

# The Role of Alexithymia and Cognitive Emotion Regulation in the Development of Aggressive Behavior in Adolescents

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The article discusses the role of cognitive emotion regulation (ER) as well as of individual alexithymic traits in the emergence of adolescents' aggressive behavior. It is assumed that alexithymic traits cause aggression by developing maladaptive ER. 142 adolescents aged 12–17 were examined in order to study this mechanism, such questionnaires as Cognitive Emotion Regulation Questionnaire (CERQ), the Alexithymia Questionnaire for Children and the Buss–Perry Aggression Questionnaire (BPAQ) were used as research methods. It has been discovered that the use of maladaptive ER strategies is a significant factor in the development of aggressive behavior. It was confirmed that the reduced ability to identify one's feelings is associated with the risk of developing maladaptive ER strategies, which in its turn enhances aggression. An inclination to catastrophize and ruminate, experiencing stressful events acutely and continuously, as well as showing hostility are the traits of a teenager's character which can be considered as predisposing to aggressive behavior. These features of dysfunctional ER can serve as targets in psychotherapeutic work and they should also be paid special attention to while conducting psycho-prophylaxis of aggressive behavior with adolescents.

**Keywords:** aggressive behavior, emotion regulation, alexithymia, adolescents, aggression, cognitive coping strategies, catastrophizing, rumination, risk factor, psycho-prophylaxis.

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## **Introduction**

Considering the problem of aggression with adolescents over time, it should be noted that so far many theories of aggression have been presented as those describing the nature, forms, functions, and mechanisms of its development [31]. Despite these scientific achievements, this problem has not stopped bothering the minds of modern researchers, but, on the contrary, scientific and practical interest in teenage aggression has only been growing. This is primarily due to spreading of the phenomenon which can be described as a “culture of violence” in modern society [12]. In people's lives it is reflected in the form of the high level of adolescents' wrongful acts committed in the public sphere, including school environment [47]. This fact is associated with the development and spreading of such forms of violence as bullying (school violence) [11], Columbine (massacre at schools) [15] and school shooting (armed attack on schoolchildren committed by a student or an intruder inside an educational institution), etc. [12; 27]. Thus, new questions arise with the representatives of the psychological science. The most important of them are the search for personal factors predisposing to aggression, the study of social and psychological factors provoking the development of aggressive reactions, as well as the search for adequate methods of providing psychological assistance to certain young people who are prone to aggressive behavior. The implementation of these objectives is an important and necessary step for building a healthy society [27].

This work considers personal factors causing teenage aggression. According to the frustration-aggression theory by L. Berkowitz's, the development of aggression is associated with some stressors causing psycho-emotional stress, whose cognitive assessment peculiarities play a major role in the development of aggressive reactions [4]. E.K. Ageenkova et al. have found that adolescents respond aggressively not only to frustrating factors, but may also feel aggression towards people showing inappropriate behavior, for example, vandals, sadists, those who jump in a queue, etc., while watching the environment [2]. Despite the fact that some scholars tend to consider modern adolescents being responsible for “lowering the standards of spirituality, neglecting positive socio-cultural goals”, etc. [17, p. 106], the research has found out that adolescents are aware of their inappropriate behavior toward their teachers, parents and friends, as well as feel guilty and ashamed, whereas these feelings can be auto-aggressive in their nature [2]. Thus, adolescents in the process of their character building handle some aspects of the external and internal worlds acutely. They also face some negative or stressful situations, the response to which largely determines their psychological well-being. Therefore, studying emotion regulation (ER) processes associated with aggression is an important area of scientific and empirical teenage aggression research in our cultural space.

### **Maladaptive Cognitive ER as a Risk Factor of Adolescents' Aggression**

Researchers consider aggressive behavior to be an imperfect form of coping with negative emotional strain due to some difficulties with ER [45]. ER is defined as a system of conscious and unconscious mental processes regulating emotional experience [19]. While using various psychodiagnostic tools, it was found that aggression with adults [34; 36] and children [38] is associated with dysfunctional ER [43]. L. Rey and N. Extremera noted that the use of such ER strategies as self-blame and rumination predisposes boys to physical

and verbal aggression [41]. According to Russian researchers N.A. Polskaya and N.V. Vlasova, maladaptive ER strategies, namely, rumination, self-blame and blaming others, play an important role in the development of self-destructive forms of behavior and psychopathological symptomatology with adolescents and young people aged 13 to 21 [22; 23]. The research of cognitive ER, considering its relationship with aggression, seems a promising approach if to take into account available opportunities for adjusting the ER processes during psychological assistance. However, the role of alexithymia as a personal trait connected with ER processes is still unclear [39].

### **The Construct of Alexithymia and Its Components**

The construct of alexithymia is multidimensional, as it consists of various personal traits characterizing emotional (affective) and cognitive components of alexithymia, which are based on various neuropsychological mechanisms [49]. The affective component of alexithymia is represented by low emotional arousability, reduced ability to symbolize, poverty of fantasy and imagination. The cognitive component of alexithymia results in difficulties identifying feelings and emotions and in the low cognitive awareness of or difficulty verbalizing and describing one's own emotional states. It is associated with low cognitive awareness of feelings and bodily sensations and difficulty differentiating them, and is also characterized by concrete thinking and focusing on external events rather than on internal experiences [7; 49]. The causes of alexithymia are still not fully understood. Researchers tend to believe that there exist two forms of alexithymia: primary (genetically determined, irreversible) and secondary (formed during life, reversible), but there is still no scientific consensus on this point [7; 8]. Most likely, the main difficulties in studying the causes of alexithymia are related to the multidimensionality of the alexithymia construct itself.

Alexithymia is a nonspecific risk factor for psychosomatic disorders, which makes the psychosocial adaptation of the individual more complicated [10] due to cognitive deficiency and low emotion differentiation [25]. It should be highlighted that alexithymia is not a psychopathological personal trait, and, according to B.D. Karvasarskij, the construct of alexithymia itself has been criticized because of its irrelevance [16]. E.K. Ageenkova and P.M. Larionov noted that the alexithymia construct includes multidimensional characteristics making it difficult to understand the intrapersonal processes associated with the development of psychosomatic disorders [1]. The most famous alexithymia questionnaire is the Toronto Alexithymia Scale (TAS-20), which consists of three subscales: difficulty identifying feelings (DIF), difficulty describing feelings (DDF), Externally-Oriented Thinking (EOT). It should be emphasized that the TAS-20 questionnaire features only the cognitive alexithymia component [29].

Russian researcher E.Yu. Brel' mentions that severe anxiety and high level of aggression, along with reduced empathic skills, are psychological components of a "person's alexithymic space" [5]. Using the Buss–Durkee Hostility Inventory and the Toronto Alexithymia Scale, a statistically significant positive correlation between alexithymia and physical aggression, irritation and resentment has been found with a sample of adolescents and young people aged 12 to 20, but no correlation between alexithymia and indirect and verbal aggression, negativity, suspicion and guilt could be

found [5; 6]. Other researchers emphasize that adolescents with high alexithymia levels are also characterized by a high level of hostility [30].

