



Assessment of emotion regulation strategies in adults with Attention Deficit/Hyperactivity Disorder (ADHD)¹

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Abstract: Introduction: Emotional dysregulation is estimated to affect between 30% and 70% of individuals with ADHD, regardless of the presence of comorbid psychiatric disorders. The present study aimed to compare adaptive and maladaptive emotion regulation strategies, symptoms of anxiety and depression, and borderline personality disorder traits in adults with and without ADHD. Additionally, the interrelationships among these variables were examined. *Material and Methods:* A total of 216 adults with ADHD ($M = 33.13$, $SD = 8.40$) and 215 individuals in the control group ($M = 34.18$, $SD = 10.10$), aged between 18 and 65 years, completed the following questionnaires: the Adult ADHD Self-Report Scale v1.1 (ASRS), the Cognitive Emotion Regulation Questionnaire (CERQ), the Emotion Regulation Questionnaire (ERQ), the Hospital Anxiety and Depression Scale (HADS), and The BPD Checklist. Relationships between variables were analysed using independent-samples *t*-tests, correlation analyses, and linear regression models. *Results:* Participants with ADHD reported significantly more frequent use of maladaptive emotion regulation strategies, particularly self-blame and rumination, compared with the control group. The clinical group also exhibited higher levels of anxiety, depression, and borderline personality disorder traits than the control group. Regression analyses demonstrated that both adaptive and maladaptive emotion regulation strategies significantly predicted the severity of anxiety and depressive symptoms, as well as borderline personality disorder traits. *Conclusions:* The findings highlight the importance of emotion regulation and co-occurring psychopathological symptoms in the adult ADHD population.

Keywords: anxiety, depression, attention-deficit/hyperactivity disorder (ADHD), borderline personality disorder (BPD), emotion regulation

1. Introduction

Attention-Deficit/Hyperactivity Disorder (ADHD) is a neurodevelopmental disorder affecting approximately 2–4% of adults in the general population and is the most diagnosed neurodevelopmental disorder (Ben-Dor Cohen et al., 2024; Soler-Gutiérrez et al., 2023). It is estimated that approximately one million individuals in Poland may have ADHD. The most recent data from 2023 concerning psychiatric diagnoses recorded within the public healthcare system indicate that ADHD—more specifically, “hyperkinetic disorder” according to the ICD-10 classification, which remains in use in Poland—was diagnosed in only 3,579 adults receiving psychiatric consultations. This represents less than 0.4% of individuals

who may potentially meet the diagnostic criteria for ADHD (Gondek et al., 2024). Furthermore, it is possible that the prevalence of ADHD among adults is higher than currently assumed, which may result from diagnostic challenges associated with the lack of detailed diagnostic criteria for adults and the frequent co-occurrence of ADHD with other psychiatric disorders (Barkley, 2015, pp. 343–355, as cited in Soler-Gutierrez et al., 2023).

According to the DSM-5-TR (American Psychiatric Association, 2022), attention-deficit/hyperactivity disorder (ADHD) has its onset in childhood and is characterised by persistent patterns of inattention, hyperactivity, and impulsivity that

¹ Article in Polish language: https://stowarzyszeniefidesetratio.pl/fer/67p_Hors.pdf

must persist for at least six months and result in significant functional impairment. The DSM-5-TR distinguishes the following ADHD presentations: (1) the combined presentation, characterised by the simultaneous presence of symptoms of inattention and hyperactivity–impulsivity; (2) the predominantly inattentive presentation; and (3) the predominantly hyperactive–impulsive presentation. In addition to these presentations, the DSM-5-TR specifies levels of severity, namely mild, moderate, and severe.

ADHD frequently co-occurs with other psychiatric disorders. It has been estimated that between 70% and 80% of individuals with ADHD experience at least one additional psychiatric disorder during their lifetime (Shen & Zhou, 2024). The most common comorbid conditions include anxiety disorders and depressive disorders (D’Agati et al., 2019; Fayyad et al., 2017; Fu et al., 2025; Giacobini et al., 2023; Mayer et al., 2021; Quenneville et al., 2022; Powell et al., 2021; Reimherr et al., 2017), as well as personality disorders (MacDonald & Sadek, 2023), particularly borderline personality disorder (BPD) (Ditrich, et al., 2021; Matthies & Philipsen, 2014; Weiner, et al., 2019). Comorbid disorders complicate the clinical presentation of ADHD and are associated with greater functional impairment than either ADHD or the co-occurring disorder alone. Individuals with comorbid conditions also tend to experience greater difficulties in everyday functioning and are less likely to respond favourably to treatment (Fu et al., 2025; MacDonald & Sadek, 2023; Mayer et al., 2021; Matthies & Philipsen, 2014; Powell et al., 2021; Shen & Zhou, 2025). Expanding current knowledge regarding ADHD, depressive and anxiety disorders, and borderline personality disorder, as well as understanding how these conditions affect various, as yet underexplored, areas of functioning, is of considerable importance. Another significant phenomenon linking ADHD with its comorbid disorders is emotional dysregulation (ED). Emotional dysregulation is one of the most prominent features associated with ADHD and is defined as difficulties in flexibly modulating emotional states in a goal-directed manner. More specifically, ED refers to the inability to manage and modulate emotional states within adaptive, goal-oriented behavioural processes

