a significantly larger sample of participants than previous analyses. Moreover, whereas previous research used the questionnaire method to diagnose psychological disorders, the present study used structured interviews. These two characteristics of the present study seem to be its advantages. The results regarding a relationship between emotional reactivity and depression find additional confirmation in the results for other personality dimensions related to the selected temperamental trait in RTT [2, 3]. The relationship between childhood adversity and the occurrence of anxiety and depression was the subject of numerous studies [8]. Interestingly, no such relationship was indicated [19]. It cannot be excluded that this relationship only occurs for some types of childhood adversity or their measurement. Pietrek et al. [19], as well as the presented analysis, measured the intensity of various types of adversity without focusing on any particular category. The relationship between childhood adversity and anxiety and depression definitely requires further research. Our analysis of the scope of interaction between childhood adversity and emotional reactivity has brought interesting results. As it was mentioned in the introduction, this question has not been given much attention before. Only one work [10] analysed the relationship between temperament and childhood adversity in relation to depressive disorders. Our results indicate that the relationship between emotional reactivity and the development of anxiety and depression is modified by the intensity of childhood adversity. However, in the case of a large number of such experiences the relationship does not exist for both of the groups of disorders. In the case of anxiety, the strongest effect of emotional reactivity can be observed for the group

with the low level of childhood adversity, and a slightly weaker effect for the group with a moderate level. A similar picture emerges in the case of all disorders analysed jointly. A slightly different situation is observed for depression. Emotional reactivity, in this case, has no effect for the group with low levels of childhood adversity. As it was mentioned in the introduction, the concept of temperamental risk factors [1] is referred to in the context of the relationship between temperament and behavioural disorders. As part of the broader “diathesis-stress” model this approach suggests the existence of an interaction between biologically conditioned temperamental traits and stressful life events, which facilitates the development of psychopathologies. This concept can be used to explain the results obtained for the low and moderate level of adversity although it seems that the mechanism of the development of risk is different for anxiety and depression. It may be a consequence of the relationship between specific types of adversity with various disorders or a coexistence of the latter, which has been indicated by Levitan et al. [20]. Due to the limitations in the size of the sample it was not possible to determine any such relationships in the presented study. The lack of a relationship between emotional reactivity and the occurrence of anxiety and depression obtained for the group reporting a high level of childhood adversity seems not to fit the temperamental risk factor model. The impact of early traumatic experiences on various aspects of development seems to be multidimensional. It is the case both on the purely biological level and the level of various psychological functions. Childhood adversity impacts the activity of genes [21] as well as the function and structure of the brain [22]. The most frequently cited model of the impact of early experience on psychological functioning (the self-trauma model by Briere [23]) indicates six domains susceptible to change: (1) negative preverbal assumptions and relational schemata; (2) conditioned emotional responses to abuse-related stimuli; (3) implicit/sensory memories of abuse; (4) narrative/autobiographical memories of maltreatment; (5) suppressed or “deep” cognitive structures involving abuse-related material; and (6) inadequately developed affect regulation skills. Briere [23] suggests that each subsequent negative experience enhances the effects caused by the previous ones. His predictions have been empirically confirmed. Briere et al. [24] indicate that large number of adversity is related to a higher number of simultaneous problems in various aspects of functioning. Hodges et al. [25] indicate that the accumulation of traumatic events translates into a growing complexity of symptoms of psychological disorders. Although Briere’s model points to the deepening of problems related to psychological functioning, a similar effect with regard to biological mechanisms cannot be excluded. Based on the cited data we presume that the accumulation of adversarial changes on the biological level as well as in terms of psychological functions caused by an experience of large number of adversity can cancel out the effects of temperamental mechanisms. This may explain the results obtained in the study.

Of course our study is not free from flaws, which may inform its reliability. As it has already been mentioned, we examined a relatively small number of people. An additional doubt can be raised over the issue of the retrospective measurement of childhood adversity. It has been suggested that this type of tool is characterised by insufficient psychometric properties. However, this doubt has been shown to be baseless as a review of studies carried out using retrospective measurement of childhood adversity demonstrated its validity [26]. The above-mentioned flaws suggest that those presented results need to be treated with caution. Nevertheless, it seems to introduce an interesting motif to the discussion on the role of temperament in the development of psychological disorders.

Conclusions

The analysis we carried out showed a varied pattern of relationships between the intensity of emotional reactivity and the occurrence of anxiety and depression depending on the level of reported childhood adversity. No effect for the studied temperamental trait was observed for the group who reported much of this type of experience. This result can be explained by referring to the accumulation of negative effects of childhood adversity.

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