Cognitive emotion regulation strategies as mediators of the relationship between mentalization ability and depressive symptoms in adolescents

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Summary

Aim. Sharp and Fonagy's conception was framework for a hypothesis regarding mentalization deficits as predictors of depressive disorders in adolescence. According to the theory, the mediators of this relationship would be the child's emotion regulation processes.

Material and methods. The basis for planning and data analysis was correlation-regression model. A cross-sectional study was conducted on a non-clinical group of 204 adolescents – primary and secondary school students. The Polish versions of the following research tools were used: CDI-2 questionnaire by Kovacs, *Reflective Functioning Questionnaire* (RFQ-8) by Fonagy, *Hypermentalization Questionnaire* by Sharp, and *Cognitive Emotion Regulation Questionnaire* (CERQ) by Garnefski and Kraaij.

Results. Data analyses revealed that the more compromised the ability to mentalize, the greater the severity of depressive symptoms, especially those related to emotional problems: negative mood and low self-esteem. All the diagnostic criteria of the disease are linked to a diminished ability to understand the world of experiences – one's own and those of others. Both hypomentalization and hypermentalization are significant predictors of depressive symptoms in adolescents, with the mediator of this relationship being the triad of maladaptive cognitive emotion regulation strategies: self-blame, rumination, and catastrophizing.

Conclusions. Self-blame constitutes the most common strategy combined with all types of mentalization deficits as well as all symptoms of depression. Whereas catastrophizing constitutes a regulation strategy that is mostly combined with one type of mentalization deficits. The obtained results require further research determining the conditions under which the exaggerated sense of guilt is associated with the occurrence of symptoms of psychopathology in adolescents.

Key words: mentalization, depression, emotion regulation, adolescence

Introduction

Thanks to mentalization, people understand themselves and others and can engage in activities they deem the most important to themselves [1]. Research theories, especially those arising out of psychoanalysis, indicate that a properly developed ability to mentalize is a protective factor preventing the development of psychopathology [2, 3]. On the other hand, mentalization deficits, denoting difficulties in perceiving and interpreting human behavior as referring to the intentional states of mind of the person exhibiting a certain behavior, are a risk factor for the development of various mental disorders [4, 5].

Source literature on psychopathology distinguishes at least two types of mentalization deficits. The first type, *hypomentalization*, is defined as the absent or lowered ability to mentalize, the inability to understand complex mental states, both one's own and those of others [6]. Another example of malfunctioning mentalization mechanism is *hypermentalization*. It implies difficulty in differentiating and integrating mental states (especially in the state of strong emotional arousal) and a tendency to make assumptions about others' mental states beyond observable facts [7].

The onset of depressive disorders in non-adolescent patients is determined by a number of complex causes. In the context of the theory on mentalization, Sharp and Fonagy [8] proposed such a model of the emergence of disorders in children and adolescents, according to which the following, in addition to the child's ability to mentalize, are the causes of disorders: a parent's ability to mentalize, a particular attachment style pertaining to both the parent and child, and the child's ability to regulate their own emotions (see Figure 1). In the view of reports presented in the source literature, the latter factor, namely the ability to process an emotional experience, is strongly associated with depressive disorders.
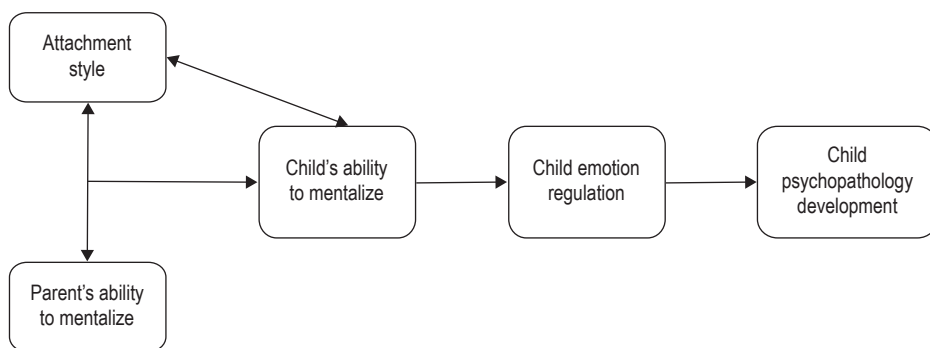

Figure 1. **Mentalization and the development of psychopathology in the child [8]**

The triad of maladaptive emotion regulation strategies, namely catastrophizing, ruminating and self – blaming, is characteristic of both clinical and subclinical forms of depression [9]. In contrast, the strategy of blaming others is more typical of clinical depression and is associated with anxiety as a trait [10].