### **The Relationship Between Alexithymia and Cognitive ER**

According to N.A. Polskaya and A.Ju. Razvaliaeva, who conducted a major theoretical review of many studies on alexithymia, maladaptive coping and alexithymia are the constructs “reflecting either the functioning of an individual with emotional experiences or some disturbances in the course of these experiences” [24, p. 72]. The studies of ER peculiarities among individuals with the high level of alexithymia have shown that they are more prone to expressive suppression than the individuals with a normal level of alexithymia [46], i.e. to restraining the external manifestation of the arisen emotional response [20]. Highly alexithymic individuals are less likely to use the adaptive ER strategy of cognitive reappraisal and are characterized by lower empathy levels than non-alexithymic individuals [46]. The heterogeneous nature of the anxiety levels, symptoms of depression and dysfunctional ER with alexithymic individuals are caused by the differences of alexithymic forms in terms of their severity [33]. Among teenage girls, alexithymic traits contribute to the increase in the symptoms of depression and anxiety [48]. Alexithymia predisposes to the use of maladaptive ER strategies among adolescent girls with anorexia nervosa and depression, but does not act as a predictor of adaptive ER strategies [44].

It should be noted that coping with life difficulties among adults with the high level of alexithymia is associated with the choice of such coping strategies as “distancing”, “self-control” and “escape/avoidance” (according to R. Lazarus) [3]. Using these strategies characterizes the individual’s escape from the very fact of emotion experiencing and contributes to emotion suppression, which reflects the characteristic features of an alexithymic individual. Diagnosis of psychological defense strategies among highly alexithymic individuals leads to similar conclusions [9]. Thus, alexithymia, expressed mainly as difficulty identifying feelings and narrowing of emotional experience, does not allow a person to regulate their emotional state and behavior adequately, which leads to the development of psycho-emotional disorders both directly and through the development of negative emotional states [35].

Russian scholars L.A. Severyanova, V.V. Plotnikov and D.V. Plotnikov, conducted a research with a large sample of young people aged 18–22, and noted that people with the high level of alexithymia were characterized by a high level of anxiety, neuropsychic arousability, shyness, somatovegetative instability and low self-esteem [28]. Using E. Heim’s methods, these researchers found that highly alexithymic individuals tend to use maladaptive coping strategies. L.A. Severyanova et al. consider that alexithymia is “an integral psychological phenomenon that combines emotional-volitional and personal traits as well as mental individual’s features into a coherent whole” [28, p. 68]. The similar point of view is shared by E.Yu. Brel’ [5].

To sum up, it can be noted that alexithymia is associated with some deficit in individual’s cognitive and emotional sphere, which, according to the above mentioned Russian and foreign studies, can lead to both using destructive coping strategies and to aggressive behavior.

## Aims and Hypotheses of the Research

**The aim** of the research is to identify alexithymic traits and characteristics of cognitive ER that can play the role of aggression predictors, as well as to study the mechanisms with which alexithymic traits and cognitive impairment can predispose to aggressive behavior with adolescents. On the basis of research conclusions that alexithymia is a strong prognostic factor of maladaptive ER strategies, A. Sfarlea et al. suggested that alexithymic traits are responsible for maladaptive cognitive ER, which can lead to aggression [44]. Due to the fact that alexithymia is a multidimensional construct, it is wrong to generalize that all dimensions of alexithymia are prognostic factors of dysfunctional ER and aggressive behavior. In this study the hypothesis that alexithymia or its individual dimensions cause aggressive behavior with adolescents through the development of maladaptive ER is verified. It is assumed that in the presence of cognitive impairments caused by alexithymia, namely, difficulties identifying emotional experience (high level of DIF), a teenager is inclined to use maladaptive cognitive ER strategies, which can predispose to the development of aggression

## Research Methods

1. The Buss–Perry Aggression *Questionnaire* (BPAQ) adapted in Russia by S.N. Enikolopov and N.P. Tsibul'skii, which provides the opportunity to quantify the level of aggression and its individual forms – physical aggression, anger and hostility. BPAQ contains 24 statements that are asked to be evaluated on a five-point scale from 1 (“uncharacteristic of me”) to 5 (“very characteristic of me”) [13].

2. Cognitive Emotion Regulation Questionnaire (CERQ), which allows one to evaluate the frequency of using 9 cognitive ER strategies (cognitive coping strategies), among which there are adaptive (acceptance, positive refocusing, refocusing on planning, positive reappraisal and putting into perspective), as well as maladaptive strategies (self-blame, rumination, catastrophizing and blaming others). The CERQ contains 36 statements (4 for each strategy), which are asked to be evaluated on a 5-point scale from 1 (“never”) to 5 (“almost always”) [26].

3. Alexithymia Questionnaire for Children [42], the Russian version of which was used by O.R. Esin et al. in the study of adolescents with tension headaches [14]. The questionnaire is a simplified version of the Toronto Alexithymia Scale (TAS-20) and consists of 20 statements that are asked to be evaluated with the options “not true”, “a bit true” and “true”. The questionnaire consists of three subscales identical to the TAS-20. According to the questionnaire developers S. Rieffe et al., only the DIF and DDF subscales show a high Cronbach’s alpha coefficient equal to 0,73 and 0,75 accordingly, whereas the EOT subscale is characterized by low reliability – 0,29 [42].

## Sample and Research Procedure

142 adolescents aged 12–17, including 102 girls and 40 boys were involved in the study ( $M=15,4$ ,  $SD=1,03$ ). The study was conducted in Zhytomyr (Ukraine) in the Regional Boarding School for gifted children, humanitarian gymnasium No. 23, lyceum No. 25, secondary school No. 26, secondary school No. 28, and in the Zhytomyr community center’s

club for adolescents from January to February 2020. The survey was carried out in accordance with the policy of conducting scientific studies in Ukraine. The approval by the management of educational institutions and by the parents of the surveyed adolescents was obtained for the research project. The study was voluntary, anonymous and in accordance with the principles of scientific research confidentiality. As for the sociodemographic variables, the survey participants reported only gender and age. The respondents filled out special standardized diagnostic forms of the BPAQ, CERQ and the Alexithymia Questionnaire for Children individually, using the paper-and-pencil format. Instructions for each technique were presented in writing on the questionnaire forms and were also provided orally by the investigator. The time for filling out the questionnaires was not regulated. On average, it took no more than 10 minutes for subjects to fill out one questionnaire. It took no more than 30 minutes for all participants to complete all questionnaires.

The statistical analysis was performed using program Statistica version 13.3 and PROCESS macro for SPSS [37]. There were used the methods of descriptive statistics, Spearman's correlation, Mann-Whitney U test, multiple regression analysis, mediation analysis adjusted in accordance with bootstrap bias correction method with 10000 iterations, Cronbach's alpha coefficient, Sobel test [40].

