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METACOGNITION INCREASES THE SEVERITY OF DEPRESSION THROUGH TRAIT ANXIETY IN A NONCLINICAL POPULATION

Previous studies show that maladaptive metacognitive beliefs may constitute the psychopathological core of anxiety and depression. Recent findings also indicate that anxiety exacerbates the severity of depression. We investigated the hypothesis that anxiety mediates the relationship between faulty metacognitive beliefs and depressive symptoms in normal subjects. Two hundred and eight normal participants completed the Metacognitions Questionnaire (MCQ), the State-Trait Anxiety Inventory(STAI), and the Beck Depression Inventory (BDI). We performed mediation analysis to explore the relationships between metacognition, depression, and trait anxiety as a mediator. Our study showed that positive beliefs about worry, negative beliefs about uncontrollability and danger, low cognitive confidence, and negative beliefs about the need to control thoughts, and cognitive self-consciousness were mediated by the level of anxiety associated withthe severity of depression. Moreover, the mediation analysis indicated that only cognitive confidence beliefs directly influenced the intensity of depressive symptoms.

Keywords: depression; anxiety; metacognition; mediation analysis.

INTRODUCTION

Lifetime risk for major depressive disorder (MDD) is relatively high and may reach 21% for women and 13% for men (Kessler et al., 1994). In addition, affective disorders occur 10 to 20 times more often than schizophrenia, and their occurrence is comparable to the prevalence of all types of anxiety disorder (Carson, Mineka, & Butcher, 1998). Therefore, any scientific attempt to establish the psychopathology of mood disorders seems to be important for the prevention of and recovery from this prominent kind of mental health problems.

Several empirical studies on depression suggest that symptom profiles lie on a continuum (Cox, Enns, & Larsen, 2001). Indeed, some researchers have pointed out the similarity of depressive symptoms in individuals with mild and severe depression (Cox et al., 2001). Such results suggest that variants of non-clinical and clinical depression differ in severity but do not have distinctive kinds of symptoms (Cox et al., 2001). For instance, the idea of depression continuity has been supported by a cluster analysis based on Beck's Depression Inventory (BDI) scores (Beck, Alford, Mendelson, Mock, & Erbaugh, 1961), which indicates that depression profiles for the clinical sample and its analogous nonclinical counterpart are qualitatively the same. Therefore, the risk factors for the development of depressive symptoms in a nonclinical sample identified with the BDI may be useful in understanding the psychopathology that underlies severe cases of depression.

Interestingly, there is a vast body of evidence showing that anxiety is an antecedent of depressive disorders (Beck & Alford, 2009). For instance, it was found that 47.5% of patients with major depressive disorders had comorbid anxiety disorders, whereas 26.1% of patients with anxiety disorders suffered from comorbid major depressive disorder (Beekman et al., 2000). An important longitudinal study by Wittchen and colleagues (Wittchen, Kessler, Pfister, Höfler, & Lieb, 2000) on a very large sample ($N = 3{,}021$) indicated that, in most cases, anxiety appeared to be the primary condition for developing and maintaining depressive symptoms.

Further links between anxiety and depression are revealed by the metacognitive model of emotional disorders proposed by Wells and Matthews (1996). According to this information processing model, the relation between metacognition and emotional disorders follows abnormal emotion-cognition patterns (Wells & Matthews, 1996; Wells, 2009), and dysfunctional metacognitive strategies and beliefs contribute substantially to the development of anxiety and depression (Papageorgiou & Wells, 2001, 2003). In the framework of metacognitive theory,

two types of faulty metacognition have been identified, in the form of positive and negative beliefs concerning their own cognitive processes (Wells, 2009). Individuals with positive beliefs consider rumination and worry to be useful coping strategies (Papageorgiou & Wells, 2001, 2003); in the long-term perspective, however, such beliefs are responsible for intensifying perseverative negative thinking (Papageorgiou & Wells, 2001). Negative metacognitive beliefs comprise beliefs about the uncontrollability of thoughts and cognitive experiences that are likely to produce detrimental interpersonal and social consequences or prolonged psychological suffering (Papageorgiou & Wells, 2003; Wells, 2009). According to the metacognitive theory, the activation of negative beliefs and appraisals about rumination or worry is, in fact, a major contributing factor to anxiety and depression (Papageorgiou & Wells, 2003; Wells & Matthews, 1996).