Aim

The purpose of the research presented in this article was to describe the links that exist between mentalization processes and depressive symptoms in adolescents, including testing a psychological mechanism, i.e., the mechanism of cognitive regulation of emotions, that could underlie these links. The following research hypotheses were formulated: lowered mentalizing abilities (in the form of hypomentalization and hypermentalization) are associated with the occurrence of aggravated depressive symptoms in adolescents (Hypothesis 1); lowered mentalizing abilities are associated with both the overall severity of symptoms of depression in adolescents and with the severity of such adolescent-specific symptoms, such as the motif of loss and rejection (Hypothesis 2); lowered mentalizing abilities in adolescents are associated with the use of maladaptive emotion regulation strategies and the presence of severe depression symptoms (Hypothesis 3).

It was assumed that cognitive strategies of emotion regulation mediate the relation between the occurrence (in the psychological functioning of adolescents) of certain mentalization deficits and the emergence of depression symptoms. In line with the theory of Sharp and Fonagy, it can be put on that the mediating role of the mechanisms of regulation of an emotional experience involves the use of specific (maladaptive) emotion regulation strategies by the child (in whom the presence of various types of mentalization deficits is observed), which, ultimately, can be associated with the individual's experience of aggravated depressive symptoms.

Material and methods

Study group characteristics

The study included 204 students: 127 females (62.3%) and 77 males (37.7%), aged between 12 and 18 years ($M = 14.76$; $SD = 1.65$). The studied group of adolescents is a non-clinical group (85% of females and males have not received any psychological/psychiatric diagnosis). More than 70% of adolescents have not received psychological help; more than 80% have not participated in a psychiatric consultation. In the studied group of adolescents: 6% of students were diagnosed with specific learning disabilities; 1.5% – anxiety disorders; 0.5% –attention deficit hyperactivity disorder. None of the parents reported that their child had been diagnosed with depression by a psychiatrist. Around 80% of young people are raised by both parents, who are in formal marriage. 46.6% of teenagers have one sister or brother; 16% of teenagers have no siblings. The most common type of parent's education is secondary. 28.4% of mothers and 15.7% of fathers have higher education with a master's degree. 64.7% of parents assess the financial situation of their family as good, while 19.6% as barely bearable.

Research procedure

The youth participated in the study voluntarily. Written consent to participate in the study was also given by the child's parents or other legal guardians. They also filled out a questionnaire on sociodemographic data and the child's psychiatric/psychological diagnosis. The research was conducted as a group study in 2019, in four primary schools and two secondary schools. The Ethics Committee at the Institute of Psychology of the University of Gdansk approved the research (application number 9/2019).

Research Tools

1. The severity of depressive symptoms was measured using the CDI-2 for the diagnosis of depression in children and adolescents by Kovacs in a Polish adaptation by Wrocławska-Warchała and Wujcik [11], providing quantitative indicators of the severity of depressive symptoms: depressed mood, neurovegetative symptoms, negative self – image, general difficulties in functioning, and difficulties in peer relations.

2. Mentalization deficits in the form of hypomentalization were measured using the *Certainty About Mental States Questionnaire*. This is one of the two scales comprising Fonagi's self-reporting *Reflective Functioning Questionnaire* (RFQ – 8), in a Polish adaptation by Woźniak-Prus and Gambin [12]. High scores on the scale signify underdeveloped reflective functions, i.e., the inability to construct complex, as well as adequate states of mind, which corresponds to hypomentalizing.