## Results

Appendix 1 presents the results of the comparative analysis of the utilization rate of ER strategies, the level of aggression and alexithymia among boys (M) and girls (F), as well as Cronbach's alpha coefficient ( $\alpha$ ) calculated for the questionnaire scales of this study. The reliability of most of the scales was high, except for some subscales from the CERQ questionnaire and the EOT subscale from the Alexithymia Questionnaire for Children. Taking into consideration the fact that the CERQ subscales include 4 questions each, and the survey itself was conducted on adolescents and was not clinical, the relatively low reliability of some CERQ subscales can be considered sufficient. In this study, the EOT subscale showed low reliability, but this is not an artifact. It should be noted that the developers of the Alexithymia Questionnaire for Children encountered some difficulties verifying the reliability of the EOT subscale; therefore, they recommended to interpret the results on this subscale with caution [42].

The verification of the normality of distribution for all the variables included in the analysis was accomplished by evaluating the coefficients of skewness and kurtosis. It was discovered that these indicators on the scale 'catastrophizing' lie beyond the permissible values range of -1 to 1. In this regard, the correlation analysis was carried out using the Spearman's correlation. Except for the fact that boys are characterized by a higher level of physical aggression compared to girls ( $p=0,006$ ), and girls are more prone to rumination than boys ( $p=0,003$ ), it can be noted that there were no differences in the analyzed parameters between the groups (Mann-Whitney U test was used; see Appendix 1).

It should be noted that among the maladaptive ER strategies, rumination and catastrophizing are more associated with aggression and alexithymia subscales (see Table 1).

Table 1

**Relationship of ER strategies with aggression, alexithymia and their forms**

Variables	The Spearman rank-order correlation coefficients							
	PA	Ang	H	Agg	DIF	DDF	EOT	Alex
Self-blame	-0,11	0,17	0,25*	0,13	0,34**	0,15	-0,27**	0,13
Acceptance	0,07	0,23*	0,19	0,21	0,14	-0,01	-0,17	0,00
Rumination	0,04	0,36**	0,46**	0,36**	0,42**	0,26*	-0,36**	0,19
Positive refocusing	-0,02	0,14	0,01	0,05	0,01	-0,11	-0,14	-0,07
Refocusing on planning	-0,15	0,08	-0,06	-0,05	0,03	-0,17	-0,35**	-0,16
Positive reappraisal	-0,21	0,00	-0,21	-0,15	-0,10	-0,20	-0,33**	-0,26*
Putting into perspective	0,00	0,08	0,08	0,05	0,21	0,05	-0,02	0,18
Catastrophizing	0,30**	0,44**	0,53**	0,50**	0,41**	0,08	0,06	0,28**
Blaming others	0,10	0,10	0,11	0,13	-0,04	-0,11	0,10	0,02
Maladaptive strategies	0,14	0,44**	0,54**	0,46**	0,50**	0,22	-0,23*	0,27**
Adaptive strategies	-0,08	0,17	0,00	0,04	0,07	-0,12	-0,29**	-0,10

Notes. PA – physical aggression, Ang – anger, H – hostility, Agg – the general level of aggression, DIF – difficulty identifying feelings, DDF – difficulty describing feelings, EOT – externally-oriented thinking, Alex – the general level of alexithymia. \* –  $p < 0,01$ ; \*\* –  $p < 0,001$ .

The data regarding several ER strategies are of some particular interest. For example, self-blame is positively related with hostility ( $r_s = 0,25$ ), and the acceptance as an adaptive strategy is positively related with anger ( $r_s = 0,23$ ). The fact that there is almost no correlation between blaming others and aggression looks somewhat paradoxical. Such adaptive strategies as refocusing on planning and positive reappraisal, as well as maladaptive rumination strategy, negatively correlate with EOT ( $p < 0,001$ ). In general, it can be noted that adaptive strategies are not related with aggression, whereas maladaptive strategies, except blaming others, are characterized by quite a strong positive correlation with aggression and its forms.

The results of correlation analysis show that aggression and its forms, especially hostility, are related with alexithymia. Hostility is related with alexithymia and its subscales to a greater extent than other forms of aggression (see Table 2).

Table 2

**Correlation of aggression and its forms with alexithymia and its subscales**

Variables	The Spearman rank-order correlation coefficients							
	PA	Ang	H	Agg	DIF	DDF	EOT	Alex
Physical Aggression (PA)	–	0,51**	0,41**	0,79**	0,19	0,15	0,27*	0,27*
Anger (Ang)	0,51**	–	0,54**	0,84**	0,34**	0,19	-0,04	0,25*
Hostility (H)	0,41**	0,54**	–	0,77**	0,54**	0,29**	-0,03	0,40**
Aggression (Agg)	0,79**	0,84**	0,77**	–	0,42**	0,27*	0,08	0,37**
DIF	0,19	0,34**	0,54**	0,42**	–	0,49**	-0,01	0,77**
DDF	0,15	0,19	0,29**	0,27*	0,49**	–	0,13	0,78**
EOT	0,27*	-0,04	-0,03	0,08	-0,01	0,13	–	0,46**
Alexithymia (Alex)	0,27*	0,25*	0,40**	0,37**	0,77**	0,78**	0,46**	–

Notes. DIF – difficulty identifying feelings, DDF – difficulty describing feelings, EOT – externally-oriented thinking. \* –  $p < 0,01$ ; \*\* –  $p < 0,001$ .

The EOT subscale is not related with other dimensions of alexithymia, neither with any forms of aggression, except physical aggression. This suggests that EOT is an autonomous component of the alexithymia construct. It can be noted that the DIF subscale is related with anger and hostility, as well as with general aggression level to a greater extent than DDF and EOT.

Multiple regression analysis was carried out using sequential exclusion of alternatives method in order to determine the ER strategies and alexithymia forms which can predict the aggression level. As it was noted above, the catastrophizing variable has the distribution beyond the normal one. The analysis of the distribution of this variable was carried out. As a result, the data collected from the two respondents (outliers) were excluded from further statistical analysis. Thus, the number of the analyzed sample carrying out multiple regression analysis was decreased by 2 and amounted to  $N=140$ .

The adaptive and maladaptive ER strategies as well as three alexithymia subscales were taken as independent variables and the general aggression level was taken as the dependent variable. As a result of the backward selection of variables which were not statistically significant predictors of aggression, the regression model that included two predictors: catastrophizing and DIF – was received (see Table 3). Catastrophizing ( $\beta=0,42$ ) is the more powerful aggression predictor compared to DIF ( $\beta=0,25$ ). The coefficient of the model determination is  $R^2=0,317$ , thus, it explains the variability level of aggression which amounts to 31,7%, which is a very high indicator, considering the fact that only two



predictors are present in the model. This indicates the important role of these variables as aggression predictors. Therefore, the more difficulties with emotional experience awareness a teenager has and the more a teenager perceives the negative situations in their life as global incidents, the more serious the negative consequences are, the more they are prone to aggression.