(Shaw, et al., 2014). It has been estimated that ED occurs in 30–70% of individuals with ADHD, irrespective of the presence of psychiatric comorbidities (Ben-Dor Cohen et al., 2024; Shaw et al., 2014). Moreover, ED is associated with greater ADHD symptom severity (Corbisiero et al., 2017), higher rates of symptom persistence, the co-occurrence of other psychiatric disorders, and poorer social and occupational adjustment (Materna et al., 2019). Emotional dysregulation encompasses various difficulties, including the frequent use of maladaptive cognitive emotion regulation strategies (Mayer et al., 2022). Reliance on maladaptive emotion regulation strategies in ADHD has been associated with increased severity of co-occurring anxiety symptoms (Bodalski et al., 2019) and depressive symptoms (Knouse, et al., 2013). Furthermore, individuals with ADHD more frequently report using maladaptive strategies such as blaming others and rumination, similarly to individuals with borderline personality disorder (Rüfenacht et al., 2019). Comparable findings were reported by Mayer et al. (2022), who demonstrated that individuals with ADHD more frequently employed self-blame, catastrophising, and rumination. Moreover, the same study found that these maladaptive strategies, together with less frequent use of adaptive strategies such as cognitive reappraisal, may be associated with an increased risk of developing depression among adolescents and young adults with ADHD. Notably, even after excluding participants with a comorbid diagnosis of depression, individuals with ADHD continued to report greater use of maladaptive emotion regulation strategies compared with healthy controls (Mayer et al., 2022). In an experimental study on sadness regulation, Matthies and colleagues (2014b) found that adults with ADHD who employed emotional suppression experienced prolonged emotional overload and significantly increased parasympathetic nervous system activation compared with individuals who used acceptance-based strategies. Moreover, adults with ADHD report more frequent use of emotional suppression and lower emotion regulation competencies than neurotypical individuals, despite not differing from control participants in their overt use of adaptive emotion regulation strategies

(Materna et al., 2019). However, Liu et al. (2022) demonstrated that individuals with ADHD were more likely to use expressive suppression than cognitive reappraisal to regulate emotions. Interestingly, greater use of emotional suppression in this group was associated with lower levels of emotional dysregulation, an effect that was not observed among healthy individuals. The studies reviewed above highlight the substantial impact of emotion regulation difficulties and impairments in the use of cognitive emotion regulation strategies on the daily functioning of adults with ADHD (Ben-Dor Cohen et al., 2024; Bodalski et al., 2019; Liu et al., 2022; Mayer et al., 2022; Materna et al., 2019; Matthies et al., 2014b; Rüfenacht et al., 2019; Soler-Gutiérrez et al., 2023). Nevertheless, the number of studies investigating emotional dysregulation and emotion regulation strategies in ADHD remains insufficient to allow definitive conclusions to be drawn, particularly in relation to other clinical variables such as symptoms of anxiety, depression, and borderline personality disorder.

The present study aims to assess adaptive and maladaptive emotion regulation strategies among adults with and without ADHD and to examine the relationships between these variables and symptoms of anxiety, depression, and borderline personality disorder.

2. Material and methods

2.1. Participants

A total of 494 adults aged between 18 and 65 years participated in the study. Following the exclusion of participants who did not meet the eligibility criteria, the final sample comprised 431 individuals. The exclusion criteria included: failure to provide informed consent to participate in the study, psychotic disorders (i.e., schizophrenia, schizoaffective disorder, and delusional disorder), bipolar disorder, organic central nervous system (CNS) damage, current substance use disorder, and intellectual disability. The sample included 135 men ($M = 34.90$, $SD = 9.10$; 31.30%),

274 women ($M = 33.50$, $SD = 9.39$; 63.60%), and 22 individuals identifying as non-binary ($M = 27.70$, $SD = 6.91$; 5.10%). Most participants had completed higher education (58.90%) or secondary education (21.10%). Most respondents were employed (65.20%) and resided in cities with populations exceeding 500,000 inhabitants (55.20%). The clinical group consisted of adults with a clinical diagnosis of ADHD made by a psychiatrist ($n = 216$; $M = 33.13$, $SD = 8.40$), whereas the control group comprised adults from the general population without a clinical diagnosis of ADHD ($n = 215$; $M = 34.18$, $SD = 10.10$). Among participants in the ADHD group, a number of individuals had also been diagnosed with comorbid psychiatric disorders, including depressive disorders ($n = 78$), anxiety disorders ($n = 66$), personality disorders ($n = 30$), autism spectrum disorder (ASD; $n = 18$), behavioural addictions ($n = 10$), and post-traumatic stress disorder (PTSD; $n = 8$). One hundred and fifty participants in the ADHD group were receiving pharmacological treatment at the time of the study. The medications used included anxiolytics (e.g., pregabalin and buspirone), selective serotonin reuptake inhibitors (SSRIs; e.g., sertraline, escitalopram, citalopram, paroxetine, and fluoxetine), serotonin antagonist and reuptake inhibitors (SARIs; e.g., trazodone), noradrenergic and specific serotonergic antidepressants (NaSSAs; e.g., mirtazapine), serotonin–noradrenaline reuptake inhibitors (SNRIs; e.g., venlafaxine and duloxetine), noradrenaline–dopamine reuptake inhibitors (NDRIs; e.g., bupropion and methylphenidate), psychostimulants (e.g., lisdexamfetamine and methylphenidate), selective noradrenaline reuptake inhibitors (NERIs; e.g., atomoxetine), antihistamines (e.g., promethazine and hydroxyzine), anticonvulsants (e.g., lamotrigine, valproic acid, and carbamazepine), atypical antipsychotics (e.g., quetiapine, olanzapine, and aripiprazole), and benzodiazepines (e.g., diazepam and alprazolam).