It is worth mentioning that several studies have attempted to determine empirically the metacognitive factors that cause depressive symptoms (Papageorgiou & Wells, 1999, 2001). In particular, the psychopathology of metacognition in anxiety and depression has been extensively explored with the Metacognitions Questionnaire (MCQ; Cartwright-Hatton & Wells, 1997). This scale is intended to measure five faulty metacognitions: (1) positive beliefs about worry, found in individuals who believe that perseverative thinking is useful (MCQ1); (2) negative beliefs about worry concerning uncontrollability and danger, which refers to individuals' beliefs that perseverative thinking is uncontrollable and dangerous (MCQ2); (3) cognitive confidence (MCQ3), which consists in confidence in one's own cognitive processes in terms of attention and memory; (4) beliefs about the need to control thoughts, involving a belief that thoughts have to be controlled (MCQ4); and (5) cognitive self-consciousness, which means monitoring one's own thoughts and focusing attention on internal experiences (MCQ5). In fact, all dysfunctional metacognitive beliefs measured by the MCQ inventory were predictive of both depression and anxiety (Spada, Nikčević, Moneta, & Wells, 2008a). In particular, MCQ2 was found to be the main predictor of both disorders in that study. Similarly, the authors of another study (Spada, Mohiyeddini, & Wells, 2008b) employing the MCQ inventory found that both anxiety and depression were associated with several MCQ factors. These researchers applied structural modeling to verify whether metacognitive beliefs explained the occurrence of depression and anxiety. Particularly, MCQ2 was found to be a determinant of both anxiety and depression. However, the results indicated that MCQ3, MCQ4 and MCQ5 factors made it possible to predict depression but not anxiety (Spada et al., 2008b). Strikingly, these results showed

that metacognition explained about 61% of variance in anxiety and 31% of variance in depression (Spada et al., 2008b).

Taking all these research outcomes together, one can expect that faulty metacognition could explain vulnerability to anxiety or depression. There is also a substantial body of evidence that anxiety disorders are comorbid with depression symptoms (Wittchen, 1996). Moreover, some researchers suggest that anxiety increases the risk of developing depression (Wittchen et al., 2000). This implies that comorbidity between anxiety and depression may be reasonably explained by abnormal metacognitive processing (Papageorgiou & Wells, 2001). In the light of the above, it is plausible that anxiety may be an important factor that contributes to the deepening of depressive symptoms. Based on the theoretical assumption that the two disorders share common sources of psychopathology (Wittchen, 1996), it is legitimate to seek similar causes behind faulty metacognitive mechanisms and explore the mediating role of anxiety in the severity of depressive symptoms. To the best of our knowledge, the present study is the first to examine the influence of maladaptive metacognitive beliefs on the severity of depressive symptoms through trait anxiety with mediation analysis. Thus, in our study we hypothesized the following: (1) there is a direct link between metacognition and depression; (2) there is a relation between metacognition and anxiety; (3) anxiety is a predictor of the severity of depressive symptoms; (4) anxiety is a mediator of the relation between metacognition and depression.

METHOD

Participants

The participants in the study were 208 individuals (161 women and 47 men), aged between 18 and 53 ($M = 26.45$, $SD = 7.34$): students from Wroclaw Faculty of Psychology, SWPS University of Social Sciences and Humanities, healthy volunteers ($n = 6$) living in the area of Wroclaw, and students from the Institute of Psychology at the University of Zielona Góra. All of them completed informed consent forms, and the students from SWPS University received credit points for participating in the study. Participants with a history of psychiatric or neurological disorders were excluded. This study was approved by the local Ethics Committees.

Assessment

The Beck Depression Inventory (BDI; Beck et al., 1961). The Polish version of the BDI employed in this study (Parnowski & Jernajczyk, 1976) is a 21-item self-report inventory intended to assess the presence and severity of symptoms of depression. Participants rate each statement based on the severity of depressive symptoms in the last two weeks using a 4-point Likert scale from 0 to 3. Each item consists of four statements, ordered according to increasing severity of a particular depressive symptom.