Table 3

**Prediction model for aggression**

Variables	F(2,137)=31,7; p<0,001; R <sup>2</sup> =0,317					
	$\beta$	St. error $\beta$	b	St. error b	t(137)	p
Constant term			37,799	3,261	11,592	<0,001
Catastrophizing	0,419	0,077	2,250	0,412	5,466	<0,001
DIF	0,247	0,077	1,188	0,369	3,219	0,002

Notes. DIF – difficulty identifying feelings, st. error – standard error,  $\beta$  – standardized beta coefficient, b – unstandardized coefficient b.

In order to determine alexithymia dimensions which are capable of predicting the use of maladaptive and adaptive ER strategies, multiple regression analysis was performed using sequential exclusion of alternatives method (see Table 4). As a result of backward selection of statistically insignificant predictors, it was found that the use of adaptive ER strategies decreases ( $\beta=-0,28$ ) with the increase in EOT. The regression model is significant, however, the determination indicator is rather low  $R^2=0,076$ ; therefore, such a model is of little use for explaining the role of the EOT in studying ER processes.

Table 4

**Prediction model for adaptive ER strategies**

Variable	F(1,138)=11,292; p<0,001; R <sup>2</sup> =0,076					
	$\beta$	st. error $\beta$	b	st. error b	t(138)	p
Constant term			65,363	2,266	28,850	<0,001
EOT	-0,275	0,082	-1,276	0,380	-3,360	0,001

Notes. EOT – externally-oriented thinking, st. error – standard error,  $\beta$  – standardized beta coefficient, b – unstandardized coefficient b.

While creating a prediction regression model for maladaptive ER strategies, where alexithymia dimensions were taken as independent variables, it was found that only DIF is a statistically significant predictor ( $\beta=0,47$ ), whereas DDF and EOT were excluded from the analysis as insignificant predictors. Such a model is significant and is able to explain 22,3%

of the variability with maladaptive ER strategies. The determination indicator is very high in this model, taking into consideration the fact that there is only one predictor in the model. This suggests that the low cognitive awareness of emotions with a teenager is a very strong prognostic factor for the use of maladaptive strategies of cognitive ER (see Table 5).

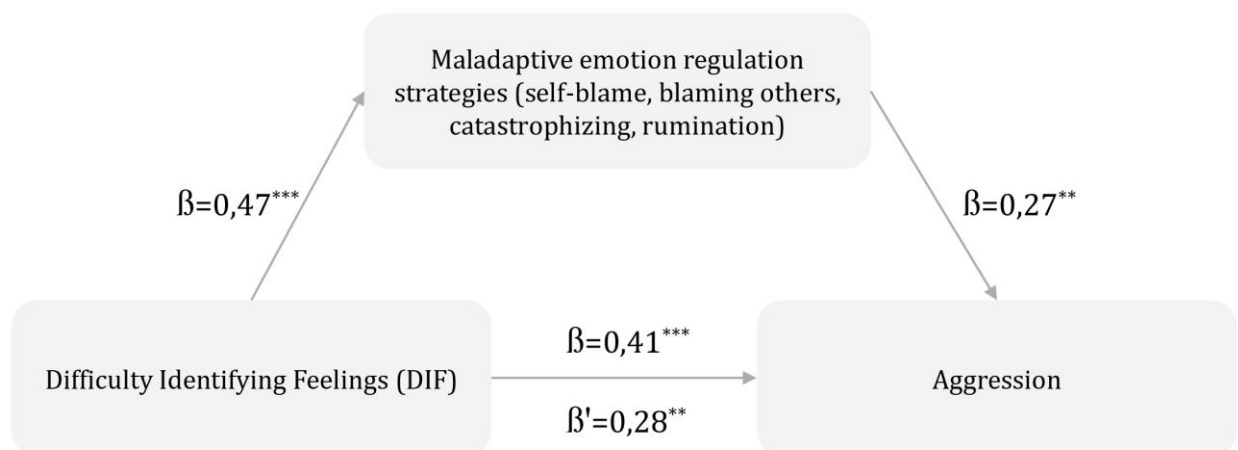
Table 5

**Prediction model for maladaptive ER strategies**

Variable	F(1,138)=39,629; p<0,001; R <sup>2</sup> =0,223					
	$\beta$	st. error $\beta$	b	st. error b	t(138)	p
Constant term			32,982	1,236	26,695	<0,001
DIF	0,472	0,075	1,253	0,199	6,295	<0,001

Notes. DIF – difficulty identifying feelings, st. error – standard error,  $\beta$  – standardized beta coefficient, b – unstandardized coefficient b.

The study of ER mechanisms, with the help of which the aggression level can be explained, was carried out using mediation analysis based on multivariate regression [37]. The hypothesis that alexithymia, in particular its DIF dimension, can contribute to dysfunctional ER, thereby contributing to the growth of aggression, was verified. Appendix 2 presents several series of regression analysis related to mediation analysis. The graphic representation of this regression model is presented in Picture 1.



Picture 1. Mediation model

Notes. \*\* – p<0,01; \*\*\* – p<0,001;  $\beta$  – standardized beta coefficient;  $\beta'$  – standardized beta coefficient for relation between DIF and aggression with the mediator (maladaptive emotion regulation strategies) included into the model.

The mediation analysis was carried out in three steps using the approach developed by R.M. Baron and D.A. Kenny [32]. The first step was to create a regression model, confirming the existence of the positive relationship between DIF and aggression ( $\beta=0,41$ ,

$p < 0,001$ ). The second step was to analyse the relationship between the independent variable (DIF) and a mediator, which was presented by maladaptive ER strategies. The analysis showed that DIF is positively correlated with the use of maladaptive cognitive ER strategies ( $\beta = 0,47$ ,  $p < 0,001$ ). The third step meant the introduction of both the independent variable and the mediator into the regression model. It has been discovered that when a mediator is introduced into the model, the strength of the relationship between DIF and aggression decreases from  $\beta = 0,41$  to  $\beta' = 0,28$ , whereas the mediator is significantly positively associated with aggression ( $\beta = 0,27$ ,  $p < 0,01$ ). Thus, maladaptive ER strategies have a partial mediating effect on the relationship between DIF and aggression. The significance of the mediation effect was proved using the Sobel test [40], which confirmed its statistical significance and the existence of the partial mediation effect ( $Z = 2,895$ ,  $p = 0,004$ ). Besides, the mediation effect was checked with the help of bootstrap method (bias correction) with 10000 iterations and calculating 95% confidence intervals (CI); it turned out to cause indirect effect (IF) = 0,616, standard error (IF) = 0,219,  $p = 0,005$ ; 95% CI: 0,250; 1,109). Based on the range of the analysis procedures performed, it can be concluded that maladaptive ER strategies partially mediate the relationship between DIF and aggression.

## Discussion

Based on the research done, it can be concluded that dysfunctional ER, expressed in the form of the increased use of maladaptive ER strategies, together with alexithymic traits, is a risk factor for the development of adolescents' aggressive behavior. The level of aggression is influenced only by maladaptive ER strategies (but not adaptive ER strategies), especially catastrophizing and rumination. In case the interpretation of the negative events which a teenager encounters is catastrophized, such an experience is most likely related with severe frustration and internal stress, which can provoke aggressive behavior with a teenager being in an unbearable situation.