3. The *Parent-Child Relationship Scale*, which is part of the *Hypermentalization Questionnaire* (HMZQ), a research tool developed by Carla Sharp, was also used. Respondents are instructed to reflect on their emotions and thoughts concerning significant relatives. The author of the *Hypermentalization Questionnaire* identified five factors in her measurement tool, corresponding to the different dimensions of hypermentalization [13]. The English version of the *Parent-Child Relationship Scale* was translated into Polish according to the collective translation and back translation procedure. Confirmatory factor analysis for discrete variables (CCFA) revealed that in the Polish sample of surveyed adolescents, the 5-factor initial model, based on the original version of the *Parent-Child Relationship Scale,* is mismatched with the data. A new, 4-factor scale model consisting of 21 test items was proposed. The fit statistics of this model (RMSEA = 0.075; CFI = 0.921; TLI = 0.909) show its correct fit to the data. The reliability of the various subscales of the Polish version of the research tool are as follows: "Excessive care about mental states of other people": Cronbach's $\alpha = 0.631$; "Overinterpretation of own mental states": Cronbach's $\alpha = 0.790$; "Overinterpretation of others' mental states": Cronbach's $\alpha = 0.712$; "Impulsive action taking": Cronbach's $\alpha = 0.731$.

4. Mechanisms of emotion regulation were measured using the CERQ – *Cognitive Emotion Regulation Questionnaire* by Garnefski and Kraaij, in a Polish adaptation by Marszał-Wiśniewska and Fajkowska [10]. The self-descriptive questionnaire is used to measure the conscious, cognitive components of emotion regulation; how people mentally cope with threatening or stressful events, e.g., by blaming, ruminating, planning, accepting, or reappraising [14].

Statistical analysis

The basis for planning and analyzing the data obtained in the presented study was the correlation and regression model. The following statistical analysis plan was adopted:

1. Estimation of relative and absolute values of qualitative variables;
2. Correlation analysis to estimate the strength of the relationship between the analyzed variables;
3. Hierarchical multiple regression analysis (input method): to estimate the predictive values of the independent variables (hypermentalization and hypomentalization) for the dependent variable (individual symptoms of depression in adolescents);
4. Mediation analysis – to estimate the value of indirect effects of mediation, where specific mentalization deficits constitute the independent variable, specific depressive symptoms – the dependent variable, and the mediators are cognitive emotion regulation strategies;

Results

Table 1 presents the frequency of occurrence of individual depressive symptoms (of varying degree of intensity) in studied adolescents. The average severity of general symptoms of depression was observed in 57.6% of the youth, over 20% of adolescents have significant emotional difficulties, and almost 10% experience chronically low mood and serious interpersonal problems.

Tabel 1. **Severity of depressive symptoms – frequency (%)**

Severity	OR	EP	NM	LSE	PF	LE	IP
Low	9.3	8.4	11.3	7.9	8.9	7.4	0
Average	57.3	57.6	58.9	57	61	65.8	72.1
Increased	15.3	12.3	13.8	16.1	17.1	12.7	14.2
High	11.8	13.3	6.5	12.3	6.9	8.9	9.8
Extremely high	6.5	9.4	9.9	6.9	6.4	5.5	3.9

OR – overall result; EP – emotional problems; NM – negative mood; LSE – low self–esteem; PF – problems in functioning; LE – lack of effectiveness ; IP – interpersonal problems; Severity of

depressive symptoms (on the ten scale): low – 21–39, average – 40–59, increased – 60–64, high – 65–69, extremely high– 70–79 [23].

Mentalization deficits (relating to both hypermentalization and hypomentalization) are associated with all symptoms of depression (the data is shown in Table 2).