The study protocol received ethical approval from the Ethics Committee of the Institute of Psychology at Cardinal Stefan Wyszyński University in Warsaw (UKSW) (approval no. 38/2025).

2.2. Methods

The following research hypotheses were formulated:

1. Adults with ADHD will report more frequent use of maladaptive emotion regulation strategies and less frequent use of adaptive emotion regulation strategies than individuals in the control group.
2. Levels of anxiety, depression, and BPD symptoms will be significantly higher in the clinical group than in the control group.
3. Adaptive emotion regulation strategies will be negatively correlated with levels of anxiety, depression, and borderline personality symptoms, whereas maladaptive strategies will be positively correlated with higher levels of anxiety, depression, and borderline personality symptoms.
4. Adaptive and maladaptive emotion regulation strategies will significantly predict symptoms of anxiety, depression, and borderline personality disorder.

The study employed a sociodemographic questionnaire and the following standardised psychometric instruments:

1. Adult ADHD Self-Report Scale (ASRS-v1.1) (Adler, Faraone, Sarocco, Atkins, & Khachatrian, 2019) – a self-report screening questionnaire designed to assess the severity of attention-deficit/hyperactivity disorder (ADHD) symptoms according to the diagnostic criteria proposed in the DSM-IV. The instrument comprises 18 items assessing symptoms of impulsivity, hyperactivity, and inattention. The first part (6 items), known as the ASRS-v1.1 Screener, has previously been validated as an effective tool for identifying adults at risk of ADHD, whereas the second part (12 items) assesses symptom frequency. The questionnaire measures symptoms across two domains—inattention and hyperactivity/impulsivity—in accordance with DSM-IV criteria. The instrument yields a total score. Internal consistency in the present sample was high (McDonald's ω with a 95% confidence interval [MLR] = 0.91 [0.90–0.93]).
2. Cognitive Emotion Regulation Questionnaire (CERQ) (Garnefski & Kraaij, 2007) – the Polish adaptation developed by Marszał-Wiśniewska and Fajkowska (2010) was used. The instrument is designed to assess nine cognitive emotion regulation strategies across 36 items, comprising the following subscales: acceptance, planning, positive refocusing, positive reappraisal, putting into perspective, self-blame, other-blame, rumination, and catastrophising. Reliability coefficients for the subscales in the present sample ranged from low to high (ω ranging from 0.69 to 0.86 [95% CI: 0.64–0.83 to 0.74–0.88]).
3. Emotion Regulation Questionnaire (ERQ) (Gross & John, 2003) – a measure assessing two emotion regulation strategies: cognitive reappraisal and expressive suppression. The questionnaire consists of 10 items divided into two subscales: cognitive reappraisal (6 items) and expressive suppression (4 items). The Polish version of the instrument was employed in the present study (Larionow, Mudło-Głagolska, & Preece, 2025). Both subscales demonstrated satisfactory internal consistency in the study sample (ω ranging from 0.79 to 0.87 [95% CI: 0.76–0.84 to 0.82–0.89]).
4. Hospital Anxiety and Depression Scale (HADS) (Zigmond & Snaith, 1983) – the Polish adaptation by Karakuła et al. (1996) was used. The instrument is designed to assess levels of anxiety and depression and consists of 14 items divided into two subscales: anxiety and depression, each comprising seven items. Responses are provided on a four-point Likert scale ranging from 0 to 3. Both subscales demonstrated satisfactory internal consistency in the present sample (ω ranging from 0.80 to 0.89 [95% CI: 0.77–0.87 to 0.82–0.90]).
5. The BPD Checklist (Bloo, Arntz, & Schouten, 2017) – a self-report questionnaire consisting of 47 items designed to assess the subjective burden associated with borderline personality disorder symptoms experienced during the preceding month. The items were developed based on the DSM-IV diagnostic criteria for BPD, the literature describing manifestations of borderline personality pathology, and clinical observations. The Polish adaptation developed by

Piotr Czyżewski and Agnieszka Popiel was used in the present study (Bloo et al., 2017). Internal consistency of the total score in the present sample was very high (McDonald's $\omega = 0.96$).

3. Results

H1: It was examined whether there were statistically significant differences between the clinical and control groups in the frequency of using adaptive and maladaptive emotion regulation strategies. An independent-samples Student's t-test was conducted, with ADHD diagnosis (yes vs. no) as the independent variable and 11 emotion regulation strategies as the dependent variables. These comprised five mal-

adaptive emotion regulation strategies (expressive suppression, self-blame, other-blame, rumination, and catastrophising) and six adaptive emotion regulation strategies (cognitive reappraisal, acceptance, planning, positive refocusing, positive reappraisal, and putting into perspective). The results are presented in Table 1.

It was observed that the clinical group reported more frequent use of maladaptive emotion regulation strategies, including self-blame ($p = 0.006$) and rumination ($p = 0.001$). In contrast, the frequency of using adaptive emotion regulation strategies was largely comparable between the clinical and control groups. The only exception was positive refocusing, which was used less frequently by individuals with ADHD ($p = 0.033$).