***Maladaptive ER strategies and their role in the development of aggression with adolescents.*** From the practical point of view, while providing psychological counseling to adolescents with high levels of aggression, as well as for those who are inclined to catastrophize and ruminate, the main emphasis should be put on reducing the use of maladaptive ER strategies, especially catastrophizing and rumination. In connection with this, the research conducted by N.A. Polskaya, in which it was noted that emotional dysregulation is also a predictor of self-aggressive behavior with adolescents, should be mentioned [21]. Besides, in the concept of N. Garnefski et al. rumination not only acquired the character of just being a separate strategy of ER [26], but also became an independent psychological construct. The broadening of ideas about rumination seems reasonable, since rumination can be considered not only as a strategy for ER, but also as a process of the higher order associated with obsession (fixedness on something). Thus, two related questions arise, if a person is ruminating and what the reason for rumination is. The answer to these questions determines the consequences for the psychological functioning of a person.

***Certain alexithymic traits as predictors of adolescents' aggression.*** It should be acknowledged that the DIF dimension of alexithymia, embodied in low cognitive awareness

of emotional experience and reflecting the deficient cognitive-emotional sphere, is a fundamental characteristic of the alexithymia construct, which forms its core. The two other dimensions of alexithymia are hardly relevant. The evaluation of the traits related to the DDF subscale which are consciously recorded by the respondent is not only ambiguous from the methodological point of view, but also the items of this subscale are characterized by contentious content. It is the DIF that is more associated with aggression and its forms than other dimensions of alexithymia.

The effect made by externally-oriented thinking (EOT) on aggression is also ambiguous. The observed significant negative relationship between EOT and rumination, self-blame, refocusing on planning and positive reappraisal presumably reflects the dual role of EOT. On the one hand, EOT can prevent immersion in the process of rumination (“mental chewing gum”) and self-blame, thereby reducing emotional strain, on the other hand, excessive orientation to the external world does not contribute to the reappraisal of the problem and trying to resolve it. The existence of a weak positive correlation between EOT and physical aggression ( $r_s=0,27$ ,  $p<0,01$ ) alongside with the absence of significant relationship between EOT and anger, hostility and the general level of aggression, makes it possible to speculate on the role of the EOT in considering the problem of aggression. It is most likely that external thinking allows one to stabilize the emotional state through a possible decrease in psycho-emotional stress through interaction with the outside world, which can take the form of physical aggression in unfavorable cases. It is only possible to talk about the adaptive or maladaptive nature of the EOT by comparing the consequences that are related with an increase or decrease in the severity of this trait. In considering aggression, it can be suggested that EOT plays an adaptive role to a great extent, protecting the teenager’s mental state from such adverse effects as rumination and self-blame, though at the cost of avoiding reappraisal of the problem while coping with difficulties.

In order to prevent researchers from considering alexithymia as a one-dimensional construct, at least while studying it in the context of aggression, it is worth emphasizing that alexithymia is a multidimensional construct, and its dimensions (subscales) are heterogeneous in content, therefore only the analysis of individual subscales can be methodologically substantiated.

The study of ER strategies reflects to some extent the static ER model, not allowing studying the flexibility of emotional regulation. Like alexithymic traits, ER strategies can play both an adaptive and maladaptive role depending on the situation. Further consideration of ER and its relationship with aggression can be significantly extended through the study of flexibility, which is considered as a “specific ability of the individual, allowing them to organize their cognitive activity and intellectual behavior depending on changing conditions” [18, p. 128].

### **Limitations of the Study**

Despite some limitations of the study, which include the uneven distribution of participants by gender, the construction of a correlation model of the study, relatively small ( $N=140$ ), but sufficient sample, the significant conclusion can be drawn that emotional dysregulation, demonstrated as difficulty identifying and describing feelings, and

expressed in the form of using maladaptive ER strategies, in particular of catastrophizing, is a prognostic factor for adolescents' aggressive behavior.

### Findings and Conclusion

1. Boys are characterized by a higher level of physical aggression compared to girls. Girls are more likely to use such maladaptive ER strategy as rumination.

2. Adaptive cognitive ER strategies do not relate with aggression, whereas maladaptive strategies, except for blaming others, have a strong positive relationship with aggression and its forms.

3. The external-oriented thinking is a negative predictor for adaptive cognitive ER strategies, whereas the difficulty identifying feelings is a positive predictor for the use of maladaptive ER strategies.

4. The role of alexithymic traits as adolescents' aggression predictors is heterogeneous. Difficulty identifying feelings and such maladaptive ER strategy as catastrophizing are strong predictors of adolescents' aggression.

5. Maladaptive ER strategies serve as the mediator for the relationship between difficulty identifying feelings and aggression (partial mediation effect is observed). Difficulty identifying emotions among adolescents promotes the use of maladaptive cognitive coping strategies, which, in its turn, predisposes to aggressive behavior.

6. While conducting psychoprophylaxis of aggressive behavior, attention should be paid to adolescents who experience negative situations acutely, are prone to catastrophizing, prolonged rumination and recalling past events in a negative way, as well as to showing hostility. These features are the precursors of aggressive behavior.

To sum up, we should note that the study is consistent with the ideas of both Russian and foreign authors about the role of alexithymia and maladaptive ER strategies as predictors of aggressive behavior among adolescents. The research confirms the original hypothesis that cognitive deficit, embodied in alexithymia and related to difficulty identifying and describing feelings or emotions, does not allow an adolescent to assess what is happening in their emotional sphere adequately. Consequently, it promotes aggressive behavior through increasing the use of maladaptive cognitive ER strategies.

### References

1. Ageenkova E.K., Larionov P.M. Novye vozmozhnosti issledovaniya zhiznennogo stsenariya v protsesse psikhologicheskogo konsul'tirovaniya [New opportunities for studying the life scenario in the process of psychological counseling]. *Dialog=Dialogue*, 2018, vol. 50, no. 3, pp. 18–31. (in Russ., abstr. in Russ.).

2. Ageenkova E.K., Larionov P.M., Volchek V.A. Lichnostnye determinanty agressivnosti podrostkov [Personality determinants of adolescent aggression]. *Psikhoterapiya=Psychotherapy*, 2019, vol. 194, no. 2, pp. 86–94. (In Russ., abstr. in Engl.).