Metacognitions Questionnaire (MCQ; Cartwright-Hatton & Wells, 1997). MCQ is a questionnaire consisting of 65 items that is used to assess dysfunctional metacognitive beliefs. It comprises five factors: (1) positive beliefs about worry (MCQ1; e.g., "*Worrying helps me to avoid problems in the future*"; Cronbach's α = .87; (2) negative beliefs about uncontrollability of thoughts and danger (MCQ2; e.g., "*If I let my worrying thoughts get out of control, they will end up controlling me*"; Cronbach's α = .89); (3) beliefs about cognitive confidence (MCQ3; e.g., "*I have a poor memory*"; Cronbach's α = .84); (4) general negative beliefs (including themes of superstition, punishment, and responsibility, MCQ4; e.g. "*It is bad to think certain thoughts*"; Cronbach's α = .74); (5) cognitive self--consciousness (a tendency to focus attention on the thought process, MCQ5; e.g., "*I monitor my thoughts*"; Cronbach's α = .72). The items are rated on a scale from 1 (*Do not agree*) to 4 (*Very much agree*). We used the Polish version of the scale in the present study (Gawęda & Kokoszka, 2014).

The State-Trait Anxiety Inventory (Spielberger et al., 1983). The STAI measures trait and state anxiety. State anxiety is understood as the situationally determined, current temporary state of anxiety, which is assessed by asking how participants feel "right now." Trait anxiety refers to relatively stable aspects of proneness to anxiety. The STAI consists of two anxiety subscales; each includes 20 items rated on a 4-point Likert scale. In the present study we used the Polish version of the State-Trait Anxiety scale (Sosnowski, Wrześniewski, Jaworoska, & Ferenc, 2002).

Statistical analysis

Data were analyzed using SPSS (version 20, IBM SPSS). First, we calculated Pearson's correlations to determine the relation between the anxiety, depression, and metacognitive beliefs. In the next step, we examined the mediating role of trait anxiety in the relation between metacognitive beliefs and depressive symptoms. To do so, we conducted a mediation analysis by employing the SPSS

bootstrapping method proposed by Hayes (2012). This mediation analysis allowed us to estimate total, direct, and indirect effects as recommended by Preacher and Hayes (2004). According to this method, in order to conclude that there is a mediation effect it is necessary to test several assumptions have to be tested. First, an independent variable (metacognitive factors) should significantly predict a dependent variable (depression symptoms; see path *c* in the diagram). In accordance with the model, it is expected that the independent variable will predicts the occurrence of the mediator (M – anxiety; see path *a* in Fig. 1). Second, the mediator must significantly predict the Y variable while the independent variable is controlled (path *b*). Thus, mediation is established when X predicts Y in the regression model via the mediator variable, and path *c* is eliminated or reduced (Baron & Kenny, 1986; see Fig. 1).
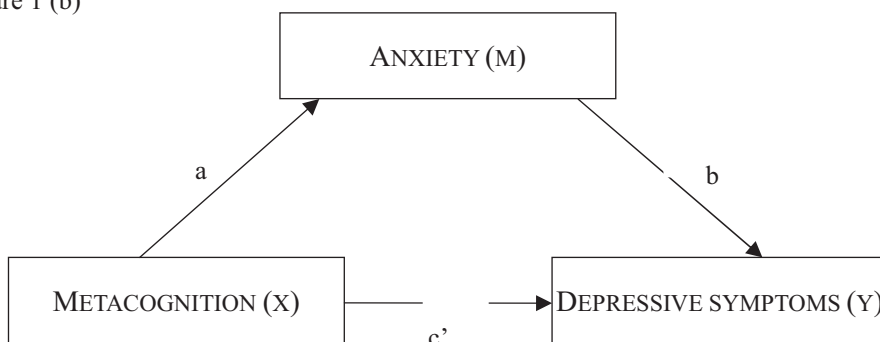
Figure 1 (a)

Figure 1 (b)

Figure 1. The model outlining the relation between metacognition and depressive symptoms (a) and the relation between metacognition and depression paths mediated by anxiety (b).

The mediation method (Hayes, Preacher, & Myers, 2011; Preacher & Hayes, 2004) rests on the assumption that there are direct effects of the X variable on the Y variable (the path from X to Y) and indirect effects where the X variable influences the M factor, which in turn affects the Y factor. We established 5,000 samples for the bootstrapping procedure to estimate coefficients for indirect, direct,

and total effects. The 95% bias-corrected and accelerated confidence intervals were then computed for each effect. We assumed that the mediation effect occurred when confidence intervals did not include zero values, thus showing that there was a significant indirect effect.