Table 1. Comparison of the clinical and control groups in terms of emotion regulation and emotion regulation strategies

Variables	Clinical <i>N</i> = 216		Control <i>N</i> = 215		<i>T</i>	<i>df</i>	<i>p</i>	<i>d</i> Cohen's
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>				
ERQ: Cognitive Reappraisal	25.53	7.82	26.30	7.99	-1.01	429	0.312	-0.10
ERQ: Expressive Suppression	15.64	5.46	15.28	6.15	0.64	423	0.521	0.06
CERQ: Acceptance	13.77	2.94	14.20	2.88	-1.52	429	0.129	-0.15
CERQ: Refocus on planning	15.33	3.10	15.37	3.49	-0.12	423	0.903	-0.01
CERQ: Positive refocusing	10.58	3.65	11.33	3.63	-2.14	429	0.033	-0.21
CERQ: Positive reappraisal	13.81	3.77	14.17	3.76	-0.97	429	0.331	-0.09
CERQ: Putting into perspective	12.33	3.77	12.80	3.52	-1.33	429	0.185	-0.13
CERQ: Self-blame	13.69	3.56	12.74	3.54	2.78	429	0.006	0.27
CERQ: Other-blame	10.62	3.56	10.49	3.43	0.38	429	0.705	0.04
CERQ: Rumination	15.51	3.27	14.42	3.37	3.42	429	0.001	0.33
CERQ: Catastrophizing	10.48	4.12	10.46	3.75	0.04	429	0.966	0.00

Note. *N* = sample size; *M* = mean; *SD* = standard deviation; *T*(*df*) = Student's t-test statistic; *p* = *p*-value; Cohen's *d* = effect size.

Table 2. Comparison of the clinical group and the control group in terms of clinical variables

Variables	Clinical <i>N</i> = 216		Control <i>N</i> = 215		<i>T</i>	<i>df</i>	<i>p</i>	<i>d</i> Cohen's
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>				
HADS: Anxiety	12.03	4.54	10.19	5.17	3.93	421	<0.001	0.38
HADS: Depression	7.47	4.25	6.64	4.25	2.03	429	0.043	0.19
BPD: Borderline symptomatology	112.67	36.27	102.02	35.21	3.09	429	0.002	0.30

Note. *N* = sample size; *M* = mean; *SD* = standard deviation; *T*(*df*) = Student's t-test statistic; *p* = significance level (*p*-value); Cohen's *d* = effect size.

Table 3. Correlations between emotion regulation and its strategies and clinical variables in the clinical and control groups

Variable	Group	HADS: Anxiety	HADS: Depression	BPD: Borderline
ERQ: Cognitive Reappraisal	ADHD	-0.28***	-0.22**	-0.17*
	Control	-0.22**	-0.22**	-0.23**
ERQ: Expressive Suppression	ADHD	0.22**	0.23**	0.20**
	Control	0.16*	0.22**	0.20**
CERQ: Acceptance	ADHD	-0.13	-0.08	-0.04
	Control	0.03	-0.03	0.10
CERQ: Refocus on planning	ADHD	-0.31***	-0.25***	-0.29***
	Control	-0.28***	-0.41***	-0.32***
CERQ: Positive refocusing	ADHD	-0.21**	-0.24***	-0.09
	Control	-0.17*	-0.18**	-0.09
CERQ: Positive reappraisal	ADHD	-0.19**	-0.15*	-0.08
	Control	-0.31***	-0.47***	-0.31***
CERQ: Putting into perspective	ADHD	-0.01	-0.09	-0.01
	Control	-0.05	-0.20**	-0.02
CERQ: Self-blame	ADHD	0.37***	0.15*	0.34***
	Control	0.43***	0.26***	0.47***
CERQ: Other-blame	ADHD	0.19**	0.17*	0.33***
	Control	0.22**	0.24***	0.20**
CERQ: Rumination	ADHD	0.39***	0.23**	0.43***
	Control	0.42***	0.21**	0.34***
CERQ: Catastrophizing	ADHD	0.46***	0.38***	0.42***
	Control	0.48***	0.40***	0.45***

*** $p < 0,001$; ** $p < 0,01$; * $p < 0,05$.

H2: It was examined whether there were statistically significant differences between the clinical and control groups in the levels of clinical variables, namely anxiety symptoms, depressive symptoms, and borderline personality symptoms. An independent-samples Student's t -test was conducted, with ADHD diagnosis (yes vs. no) as the independent variable and the clinical variables (anxiety, depression, and borderline personality symptoms) as the dependent variables. The results are presented in Table 2.

The clinical group exhibited significantly higher levels of anxiety ($p < 0,001$), depression ($p = 0,043$), and borderline personality disorder symptoms ($p = 0,002$) than the control group.

H3: It was examined whether there were statistically significant associations between individual psychopathological symptoms (i.e., anxiety, depression, and borderline personality disorder symptoms) and

emotion regulation strategies (cognitive reappraisal, expressive suppression, acceptance, planning, positive refocusing, positive reappraisal, putting into perspective, self-blame, other-blame, rumination, and catastrophising). Pearson's r correlations were conducted for variables with a normal distribution. The results are presented in Table 3.

Depression was found to be significantly negatively correlated, with weak to moderate effect sizes, with adaptive strategies, including cognitive reappraisal, planning, positive refocusing, positive reappraisal, and putting into perspective. Conversely, depression was significantly positively correlated, with weak to moderate effect sizes, with maladaptive emotion regulation strategies, including self-blame, other-blame, rumination, and catastrophising. The significance values ranged from $p < 0,001$ to $p = 0,032$.