3. Akimenko A.K. Vzaimosvyaz' aleksitimii, koping-strategii i stilya samoregulyatsii lichnosti [Relationship between Alexithymia, Coping Strategies and a Self-regulation Style]. *Izvestiya Saratovskogo universiteta. Novaya seriya. Seriya Filosofiya. Psikhologiya. Pedagogika*=*Izvestiya of Saratov University. New Series. Series: Philosophy. Psychology. Pedagogy*, 2016, vol. 16, no. 3, pp. 311–316. DOI: 10.18500/1819-7671-2016-16-3-311-316 (In Russ., abstr. in Engl.).
4. Berkowitz L. Agressiya: prichiny, posledstviya i kontrol' [Aggression: Its Causes, Consequences, and Control]. Saint-Petersburg: Praim-Evroznak, 2001. 512 p. (In Russ.).
5. Brel' E.Yu. Aleksitimiya v norme i patologii: psikhologicheskaya struktura i vozmozhnosti preventsii: avtoreferat diss. ... dokt. psikhol. nauk [Alexithymia in norm and pathology: psychological structure and possibilities of prevention. Dr. Sci. (Psychology) Thesis]. Tomsk, 2018. 40 p.
6. Brel' E.Yu. Aleksitimiya v strukture «prakticheski zdorovoi» lichnosti [Alexithymia in the structure of "apparently healthy" personality]. *Sibirskii psikhologicheskii zhurnal*=*Siberian Journal of Psychology*, 2018, no. 67, pp. 89–101. DOI: 10.17223/17267080/67/7 (In Russ., abstr. in Engl.).
7. Brel' E.Yu., Stoyanova I.Ya. Fenomen aleksitimii v kliniko-psikhologicheskikh issledovaniyakh (obzor literatury) [Phenomenon of alexithymia in clinical-psychological studies (literature review)]. *Sibirskii vestnik psikhiatrii i narkologii*=*Siberian Herald of Psychiatry and Addiction Psychiatry*, 2017, vol. 97, no. 4, pp. 74–81. DOI: 10.26617/1810-3111-2017-4(97)-74-81 (In Russ., abstr. in Engl.).
8. Brel' E.Yu. et al. Problema aleksitimii v kontekste mediko-psikhologicheskikh issledovaniy. Chast' 1. Soderzhatel'nye kharakteristiki fenomena aleksitimii v kontekste psikhicheskikh i somaticheskikh narushenii [The problem of alexithymia in the context of medical and psychological research. Part 1. Content characteristics of the phenomenon of alexithymia in the context of mental and somatic disorders]. *Meditinskaya psikhologiya v Rossii*=*Medical Psychology in Russia*, 2019, vol. 57, no. 4. URL: [http://medpsy.ru/mprj/archiv\\_global/2019\\_4\\_57/nomer04.php](http://medpsy.ru/mprj/archiv_global/2019_4_57/nomer04.php) (Accessed 02.06.2020). (In Russ., abstr. in Engl.).
9. Vasilyeva O.S., Gaus E.V. Vzaimosvyaz' urovnya aleksitimii s urovnem psikhologicheskikh zashchit i sostavlyayushchimi psikhologicheskogo blagopoluchiya [The interrelation of alexithymia level with the level of psychological protections and components of psychological well-being]. *Severo-Kavkazskii psikhologicheskii vestnik*=*North-Caucasian Psychological Bulletin*, 2017, no. 15/1, pp. 5-16. (In Russ., abstr. in Engl.).
10. Gaus E.V., Pronenko E.A., Vasilyeva O.S. Misheni psikhologicheskoi raboty s lyud'mi, imeyushchimi vysokii uroven' aleksitimii [Targets of psychological work for high alexithymia people]. *Vestnik Rossiiskogo universiteta druzhby narodov. Seriya: Psikhologiya i pedagogika*=*RUDN Journal of Psychology and Pedagogics. Series: Psychology and Pedagogy*, 2019, vol. 16, no. 1, pp. 55–70. DOI: 10.22363/2313-1683-2019-16-1-55-70 (In Russ., abstr. in Engl.).

11. Greben' N.F. Bulling sredi belorusskikh podrostkov i vozmozhnosti ego diagnostirovaniya [Bullying among Belarusian teenagers and the possibility of its diagnosis]. *Adukatsyya i vykhavanne=Education and Upbringing*, 2017, vol 310, no. 10, pp. 47–53. (In Russ., abstr. in Engl.).
12. Davydov D.G., Khlomov K.D. Massovye ubiistva v obrazovatel'nykh uchrezhdeniyakh: mekhanizmy, prichiny, profilaktika [Massacres in educational institutions: mechanisms, causes, prevention]. *Natsional'nyi psikhologicheskii zhurnal=National Psychological Journal*, 2018, vol. 32, no. 4, pp. 62–76. DOI: 10.11621/npj.2018.0406 (in Russ., abstr. in Engl.).
13. Enikolopov S.N., Tsibul'skii N.P. Psikhometricheskii analiz russkoyazychnoi versii oprosnika diagnostiki agressii A. Bassa i M. Perri [The psychometric analysis of the Russian Version of the Aggression Questionnaire (Buss & Perry)]. *Psikhologicheskii zhurnal=Psychological Journal*, 2007, vol. 28, no. 1, pp. 115–124. (In Russ., abstr. in Engl.).
14. Esin O.R., Gorobets E.A., Khairullin I.K. Aleksitimiya u podrostkov s golovnoi bol'yu napryazheniya [Diagnosis of alexithymia in adolescents with tension-type headache]. *Nevrologicheskii vestnik=Neurological Bulletin*, 2018, vol. 4, pp. 40-43. (In Russ., abstr. in Engl.).
15. Karpov V.O. Kul't Kolumbaina: osnovnye determinanty massovykh ubiistv v shkolakh [Cult of columbine: Main reasons for school shooting]. *Vestnik Kazanskogo yuridicheskogo instituta MVD Rossii=Bulletin of the Kazan Law Institute of the MIA of Russia*, 2018, vol. 9, no. 4, pp. 442–446. DOI: 10.24420/KUI.2018.49.27.001 (in Russ., abstr. in Engl.).
16. Klinicheskaya psikhologiya: Uchebnik dlya vuzov. 4-e izd. [Clinical Psychology: Textbook for Universities. 4th ed.]. In B.D. Karvasarskij (ed.). Saint-Petersburg: Piter, 2011. 864 p. (In Russ.).
17. Menshikova T.I. Spetsifika agressivnogo povedeniya podrostkov [Specific of aggressive behaviour of adolescents]. *Vestnik Taganrogskogo instituta imeni A.P. Chekhova=Bulletin of the Taganrog Institute named after A.P. Chekhov*, 2017, no. 2, pp. 106–115. (In Russ., abstr. in Engl.).
18. Osavoliuk E.Yu., Kurginyan S.S. Kognitivnaya fleksibil'nost' lichnosti: teoriya, izmerenie, praktika [Person's cognitive flexibility: Theory, measurement, and practice]. *Psikhologiya. Zhurnal Vysshei shkoly ekonomiki=Psychology. Journal of the Higher School of Economics*, 2018, vol. 15, no. 1, pp. 128–144. DOI: 10.17323/1813-8918-2018-1-128-144 (In Russ., abstr. in Engl.).
19. Padun M.A. Regulyatsiya emotsii i ee narusheniya [Emotion regulation and its disorders]. *Psikhologicheskie issledovaniya=Psychological Studies*, 2015, vol. 8, no. 39. URL: <http://psystudy.ru/index.php/num/2015v8n39/1089-padun39.html> (Accessed: 02.06.2020). (In Russ., abstr. in Engl.).
20. Pankratova A.A., Kornienko D.S. Russkoyazychnaya adaptatsiya oprosnika ERQ (Emotion Regulation Questionnaire) Dzh. Grossa [A Russian adaptation of the Emotional

Regulation Questionnaire (J. Gross)]. *Voprosy psikhologii=Questions of Psychology*, 2017, no. 5, pp. 139–149. (In Russ., abstr. in Engl.).