RESULTS

Demographic and psychological characteristics of the groups

First, because our sample included volunteers and students, we examined whether the two populations differed in terms of demographic and psychological variables. There were no significant differences between the groups of students and healthy volunteers regarding gender, $\chi^2(1, 208) = 2.65$, $p > .10$, or age, $U = 475.5$, $p > .30$. Neither group differed in the levels of MCQ factors (MCQ1: $U = 503$, $p > .40$; MCQ2: $U = 550.5$, $p > .70$; MCQ3: $U = 504$, $p > .40$; MCQ4: $U = 604$, $p > .90$; MCQ5: $U = 588.5$, $p > .90$). There were no significant differences between students and volunteers regarding the severity of anxiety ($U = 537$, $p > .60$) and depression ($U = 390.5$, $p > .10$).

Relationships between metacognitive beliefs, anxiety, and symptoms of depression

The correlation analysis results are presented in Table 1.

Table 1
Relations Between Metacognitive Beliefs, Anxiety, and Symptoms of Depression (N = 208)

	Metacognition					Anxiety	Depression
	MCQ1	MCQ2	MCQ3	MCQ4	MCQ5	STAI-T	BDI
MCQ1	–	.650***	.516***	.739***	.599***	.462***	.342***
MCQ2		–	.638***	.777***	.555***	.595***	.490***
MCQ3			–	.593***	.339**	.489***	.434***
MCQ4				–	.633***	.450***	.369***
MCQ5					–	.216**	.161*
STAI-T						–	.705***
BDI							–

Note. BDI – Beck's Depression Inventory; STAI-T – Trait Anxiety; MCQ1 – positive worry beliefs; MCQ2 – negative beliefs about uncontrollability of thoughts and danger; MCQ3 – beliefs about cognitive confidence – low cognitive confidence; MCQ4 – general negative beliefs (concerning superstition, punishment, and responsibility); MCQ5 – cognitive self-consciousness (a tendency to focus attention on the thought process); * $p < .05$; ** $p < .01$; *** $p < .001$.

We found the strongest relationship between MCQ2 and MCQ4. It also turned out that depressive symptoms were moderately and positively correlated with MCQ1, MCQ2, MCQ3, and MCQ4. The relation between depressive symptoms and MCQ5 was weak and positive. Furthermore, there were moderate and positive relations between anxiety and MCQ1, MCQ2, MCQ3, and MCQ4 as well as a positive and weak association between anxiety and MCQ5. The relationship between depression and anxiety was strong and positive.

Mediation analysis

First, we performed preliminary t-tests on independent and dependent variables to find out if they were influenced by the gender factor. There were no gender differences in metacognition, depression, and trait anxiety (see Table 2); therefore, we did not include the gender variable in the mediation model. In the next step, we examined the effects of age on the independent and dependent variables. To this end, we performed an analysis of correlations between all variables and the age factor. It turned out that there were no significant correlations between age, depression, metacognition, and trait anxiety (see Table 2); therefore we did not include the age variable in the model.

Table 2

Correlations Between Age, the Dependent and Independent Variables (Depression, Trait Anxiety, and Metacognition) and Sex Differences on the Dependent and Independent Variables

| Variables | | Age | | Gender | | | | | |
| | | $N = 208$ | | Male ($n = 47$) | | Female ($n = 161$) | | | |
		r-Pearson	p value	M	SD	M	SD	t	p value
Maladaptive Metacognition	MCQ1	-.061	$p > .30$	33.68	12.63	33.14	12.08	-0.269	$p > .70$
	MCQ2	.049	$p > .40$	33.08	10.06	33.84	12.50	0.379	$p > .70$
	MCQ3	.003	$p > .90$	19.77	6.06	19.24	6.96	-0.472	$p > .60$
	MCQ4	-.026	$p > .70$	24.06	7.38	24.22	7.92	0.119	$p > .90$
	MCQ5	-.036	$p > .60$	16.79	3.85	17.66	4.60	1.184	$p > .20$
Trait Anxiety	STAI	.000	$p > .90$	40.06	9.11	40.51	9.47	1.666	$p > .09$
Depression	BDI	-.046	$p > .50$	7.53	6.68	6.26	7.18	-1.083	$p > .20$

Note. MCQ1 – positive worry beliefs; MCQ2 – negative beliefs about uncontrollability of thoughts and danger; MCQ3 – beliefs about cognitive confidence – low cognitive confidence; MCQ4 – general negative beliefs (concerning superstition, punishment, and responsibility); BDI – Beck's Depression Inventory; * $p < .05$; ** $p < .01$; *** $p < .001$.