Table 4. Predictors of anxiety in the clinical and control groups

Group	Predictor variables	<i>B</i>	<i>SE</i>	<i>Beta</i>	<i>t</i>	<i>R</i> ²	<i>F</i>
Clinical	(Constant)	4.47	2.11		2.11*	0.32	21.56***
	CERQ: Catastrophizing	0.26	0.08	0.24	3.48***		
	CERQ: Self-blame	0.22	0.08	0.17	2.77**		
	CERQ: Refocus on planning	-0.28	0.09	-0.19	-3.16**		
	CERQ: Rumination	0.28	0.10	0.20	2.90**		
	ERQ: Expressive Suppression	0.11	0.05	0.13	2.29*		
Control	(Constant)	1.29	1.91		0.68	0.40	29.65***
	CERQ: Catastrophizing	0.27	0.10	0.20	2.84**		
	CERQ: Self-blame	0.43	0.09	0.29	4.85***		
	CERQ: Refocus on planning	-0.41	0.08	-0.27	-4.96***		
	CERQ: Rumination	0.33	0.10	0.22	3.28**		
	CERQ: Other-blame	0.20	0.09	0.13	2.20*		

Note. *B* = unstandardised regression coefficient; *SE* = standard error; β = standardised regression coefficient; *t* = t-test statistic; *R*² = coefficient of determination; *F* = ANOVA statistic. *** $p < 0,001$; ** $p < 0,01$; * $p < 0,05$.

Table 5. Predictors of depression in the clinical and control groups

Group	Predictor variables	<i>B</i>	<i>SE</i>	<i>Beta</i>	<i>t</i>	<i>R</i> ²	<i>F</i>
Clinical	(Constant)	3.78	1.37		2.75**	0.19	17.91***
	CERQ: Catastrophizing	0.33	0.07	0.32	5.10***		
	ERQ: Expressive Suppression	0.14	0.05	0.17	2.80**		
	CERQ: Positive refocusing	-0.18	0.07	-0.16	-2.46*		
Control	(Stała)	7.79	1.74		4.49***	0.35	24.46***
	CERQ: Catastrophizing	0.21	0.08	0.18	2.72**		
	CERQ: Positive reappraisal	-0.26	0.08	-0.23	-3.26**		
	CERQ: Refocus on planning	-0.30	0.08	-0.25	-3.58***		
	CERQ: Self-blame	0.24	0.07	0.20	3.37***		
	CERQ: Other-blame	0.18	0.07	0.15	2.34*		

Note. *B* = unstandardised regression coefficient; *SE* = standard error; β = standardised regression coefficient; *t* = t-test statistic; *R*² = coefficient of determination; *F* = ANOVA statistic. *** $p < 0,001$; ** $p < 0,01$; * $p < 0,05$.

Regarding borderline personality disorder symptoms, significant negative correlations of weak to moderate strength were observed with the following adaptive emotion regulation strategies: cognitive reappraisal, planning, and positive reappraisal. Positive correlations were observed with maladaptive strategies, including self-blame, other-blame, rumination, and catastrophizing. The significance values ranged from $p < 0,001$ to $p = 0,035$.

A similar pattern of associations was observed in the control group, where higher levels of clinical variables were associated with lower levels of adaptive strategies and higher levels of maladaptive strategies.

H4: To determine which emotion regulation strategies serve as predictors of anxiety symptoms, depressive symptoms, and borderline personality disorder symptoms, a stepwise multiple regression analysis was conducted. The explanatory variables were emotion regulation strategies, whereas the dependent variables were anxiety symptoms, depres-

Table 6. Predictors of borderline symptomatology in the clinical and control groups

Group	Predictor variables	<i>B</i>	<i>SE</i>	<i>Beta</i>	<i>t</i>	<i>R</i> ²	<i>F</i>
Clinical	(Constant)	20.73	13.90		1.49	0.40	25.09***
	CERQ: Catastrophizing	2.75	0.49	0.37	5.66***		
	CERQ: Rumination	1.90	0.60	0.21	3.16**		
	CERQ: Positive refocusing	-3.02	0.63	-0.31	-4.79***		
	CERQ: Positive reappraisal	2.51	0.53	0.31	4.71***		
	ERQ: Expressive Suppression	0.84	0.30	0.15	2.78**		
	CERQ: Self-blame	1.08	0.51	0.13	2.12*		
Control	(Constant)	47.05	10.58		4.45***	0.39	35.61***
	CERQ: Catastrophizing	1.64	0.49	0.21	3.32**		
	CERQ: Positive refocusing	-2.33	0.45	-0.28	-5.16***		
	CERQ: Self-blame	3.36	0.47	0.41	7.13***		
	CERQ: Other-blame	1.43	0.51	0.17	2.78**		

Note. *B* = unstandardised regression coefficient; *SE* = standard error; β = standardised regression coefficient; *t* = t-test statistic; *R*² = coefficient of determination; *F* = ANOVA statistic. *** $p < 0,001$; ** $p < 0,01$; * $p < 0,05$.

sive symptoms, and borderline personality disorder symptoms. The results for anxiety symptoms are presented in Table 4, for depressive symptoms in Table 5, and for borderline personality disorder symptoms in Table 6.

In the clinical group, five emotion regulation strategies were identified as statistically significant predictors of anxiety symptoms: catastrophising, self-blame, planning, rumination, and expressive suppression. Together, these strategies explained 32% of the variance in anxiety symptoms. Higher levels of anxiety were associated with greater use of catastrophising ($p < 0,001$), self-blame ($p = 0,006$), rumination ($p = 0,002$), and expressive suppression ($p = 0,023$), as well as with lower levels of the adaptive strategy of planning ($p < 0,002$). The strongest predictor was catastrophising ($\beta = 0,24$). Emotion regulation strategies such as cognitive reappraisal, positive refocusing, positive reappraisal, and other-blame did not constitute significant predictors of anxiety symptoms ($p > 0,05$).