Table 2. **Relationships between mentalization deficits and severity of depressive symptoms in adolescents – correlation matrix**

FR-u	Depressive symptoms						
	Overall result	Emotional problems	Negative mood	Low self-esteem	Problems in functioning	Lack of effectiveness	Interpersonal problems
	0.45**	0.45**	0.46**	0.38**	0.38**	0.37**	0.28**
OR	0.55**	0.53**	0.50**	0.48**	0.51**	0.45**	0.42**
ECOP	0.44**	0.45**	0.42**	0.40**	0.37**	0.34**	0.35**
OIO	0.42**	0.37**	0.33**	0.38**	0.43**	0.40**	0.32**
AI	0.44**	0.44**	0.44**	0.38**	0.40**	0.36**	0.31**
OO	0.55**	0.53**	0.50**	0.48**	0.50**	0.44**	0.41**

** correlation significant at $p = 0.01$ (two-tailed); * correlation significant at $p = 0.05$ (two-tailed); FR-u – reflective functions (score on the scale *Certainty About Mental States Questionnaire*); OS – overall score on the *Parent-Child Relationship Scale*; ECOP – excessive care for others; OIO – overinterpretation of the mental states of others; AI – acting on impulse; OO – overinterpretation of own mental states

The more the ability to mentalize is lowered, the greater the severity of depressive symptoms, especially negative mood, emotional problems and low self-esteem. In the studied sample of adolescents, the strength of the association between impaired ability to understand mental states and the severity of depression can be described as moderate.

Table 3 presents magnitude of coefficients relating to the correlation between mentalization deficits and diagnostic criteria for depressive disorders. Particular test items of the CDI-2 inventory are assigned to specific criteria, most symptomatic of the symptom [11]. A reduced/impaired ability to understand the world of one's own and other people's experiences is statistically significantly associated with all diagnostic criteria for illness.

Table 3. **Mentalization deficits vs. diagnostic criteria for depression – correlation matrix**

Variables	Test item in CDI-2.	FR-u	Hypermentalization				
			OR	ECOP	OIO	AI	OO
Depressive mood	1, 9, 19, 24	0.43**	0.52**	0.44**	0.39**	0.46**	0.48**
Irritability	10, 25	0.30**	0.36**	0.34**	0.25**	0.30**	0.34**

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Anhedonia	4, 20	0.22**	0.23**	0.16**	0.21**	0.19**	0.22**
Appetite/weight gain or loss	17, 27	0.28**	0.33**	0.27**	0.2**	0.28**	0.35**
Insomnia/excessive drowsiness	15, 26	0.48**	0.36**	0.31**	0.24**	0.31**	0.37**
Psychomotor agitation/ retardation	14	0.23**	0.31**	0.25**	0.30**	0.19**	0.30**
Fatigue/lack of energy	16	0.37**	0.42**	0.29**	0.28**	0.39**	0.44**
Feelings of worthlessness/ sense of guilt	5, 6, 7	0.39**	0.48**	0.40**	0.40**	0.40**	0.44**
Thinking/ decision-making	12, 28	0.37**	0.41**	0.27**	0.38**	0.37**	0.40**
Thoughts of death, suicidal ideation/ attempted suicide	8	0.44**	0.48**	0.43**	0.32**	0.39**	0.47**
Low self-esteem	3, 13, 21	0.23**	0.42**	0.35**	0.34**	0.33**	0.42**
Feelings of hopelessness	2, 23	0.27**	0.30**	0.29**	0.23**	0.19**	0.29**

**correlations significant at p = 0.01; FR_{-u} – reflective functions (score on the scale *Certainty About Mental States Questionnaire*); OS – overall score on the *Parent-Child Relationship Scale*; ECOP – Excessive care for others; OIO – overinterpretation of the mental states of others; AI – Acting on impulse; OO – overinterpretation of own mental states

In addition, hierarchical multiple regression analysis revealed that hypomentalization ($\Delta R^2 = 0.203$; $F_{change} = 50.9$; $p = 0.001$) and three dimensions of hypomentalization: excessive care for the mental states of others ($\Delta R^2 = 0.18$; $F_{change} = 11.50$; $p = 0.001$), overinterpretation of others' mental states $\Delta R^2 = 0.04$; $F_{change} = 50.9$; $p = 0.001$) and overinterpretation of own mental states ($\Delta R^2 = 0.009$; $F_{change} = 26.16$; $p = 0.001$) are significant predictors of depressive symptoms in adolescents.