Table 3

Mediation Analysis. Path Coefficients and Standard Errors Testing the Significance of the Indirect Effect for the Relationship Between MCQ and the STAI-T Mediator as well as BDI as the Dependent Variable

Independent variable (X)	Mediator (M)	Dependent variable (Y)	Med. Schem.	Path coefficients	t/Z	Estimate	Bootstrap 95% CI	
							Lower	Upper
MCQ1		BDI	c	0.199 (0.038)	5.22***			
MCQ1	STAI-T		a	0.348 (0.047)	7.47***			
(MCQ1)	STAI-T	BDI	b	0.536 (0.043)	12.44***			
MCQ1	(STAI-T)	BDI	c'	0.012 (0.032)	0.37 n.s.	0.186 (0.04)	0.122	0.264
MCQ2		BDI	c	0.290 (0.03)	8.06***			
MCQ2	STAI-T		a	0.456 (0.04)	10.62***			
(MCQ2)	STAI-T	BDI	b	0.493 (0.05)	10.45***			
MCQ2	(STAI-T)	BDI	c'	0.065 (0.04)	1.79 n.s.	0.225 (0.04)	0.159	0.301
MCQ3		BDI	c	0.455 (0.06)	6.92***			
MCQ3	STAI-T		a	0.664 (0.08)	8.05***			
(MCQ3)	STAI-T	BDI	b	0.499 (0.04)	11.51***			
MCQ3	(STAI-T)	BDI	c'	0.123 (0.06)	2.09*	0.331 (0.06)	0.229	0.455
MCQ4		BDI	c	0.335 (0.06)	5.70***			
MCQ4	STAI-T		a	0.531 (0.07)	7.24***			
(MCQ4)	STAI-T	BDI	b	0.521 (0.04)	12.20***			
MCQ4	(STAI-T)	BDI	c'	0.059 (0.05)	1.18 n.s.	0.276 (0.05)	0.177	0.397
MCQ5		BDI	c	0.256 (0.11)	2.34*			
MCQ5	STAI-T		a	0.446 (0.14)	3.18**			
(MCQ5)	STAI-T	BDI	b	0.542 (0.04)	13.84***			
MCQ5	(STAI-T)	BDI	c'	0.014 (0.08)	0.17 n.s.	0.242 (0.09)	0.091	0.436

Note. MCQ1 – positive worry beliefs; MCQ2 – negative beliefs about uncontrollability of thoughts and danger; MCQ3 – beliefs about cognitive confidence – low cognitive confidence; MCQ4 – general negative beliefs (concerning superstition, punishment and responsibility); BDI – Beck's Depression Inventory; * $p < .05$; ** $p < .01$; *** $p < .001$.

Our analysis showed that all maladaptive metacognitive beliefs including the factors such as MCQ1, MCQ2, MCQ3, MCQ4, and MCQ5 were predictive of depressive symptoms in normal subjects. The trait anxiety variable met the criteria for the mediator variable in these relationships. The path coefficients and standard errors for the analyzed indirect effects are presented in Table 3. The obtained results clearly show that four of the metacognitive beliefs (MCQ1, MCQ2, MCQ4, and MCQ5) indirectly influence the occurrence of depressive symptoms. Trait anxiety mediated the relations between the severity of depressive symptoms and maladaptive metacognitive beliefs (see Table 3). Moreover, it turned out that MCQ3 affected the severity of depression both directly and indi-

rectly via trait anxiety. In particular, the tests for the presence of indirect effects indicated that the relations between dysfunctional metacognitive beliefs: MCQ1 (95% CI: 0.122 to 0.264), MCQ2 (95% CI: 0.159 to 0.301), MCQ3 (95% CI: 0.229 to 0.455), MCQ4 (95% CI: 0.177 to 0.397), and MCQ5 (95% CI: 0.091 to 0.436) and these verity of depressive symptoms were mediated by trait anxiety. We also observed a direct effect between metacognition and depression for MCQ3 ($t = 2.09$, $p < .05$).