21. Polskaya N.A. Faktory riska i napravleniya profilaktiki samopovrezhdayushchego povedeniya podrostkov [Risk Factors and Approaches to Preventing Self-Injurious Behavior in Adolescents]. *Klinicheskaya i spetsial'naya psikhologiya=Clinical Psychology and Special Education*, 2018, vol. 7, no. 2, pp. 1–20. DOI: 10.17759/cpse.2018070201 (In Russ., abstr. in Engl.).

22. Polskaya N.A. Emotsional'naya regulyatsiya u podrostkov s suitsidal'nymi popytkami i samopovrezhdeniyami (Prilozhenie) [Emotional regulation in adolescents with suicidal attempts and self-injuries (Supplement)]. *Voprosy psikhicheskogo zdorov'ya detei i podrostkov=Journal of Mental Health of Children and Adolescent*, 2017, no. 2, pp. 191–193. (In Russ., abstr. in Engl.).

23. Polskaya N.A., Vlasova N.V. Autodestruktivnoe povedenie v podrostkovom i yunosheskom vozraste [Self-destructive behavior in adolescence and youth]. *Konsul'tativnaya psikhologiya i psikhoterapiya=Counseling Psychology and Psychotherapy*, 2015, vol. 23, no. 4, pp. 176–190. DOI: 10.17759/cpp.2015230411 (In Russ., abstr. in Engl.).

24. Polskaya N.A., Razvaliaeva A.Ju. Razrabotka oprosnika emotsional'noi disregulyatsii [Elektronnyi resurs] [The development of the Emotion Dysregulation Questionnaire]. *Konsul'tativnaya psikhologiya i psikhoterapiya=Counseling Psychology and Psychotherapy*, 2017, vol. 25, no. 4, pp. 71–93. DOI: 10.17759/cpp.2017250406 (In Russ., abstr. in Engl.).

25. Potapova N.A., Grekhov R.A., Suleymanova G.P., et al. Problemy izucheniya fenomena aлекситимии v psikhologii [Problems of studying alexithymia phenomenon in psychology]. *Vestnik Volgogradskogo gosudarstvennogo universiteta. Seriya 11: Estestvennye nauki=Science Journal of Volgograd State University. Natural Sciences*, 2016, vol. 16, no. 2, pp. 65–73. DOI: 10.15688/jvolsu11.2016.2.8 (In Russ., abstr. in Engl.).

26. Rasskazova E.I., Leonova A.B., Pluzhnikov I.V. Razrabotka russkoyazychnoi versii oprosnika kognitivnoi regulyatsii emotsii [Development of the Russian version of the Cognitive Emotion Regulation Questionnaire]. *Vestnik Moskovskogo universiteta. Seriya 14. Psikhologiya=Moscow University Psychology Bulletin*, 2011, no. 4, pp. 161–179. (In Russ., abstr. in Engl.).

27. Rean A.A. Profilaktika agressii i asotsial'nosti nesovershennoletnikh [Prevention of aggression and antisocial behaviour in adolescents]. *Natsional'nyi psikhologicheskii zhurnal=National Psychological Journal*, 2018, vol. 30, no. 2, pp. 3–12. DOI: 10.11621/npj.2018.0201 (In Russ., abstr. in Engl.).

28. Severyanova L.A., Plotnikov V.V., Plotnikov D.V. Integrativnye osnovy aлекситимии [The integrative fundamentals of alexithymia]. *Uchenye zapiski SPbGMU im. I.P. Pavlova=The Record of the I.P. Pavlov St. Petersburg State Medical University*, 2013, vol. 20, no. 3, pp. 65–68. (In Russ., abstr. in Engl.).

29. Starostina E.G., et al. Torontskaya shkala aлекситимии (20 punktov): validizatsiya russkoyazychnoi versii na vyborke terapevticheskikh bol'nykh [A new 20-item version of



the Toronto Alexithymia Scale: validation of the russian language translation in a sample of medical patients]. *Sotsial'naya i klinicheskaya psikhiatriya=Social and Clinical Psychiatry*, 2010, no. 4. pp. 31–38. (in Russ., abstr. in Engl.).

30. Fedorenko V.V., Belov V.G. Sootnoshenie agressivnosti, aleksitimii i tipa povedeniya u podrostkov [The relations between aggression, alexithymia and types of behavior in adolescents]. *Mir psikhologii=World of Psychology*, 2017, no. 1, pp. 153–158. (In Russ., abstr. in Engl.).

31. Furmanov I.A. Detskaya agressivnost': psikhodiagnostika i korrektsiya [Children's Aggression: Psychodiagnosics and Correction]. Minsk: Il'in V.P., 1996. 192 p. (in Russ.).

32. Baron R.M., Kenny D.A. The moderator-mediator variable distinction in social psychological research: conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, 1986, vol. 51, no. 6, pp. 1173–1182. DOI: 10.1037//0022-3514.51.6.1173

33. Chen J., Xu T., Jing J., et al. Alexithymia and emotional regulation: A cluster analytical approach. *BMC Psychiatry*, 2011, vol. 11, no. 33. DOI: 10.1186/1471-244X-11-33

34. Contardi A., Imperatori C., Penzo I., et al. The association among difficulties in emotion regulation, hostility, and empathy in a sample of young Italian adults. *Frontiers in Psychology*, 2016, vol. 7, article 1068. DOI: 10.3389/fpsyg.2016.01068

35. Dubey A., Pandey R. Mental health problems in alexithymia: Role of positive and negative emotional experiences. *Journal of Projective Psychology & Mental Health*, 2013, vol. 20, no. 2, pp. 128–136.

36. Ghabeshi M.B., Ghasemi M., Hashemi H.M. Moderator Effects of Cognitive Emotion Regulation Skills on the Relationship between Aggression and Physical Health. *Journal of Applied Environmental and Biological Sciences*, 2016, vol. 6(3S), pp. 273–276.

37. Hayes A.F. Introduction to Mediation, Moderation, and Conditional Process Analysis, Second Edition. New York: Guilford Publications, 2018. 692 p.