In the control group, a different regression model was obtained, including five emotion regulation strategies as predictors of anxiety symptoms: catastrophising, self-blame, planning, rumination, and other-blame. Together, these strategies explained 40% of the variance in anxiety symptoms. Higher

levels of anxiety were associated with greater use of maladaptive emotion regulation strategies, including catastrophising ($p = 0,005$), self-blame ($p < 0,001$), rumination ($p = 0,001$), and other blame ($p = 0,029$), as well as with lower levels of the adaptive strategy of planning ($p < 0,001$). Cognitive reappraisal, expressive suppression, positive refocusing, and positive reappraisal did not represent significant predictors of anxiety symptoms ($p > 0,05$).

The best-fitting regression model in the clinical group included three emotion regulation strategies as predictors of depressive symptoms: catastrophising, expressive suppression, and positive refocusing. Together, these strategies explained 19% of the variance in depressive symptoms. Higher levels of depression were associated with greater use of catastrophising ($p < 0,001$) and expressive suppression ($p = 0,006$), as well as with lower levels of positive refocusing ($p = 0,015$). Maladaptive strategies, including self-blame, other-blame, and rumination, as well as adaptive strategies such as cognitive reappraisal, planning, and putting into perspective, did not represent significant predictors of depressive symptoms ($p > 0,05$).

In the control group, a similar regression model was obtained, including five emotion regulation strategies as predictors of depressive symptoms: catastrophising, positive reappraisal, planning, self-blame,

and other-blame. Together, these strategies explained 35% of the variance in depressive symptoms. Higher levels of depression were associated with greater use of catastrophising ($p = 0,007$), self-blame ($p < 0,001$), and other-blame ($p = 0,02$), as well as with lower levels of positive reappraisal ($p = 0,001$) and planning ($p < 0,001$). Emotion regulation strategies such as cognitive reappraisal, expressive suppression, positive refocusing, putting into perspective, and rumination did not represent significant predictors of depressive symptoms ($p > 0,05$).

In the clinical group, the model identified six emotion regulation strategies as statistically significant predictors of borderline symptomatology: catastrophising, rumination, planning, positive reappraisal, expressive suppression, and self-blame, which together accounted for 40% of the variance in borderline symptoms. Higher levels of borderline symptomatology were associated with higher levels of catastrophising ($p < 0.001$), rumination ($p = 0.002$), expressive suppression ($p = 0.006$), and positive reappraisal ($p < 0.001$), as well as lower levels of planning ($p < 0.001$). The maladaptive strategy of blaming others and the adaptive strategy of cognitive reappraisal were not significant predictors of borderline symptomatology ($p > 0.05$).

In the control group, a similar regression model was obtained, including four emotion regulation strategies as predictors: catastrophising, planning, self-blame, and blaming others, which together accounted for 39% of the variance in borderline symptoms. Higher levels of borderline symptomatology were associated with higher levels of catastrophising ($p = 0.001$), self-blame ($p < 0.001$), and blaming others ($p = 0.006$), as well as lower levels of planning ($p < 0.001$). Emotion regulation strategies such as cognitive reappraisal, expressive suppression, positive reappraisal, and rumination were not significant predictors of borderline symptomatology ($p > 0.05$).

4. Discussion

The aim of the present study was to assess adaptive and maladaptive emotion regulation strategies among adults with and without ADHD and to examine

the relationships between emotion regulation and borderline personality disorder (BPD) traits, anxiety, and depression. The findings indicated that, compared with the control group, individuals with ADHD more frequently employed maladaptive emotion regulation strategies, such as self-blame and rumination. This finding is consistent with the limited literature available on the topic. Rüfenacht et al. (2019) demonstrated that individuals with ADHD, compared with healthy controls, more frequently used self-blame and rumination, which is in line with the findings of the present study. Similarly, Mayer et al. (2022) observed that individuals with ADHD more frequently relied on maladaptive emotion regulation strategies, including self-blame, rumination, and catastrophising. The partial replication of these findings is particularly important, as previous research suggests that more frequent use of maladaptive emotion regulation strategies adversely affects emotional and cognitive functioning among individuals with ADHD (Ben-Dor Cohen et al., 2024; Soler-Gutiérrez et al., 2023). Regarding adaptive strategies, no significant differences were observed between the clinical and control groups for most strategies, with the exception of one, namely positive refocusing (referred to in the original measure as cognitive reappraisal). One possible explanation for this finding is that the control group may have included individuals with undiagnosed ADHD. This interpretation is supported by the statistics reported by Gondek et al. (2024), which indicate that only a small proportion of adults in Poland have received a clinical diagnosis of ADHD, a figure that is inconsistent with prevalence estimates reported in other countries.