Table 4 presents the mediation model data for those cognitive emotion regulation strategies that are statistically significant mediators of the relationship between a particular type of mentalization deficits and the occurrence of depressive. Statistical anlysis showed that the occurrence of depressive symptoms in adolescents is accompanied by their employment of maladaptive cognitive emotion regulation strategies (in the form of self-blame, catastrophizing and ruminations) and having difficulty employing adaptive emotion regulation strategies (positive reappraisals). Self-blame is the most common, statistically significant strategy linked to all dimensions of hypermentalization and hypomentalization as well as all symptoms of depression. For all four of the above-mentioned emotion regulation strategies, the indirect effects of mediation are statistically significant, as evidenced by the values of the confidence intervals.

Table 4. **Cognitive emotion regulation strategies as mediators of the relationship between mentalization deficits and the occurrence of depressive symptoms in adolescents**

Mediator (M)	Type of mentalization deficit (X)	Symptoms of depression (Y)	Indirect effect (X on Y)			
			β	s.e.	CI	
Self-blame:	ECOP	Overall result	0.48	0.16	0.14	0.81
	OIO		0.17	0.07	0.05	0.32
	AI		0.34	0.11	0.12	0.59
	OO		0.17	0.06	0.05	0.31
	Hypomentalization		0.17	0.07	0.05	0.32
	ECOP	Emotional problems	0.44	0.15	0.12	0.75
	OIO		0.16	0.06	0.04	0.31
	AI		0.31	0.11	0.11	0.56
	OO		0.06	0.06	0.05	0.29
	Hypomentalization		0.28	0.10	0.11	0.51
	OIO	Negative mood	0.11	0.06	0.01	0.24
	AI		0.21	0.10	0.02	0.45
	Hypomentalization		0.20	0.09	0.05	0.41
	OIO	Low self-esteem	0.19	0.07	0.06	0.36
	OO		0.20	0.06	0.08	0.35
	Hypomentalization		0.33	0.10	0.14	0.56
	ECOP	Problems in functioning	0.42	0.16	0.09	0.75
	OIO		0.15	0.06	0.03	0.30
	AI		0.29	0.11	0.08	0.53
	OO		0.15	0.06	0.04	0.29
	Hypomentalization		0.27	0.09	0.09	0.48
	ECOP	Inefficiency in Action	0.41	0.16	0.10	0.73
	OIO		0.14	0.06	0.03	0.28
	AI		0.29	0.11	0.09	0.54
	OIO	Interpersonal problems	0.12	0.06	0.02	0.26
	OO		0.15	0.06	0.03	0.28

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	ECOP	Overall result	0.16	0.09	0.01	0.37
	ECOP	Emotional problems	0.14	0.08	0.01	0.18
	ECOP	Negative mood	0.17	0.09	0.02	0.39
Catastrophizing:	Hypomentalization		0.13	0.06	0.01	0.28
	ECOP	Problems in functioning	0.17	0.10	0.01	0.40
	OO	Inefficiency in Action	0.12	0.06	0.01	0.26
	Hypomentalization		0.19	0.08	0.05	0.38
	ECOP	Emotional problems	0.22	0.11	0.02	0.46
	OIO		0.07	0.04	0.01	0.18
Ruminating:	AI		0.17	0.09	0.01	0.37
	ECOP	Negative mood	0.25	0.12	0.03	0.52
	OIO		0.09	0.05	0.01	0.21
	AI		0.19	0.10	0.02	0.45
Positive reappraisals:	OO	Low self-esteem	0.08	0.04	0.01	0.19

Dependent variable (all results are presented as T-score); ECOP – excessive care about mental states of other people; OIO – overinterpretation of mental states of other people; AI – acting on impulse; OO – overinterpretation of own mental states

Discussion

Mentalization deficits as a risk factor for increasing depressive symptoms in adolescence

The more diminished the adolescent's ability to mentalize, the more severe the depressive symptoms they experience (see: Hypothesis 1). The obtained research result is consistent with clinical reports [15]. In the study presented here, predictors of depressive symptoms were found to be both hypomentalization and three dimensions of hypermentalization: excessive care about mental states of other people, overinterpretation of own mental states, and overinterpretation of the mental states of others. Such risk factors for increased depressive symptoms are also mentioned in research presented in source literature. Gambin and Sharp [16] report a link between depressive symptoms in adolescents and worrying about others, experiencing guilt or worrying about hurting or neglecting loved ones. Overwhelmed by a sense of shame, the adolescent's depressed *self* feels helpless and worthless due to the infringement of its own internal standards.