38. Helmsen J., Koglin U., Petermann F. Emotion Regulation and Aggressive Behavior in Preschoolers: The Mediating Role of Social Information Processing. *Child Psychiatry & Human Development*, 2012, vol. 43, no. 1, pp. 87–101. DOI: 10.1007/s10578-011-0252-3

39. Hemming L., Haddock G., Shaw J., et al. Alexithymia and its associations with depression, suicidality, and aggression: An overview of the literature. *Frontiers in Psychiatry*, 2019, no. 10. DOI: 10.3389/fpsyg.2019.00203

40. Preacher K.J., Leonardelli G.J. Calculation for the Sobel test: An interactive calculation tool for mediation tests. URL: <http://quantpsy.org/sobel/sobel.htm> (Accessed: 01.06.2020).

41. Rey L., Extremera N. Physical-verbal aggression and depression in adolescents: The role of cognitive emotion regulation strategies. *Universitas Psychologica*, 2012, vol. 11, no. 4, pp. 1245–1254.

42. Rieffe C., Oosterveld P., Meerum Terwogt M. An alexithymia questionnaire for children: Factorial and concurrent validation results. *Personality and Individual Differences*, 2006, no. 40, pp. 123–133. DOI: 10.1016/j.paid.2005.05.013
43. Robertson T., Daffern M., Bucks R.S. Emotion regulation and aggression. *Aggression and Violent Behavior*, 2012, vol. 17, no. 1, pp. 72–82. DOI: 10.1016/j.avb.2011.09.006
44. Sfarlea A., Dehning S., Keller L.K., et al. Alexithymia predicts maladaptive but not adaptive emotion regulation strategies in adolescent girls with anorexia nervosa or depression. *Journal of Eating Disorders*, 2019. № 7. DOI: 10.1186/s40337-019-0271-1
45. Sołtys M., Grzankowska I. Emocjonalność rodziców a natężenie zachowań agresywnych u dzieci [Emotionality of parents and aggressive behaviour among children]. *Polskie Forum Psychologiczne=Polish Psychological Forum*, 2015, vol. 20, no. 2, pp. 201–215. DOI: 10.14656/PFP20150204 (in Polish, abstr. in Engl.).
46. Swart M., Kortekaas R., Aleman A. Dealing with feelings: Characterization of trait alexithymia on emotion regulation strategies and cognitive-emotional processing. *PLoS ONE*, 2009, no. 4, pp. 255–262. DOI: 10.1371/journal.pone.0005751
47. United Nations Children’s Fund. A Familiar Face: Violence in the lives of children and adolescents. New York: UNICEF, 2017. 96 p. *UNICEF Data and Analytics Section, Division of Data, Research and Policy*. URL: <https://www.refworld.org/docid/5a0b00e34.html> (Accessed: 12.01.2020).
48. van der Crujisen R., Murphy J., Bird G. Alexithymic traits can explain the association between puberty and symptoms of depression and anxiety in adolescent females. *PLoS ONE*, 2019, vol. 14, no. 1. DOI: 10.1371/journal.pone.0210519
49. Vorst H.C.M., Bermond B. Validity and reliability of the Bermond-Vorst Alexithymia Questionnaire. *Personality and Individual Differences*, 2001, vol. 30, no. 3, pp. 413–434. DOI: 10.1016/S0191-8869(00)00033-7

Appendix 1

**Gender differences in the level of aggression, alexithymia and ER functioning**

Variables	Average (standard deviation)			p-value
	Total sample	Male	Female	
Self-blame ( $\alpha=0,75$ )	11,4 (3,5)	10,9 (3,7)	11,7 (3,4)	0,179
Acceptance ( $\alpha=0,65$ )	11,2 (3,4)	10,8 (3,1)	11,3 (3,5)	0,511
Rumination ( $\alpha=0,79$ )	12,4 (3,8)	11,0 (3,5)	13,0 (3,8)	0,003*
Positive refocusing ( $\alpha=0,55$ )	10,6 (2,9)	10,6 (3,0)	10,7 (2,8)	0,815
Refocusing on planning ( $\alpha=0,65$ )	12,6 (3,2)	12,7 (3,4)	12,5 (3,1)	0,760
Positive reappraisal ( $\alpha=0,71$ )	12,8 (3,4)	12,4 (3,4)	13,0 (3,4)	0,267
Putting into perspective ( $\alpha=0,65$ )	11,0 (3,3)	10,5 (3,1)	11,2 (3,4)	0,303
Catastrophizing ( $\alpha=0,69$ )	8,1 (3,0)	7,9 (2,4)	8,2 (3,2)	0,960
Blaming others ( $\alpha=0,56$ )	8,2 (2,4)	9,1 (2,8)	7,9 (2,1)	0,064
Maladaptive strategies ( $\alpha=0,78$ )	40,1 (8,4)	38,8 (8,1)	40,7 (8,5)	0,234
Adaptive strategies ( $\alpha=0,84$ )	58,2 (11,5)	57,0 (11,6)	58,6 (11,4)	0,394
Physical aggression ( $\alpha=0,81$ )	19,1 (6,4)	21,4 (5,4)	18,3 (6,6)	0,006*
Anger ( $\alpha=0,80$ )	21,2 (5,8)	19,7 (4,0)	21,8 (6,3)	0,068
Hostility ( $\alpha=0,73$ )	22,2 (5,9)	21,2 (5,0)	22,6 (6,2)	0,291
Aggression ( $\alpha=0,88$ )	62,5 (14,7)	62,2 (11,0)	62,6 (16,0)	0,847
DIF ( $\alpha=0,72$ )	5,5 (3,0)	5,3 (2,7)	5,6 (3,2)	0,632
DDF ( $\alpha=0,68$ )	4,2 (2,3)	4,1 (2,3)	4,2 (2,4)	0,869
EOT ( $\alpha=0,45$ )	5,5 (2,5)	5,9 (2,6)	5,3 (2,4)	0,156
Alexithymia ( $\alpha=0,72$ )	15,1 (5,5)	15,2 (5,0)	15,1 (5,7)	0,677

Notes. DIF – difficulty identifying feelings, DDF – difficulty describing feelings, EOT – externally-oriented thinking. \* –  $p < 0,01$ .

### Regression models of mediation analysis

Prediction models	Parameters of predictor variables in regression models				Model parameters		
	$\beta$ (st. error $\beta$ )	b (st. error b)	t	p	F statistics	R <sup>2</sup>	
Model 1 (step 1 of the mediation analysis): The predictor is DIF, the dependent variable is aggression	0,41 (0,08)	1,97 (0,37)	5,28	<0,001	F(1,138)=27,85, p<0,001	0,168	
Model 2 (step 2): The predictor is DIF, the dependent variable is maladaptive ER strategies (MERS)	0,47 (0,08)	1,25 (0,20)	6,30	<0,001	F(1,138)=39,63, p<0,001	0,223	
Model 3 (step 3): The predictors are DIF and MERS, the dependent variable is aggression	DIF	0,28 (0,09)	1,36 (0,41)	3,30	0,001	F(2,137)=19,87, p<0,001	0,225
	MERS	0,27 (0,09)	0,49 (0,15)	3,17	0,002		

Notes. DIF – difficulty identifying feelings, st. error – standard error,  $\beta$  – standardized beta coefficient, b – unstandardized coefficient b.

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