The clinical group exhibited significantly higher levels of anxiety, depression, and borderline symptomatology compared with the control group. This finding is consistent with the existing literature on psychiatric comorbidity in ADHD, which indicates that individuals with ADHD are statistically more likely to experience other mental disorders over the course of their lifetime (Shen & Zhou, 2024). The most common psychiatric conditions co-occurring with ADHD include anxiety disorders (Fayyad et al., 2017; Fu et al., 2025; Quenneville et al., 2022),

depressive disorders (D'Agati et al., 2019; Fayyad et al., 2017; Fu et al., 2025; Giacobini et al., 2023; Mayer et al., 2021; Powell et al., 2021), and borderline personality disorder (Ditrich et al., 2021; MacDonald & Sadek, 2023; Matthies & Philipsen, 2014; Weiner et al., 2019). Moreover, the symptoms associated with these disorders frequently overlap with those of ADHD (Ditrich et al., 2021; Fu et al., 2025; Matthies & Philipsen, 2014; Weiner et al., 2019), which presents an additional diagnostic challenge in terms of accurately distinguishing between these conditions. It is possible that self-report measures are not sufficiently sensitive to differentiate ADHD from other psychiatric disorders, such as anxiety disorders, depressive disorders, or personality disorders. This issue warrants further investigation in future research. The statistical analyses conducted in the present study confirmed significant correlations between emotion regulation strategies and symptoms of anxiety, depression, and borderline symptomatology in both the clinical and control groups. Adaptive emotion regulation strategies were associated with lower levels of psychopathological symptoms, whereas maladaptive strategies were associated with greater clinical symptom severity. These findings are consistent with the existing literature demonstrating that anxiety, depression, and borderline personality disorder are associated with higher levels of emotional dysregulation (Ditrich et al., 2021; Matthies & Philipsen, 2014; Young et al., 2019), as well as lower use of adaptive and greater use of maladaptive emotion regulation strategies (Bodalski et al., 2019; Rüfenacht et al., 2019; Mayer et al., 2022; Young et al., 2019). Mayer et al. (2022) demonstrated that more frequent use of maladaptive strategies and less frequent use of adaptive strategies, such as cognitive reappraisal, may increase the risk of developing depression among adolescents and young adults with ADHD, even after excluding individuals with depressive disorders. Likewise, the use of maladaptive emotion regulation strategies has been associated with greater severity of anxiety symptoms (Bodalski et al., 2019). In a study examining the relationships between neuroticism, depressive symptoms, and the moderating role of emotion regulation strategies, Liu, C. et al., (2020) reported partial correlations

among neuroticism, emotion regulation strategies, and depressive symptoms. Maladaptive strategies were positively associated with depressive symptoms, whereas adaptive strategies were negatively associated with depression. Furthermore, a meta-analysis conducted by Yao et al., (2023), focusing on the relationship between anxiety and cognitive emotion regulation strategies, demonstrated that anxiety was significantly positively associated with maladaptive strategies and negatively associated with adaptive strategies. This relationship was particularly evident for positive reappraisal and planning. Interestingly, however, acceptance was positively associated with anxiety. Research addressing these relationships remains relatively limited. Consequently, one of the major strengths of the present study is the inclusion of clinically relevant variables—namely anxiety, depression, and borderline symptomatology—in the investigation of emotion regulation among individuals with ADHD (D'Agati et al., 2019; Ditrich et al., 2021; Fu et al., 2025; Matthies & Philipsen, 2014; Powell et al., 2021; Quenneville et al., 2022; Weiner et al., 2019). It should also be noted that significant correlations between clinical symptoms (i.e., anxiety, depression, and borderline symptomatology) and emotion regulation strategies were observed within the control group. This finding may reflect the increasing prevalence of psychopathological symptoms, particularly anxiety and depressive symptoms, in the general population (Gajewski & Kucharska, 2023). Maladaptive emotion regulation strategies, including catastrophising, self-blame, rumination, and expressive suppression, as well as the adaptive strategy of planning, emerged as statistically significant predictors of anxiety in the clinical group. Maladaptive strategies predicted higher levels of anxiety, whereas planning was associated with lower anxiety severity. In turn, the emotion regulation strategies that significantly predicted depressive symptoms in the clinical group were catastrophising, expressive suppression, and positive refocusing. Maladaptive strategies were associated with higher levels of depression, while positive refocusing predicted lower levels of depressive symptom severity. With regard to borderline symptomatology, significant predictors included catastrophising, rumination, expressive sup-

pression, self-blame, planning, and positive reappraisal. Maladaptive strategies and, interestingly, positive reappraisal predicted higher levels of borderline symptom severity, whereas planning was associated with lower levels of these symptoms. Referring to the limited body of literature addressing these issues, D'Avanzato et al., (2013), in a study involving individuals with major depressive disorder, individuals in remission, individuals with social anxiety disorder, and healthy controls, demonstrated that rumination predicted greater anxiety symptom severity. Interestingly, however, expressive suppression did not emerge as a significant predictor of anxiety in that study. Similarly, Garnefski and Kraaij (2018), in a sample of adolescents aged 13 to 16 years, reported that, after controlling for depressive symptoms, anxiety symptoms were uniquely associated with two maladaptive emotion regulation strategies—catastrophising and self-blame. In the same study, after statistically controlling for anxiety symptoms, depressive symptoms were associated with rumination, self-blame, positive reappraisal, and positive refocusing, with the latter two strategies demonstrating negative associations with depressive symptoms, suggesting their potential protective role against the development of depressive disorders. Bodalski et al. (2019) found that cognitive reappraisal and expressive suppression predicted anxiety symptoms; however, experiential and cognitive-behavioural avoidance demonstrated the strongest predictive power in explaining anxiety severity. Similar findings were obtained for depressive symptoms in an earlier study conducted by Knouse et al. (2013), in which both forms of avoidance predicted greater severity of depressive symptoms. Liu et al. (2020) likewise reported that maladaptive emotion regulation strategies significantly predicted depressive symptoms and were associated with greater symptom severity, whereas adaptive strategies contributed to lower levels of depressive symptomatology. Interestingly, Zaid et al., (2025) found that rumination was associated with lower levels of anxiety, whereas expressive suppression was not significantly related to anxiety. This finding is noteworthy, as it is not only counterintuitive but also inconsistent with the results of the present study. As previously reported by