Studies on mentalization deficits in adults with depression also shown significant differences in the frequency of *self* statements compared to a control group. Depressive

patients' tendency to think more about themselves than others stems from negative thoughts and affects blocking their ability to understand other people's mental states [17]. Distortion affecting mentalization consisting in overinterpretation of own and other people's experiences are associated with the activation of negative schemas about *self,* selectivity of attention and sensitivity to negative stimuli, ruminations, and impulsive decision-making [18].

Relationship between general and specific depressive symptoms and mentalization deficits in adolescents

Lowered mentalization abilities are associated with all, including specific (concerning the motif of loss or rejection) symptoms of depression, thus confirming the study's hypothesis 2. Considering the diagnostic criteria of major depressive disorder, it can be assumed that all of them are positively correlated with hypomentalization and hypermentalization, with the following being the strongest: negative mood, suicidal tendencies and feelings of worthlessness/guilt. This research result is supported by source literature and clinical studies. It has been found that a child's depressed mood contributes to increased levels of arousal and stress, which can weaken mentalization; such weakened ability, in turn, leads to a loss of resilience in stress and a "vicious cycle" of increasingly depressed, negative mood [19].

In the studies analyzing the links between dissociation mechanisms and depressive symptoms in a group of self-harming adolescents (in which two thirds of adolescents had attempted suicide), clear correlations was observed between dissociation mechanisms, feelings toward the body and the severity of depressive symptoms [20]. The states of dissociation experienced by the studied teenagers, i.e., the feeling of being numb and dead, were activated defensively so that difficult, often traumatic experiences were not reflected, but pushed into the unconscious and repeatedly played out in action. Finally, there are links between internalizing symptoms and social withdrawal as well as making errors in evaluating the experiences of self and others [21].

Cognitive emotion regulation strategies as a mediator of the relationship between mentalizing ability and depressive symptoms during adolescence

Cognitive regulation strategies mediate the relation between the ability to mentalize and depressive symptoms in adolescents. Self-blaming strategy is the most common. It can be linked to all types of mentalization deficits and various symptoms of depression. In addition, three other cognitive methods of resolving potentially dangerous situations or experiences are also important, namely: ruminating, catastrophizing, and positive reappraisal. This research finding corresponds with reports found in source literature indicating links between depression and a triad of maladaptive methods of coping with difficult, emotionally charged content: self-blaming, ruminating or exaggerating [22].

There is the association between specific cognitive emotion strategies and a particular type of depression. For example, ruminating, resulting from malfunctioning

attention control processes, accompanies depression with anhedonia, increased feelings of sadness, dissatisfaction and guilt, and an inability to experience happiness, hope and self-satisfaction. Reactive depression with occurring somatic complaints, feelings of anxiety, anger, resentment, may be associated with more "explosive" emotions, such as fear, hostility toward others and acting on impulse. Catastrophizing, on the other hand, is such a regulatory strategy that is associated with a specific deficit in mentalization – mainly the adolescent's attaching excessive care to the mental experiences of others, which can be accompanied by a significant lowering of mood, sometimes suicidal ideation [23, 24].

Limitations and final conclusions

The research presented here is a cross-sectional study that does not take into account the temporal dimension of the relations between the analyzed variables and involves a small group of subjects. Therefore, for these two reasons, its explanatory power concerning the mechanisms underlying disruptions in the processing of an emotional experience in youth development is limited.

Nevertheless, the obtained research results are interesting. They illustrate close links between deficits in mentalization, intensification of emotion regulation strategies based on experiencing feelings of guilt and catastrophizing, and an increase in various depressive symptoms in teenagers. Replication of the study in a larger and representative sample of participants could describe the conditions under which the use of such strategies is associated with the occurrence of psychopathology.

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