Rüfenacht et al. (2019), individuals with ADHD exhibited a maladaptive emotion regulation profile similar to that observed in individuals with borderline personality disorder. Therefore, it is unsurprising that maladaptive emotion regulation strategies predicted higher levels of borderline symptomatology in the present regression analyses. Previous studies have consistently demonstrated that individuals with borderline personality disorder or borderline personality traits are more likely to employ maladaptive emotion regulation strategies (McLachlan et al., 2021; Murgueitio et al., 2025; Salgó et al., 2021). Moreover, a systematic review conducted by Bud et al., (2023) confirmed a strong association between emotion regulation strategies and borderline symptomatology. Nevertheless, studies investigating emotion regulation strategies as predictors of borderline symptoms remain scarce. Houben et al. (2023) demonstrated that borderline personality traits were associated with maladaptive emotion regulation strategies, such as rumination and suppression, as well as adaptive strategies, including cognitive reappraisal and attentional distraction. Depressive symptoms, as might be expected, were associated with maladaptive strategies (i.e., suppression and rumination); however, somewhat surprisingly, they were not significantly associated with adaptive emotion regulation strategies. When examining depressive symptoms and borderline personality traits simultaneously, several common patterns emerged. Both constructs were associated with rumination and expressive suppression, suggesting that emotional dysregulation may represent a transdiagnostic characteristic shared across a range of psychiatric disorders. This interpretation is consistent with theoretical models of emotion dysregulation (Grazt & Roemer, 2004, as cited in Ben-Dor Cohen et al., 2021) and with empirical findings reported in previous studies (Ditrich et al., 2021; Houben et al., 2023; Matthies & Philipsen, 2014; Young et al., 2019). Unfortunately, the number of studies investigating emotion regulation strategies and symptoms of anxiety and depression in adults remains limited, particularly among individuals with ADHD. Likewise, the current literature examining emotion regulation strategies and borderline personality traits

is relatively sparse. Consequently, the present study may be considered to contribute novel evidence to this field of research. At the same time, the limited evidence base highlights the need for further investigations into the relationships between emotion regulation and psychopathological symptoms—such as anxiety, depression, and personality disorder traits—not only in adults with ADHD but also across broader clinical and non-clinical populations.

Summary, limitations, and future research directions

The findings of the present study confirm that individuals with ADHD are more likely to employ maladaptive emotion regulation strategies, such as rumination and self-blame, which may contribute to greater psychological difficulties within this population. At the same time, their use of most adaptive emotion regulation strategies appears to be comparable to that of individuals without ADHD, except for less frequent use of positive refocusing. This may indicate specific deficits in emotional regulation flexibility among individuals with ADHD.

The results also demonstrated elevated levels of anxiety, depressive symptoms, and borderline symptomatology among individuals with ADHD, which is consistent with the well-established phenomenon of psychiatric comorbidity reported in the literature.

Significant associations between emotion regulation strategies and psychopathological symptoms were observed in both the clinical and control groups, highlighting the importance of emotion regulation as a factor related to psychological functioning. This was further supported by the predictor analyses, which demonstrated that emotion regulation strategies significantly predicted the severity of clinical variables, such as anxiety, depression, and borderline personality traits, in both groups. Furthermore, the findings suggest that emotional dysregulation is a phenomenon of central importance not only in ADHD but also across a range of other mental health conditions. One of the major strengths of the present study is its innovative character. To date, few studies have simultaneously examined the relation-

ships between emotion regulation strategies and clinical variables—including anxiety symptoms, depressive symptoms, and borderline personality traits—within a population of adults with ADHD. Another strength of the study is its relatively large sample size, comprising 431 adults aged between 18 and 65 years. The clinical and control groups were comparable in size, allowing basic statistical analyses to be conducted with high statistical power within each subgroup. In addition, participant recruitment was carefully controlled and based on clearly defined inclusion criteria, resulting in relatively homogeneous study groups. A further strength of the study was the use of multiple reliable and well-standardised psychometric instruments, which enabled a comprehensive examination of the relationships between emotion regulation strategies and the psychopathological variables investigated.

One of the principal limitations of the study is its cross-sectional design. This methodology does not permit causal inferences to be drawn and allows only for the identification of associations between the variables examined. Although the regression models enabled the identification of significant predictors of anxiety, depression, and borderline personality traits, longitudinal research is required to determine the directionality of these relationships and to examine the dynamics of the observed phenomena over time.

Future studies should investigate these relationships across the three diagnostic presentations of ADHD and employ ecological methods for assessing the dynamic nature of emotion regulation, such as Ecological Momentary Assessment (EMA), within large clinical ADHD samples. Mental health professionals should pay particular attention to emotion regulation deficits not only among individuals with ADHD but also within the general population. Therapeutic interventions may benefit from focusing on modifying the frequency with which adaptive and maladaptive emotion regulation strategies are employed. Such interventions could potentially reduce the severity of psychopathological symptoms, including anxiety, depression, and borderline symptomatology, among individuals with ADHD and may consequently protect them from further psychological and psychiatric complications.

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