DISCUSSION

The present study provides substantial evidence for the relationship between trait anxiety and faulty metacognition in the general population. Our findings indicate that the MCQ1, MCQ2, MCQ3, MCQ4, and MCQ5 variables influence the severity of prolonged anxiety. In addition, the mediation analysis shows that the effects of MCQ1, MCQ2, MCQ4 and MCQ5 on depression were fully mediated by trait anxiety, whereas MCQ3 influenced depressive symptoms both indirectly via trait anxiety and directly. Thus, our study offers a broader perspective on the psychopathology of both disorders and shows that metacognition has a considerable impact on the severity of depressive symptoms in individuals with a higher level of anxiety.

The present study also shows that metacognitive factors predictive of anxiety and depressive symptoms in a nonclinical sample may vary. As mentioned earlier, Spada and colleagues (2008) found, using a structural equation model, that MCQ2, MCQ3, MCQ4, and MCQ5 were significant predictors of depressive symptoms, but only MCQ2 predicted the severity of anxiety. However, these researchers employed the Hospital Anxiety and Depression Scale (HADS; Zigmond & Snaith, 1983) instead of the BDI and the STAI to measure anxiety and depression in a nonclinical sample. Gawęda and Kokoszka (2014) have recently employed the BDI and the STAI to measure depression and state anxiety in the general population and found that MCQ2, MCQ3, and MCQ4 are related to anxiety and depression. Such discrepancies between these results and our outcomes may be due to different methodological approaches to measuring depression and anxiety. State anxiety is generally believed to be related to a temporary condition of anxiety, while trait anxiety refers to the general and long-standing quality of anxiety (Spielberger et al., 1983). For instance, in the study by Gawęda and Kokoszka (2014), state anxiety was not related to MCQ1 and MCQ5, while our results show that these metacognitive factors may increase trait anxiety. This

means the MCQ1 and MCQ5 factors may have a unique impact on prolonged rather than momentary anxiety and therefore represent a significant source of psychological suffering in the anxiety population. Interestingly, Wells and Cartwright-Hatton (2004) also found that trait anxiety was positively related to MCQ2 and MCQ3 subscales, as well as to the MCQ1 factor. However, in our analysis, we found that the effect of MCQ1 on depressive symptoms was fully mediated by trait anxiety. These findings provide additional support for the view that particularly MCQ1 may lead to a sustained increase in anxiety and exacerbate depression.

Although research on dysfunctional metacognition in anxiety and depression are well known, our results seem to extend the cognitive view on the development of depression. Namely, our study is building up the theoretical perspective on the psychopathology of both disorders by showing that metacognition has a considerable impact on the severity of depressive symptoms via anxiety. In particular, we believe that anxiety may be part of the mediating pathological mechanism that links metacognition to the severity of depressive symptoms. To the best of our knowledge, this is the first study to show that trait anxiety is a mediator in the relationship between faulty metacognitive beliefs and depression.

Our results also indicate that anxiety is an important mediator between all metacognitive factors (MCQ1, MCQ2, MCQ3, MCQ4, and MCQ5) and the intensification of depression. In the proposed mediation model, we also tested the direct effect of metacognitive faulty beliefs on depression. Interestingly, we observed that only MCQ3 had a direct effect on depression without a mediating effect of anxiety. The obvious interpretation of such findings is that individuals who hold faulty metacognitive beliefs tend to experience more severe prolonged anxiety resulting in exacerbated depressive symptoms. It should be pointed out that MCQ3, which refers to reduced capacity for cognitive appraisal of the presence (or absence) of objective deficits (Papageorgiou & Wells, 2003), may have a unique impact on the severity of depressive symptoms, regardless of the level of anxiety. Experiencing low effectiveness of memory and thinking processes is likely to have a direct influence on negative emotions and difficulties in flexible problem solving, which may be crucial for effective coping (Wells, 2000). Moreover, low confidence in cognitive abilities may lead to low global self-esteem in depressive individuals and recurrent highly self-critical self-judgments, such as "I am useless," which increase and maintain the severity of depressive symptoms.

It is worth mentioning that, taken together, the previous MCQ outcomes and our results suggest that metacognition, especially negative beliefs about uncontrollability of thoughts and danger, constitute a more general cause of psychological suffering, not limited to depression or anxiety. For example, MCQ2 turned out to be the main predictor of psychosis (e.g., Gawęda, Cichoń, & Szczepanowski, 2015; Varese & Bentall, 2011). Moreover, these specific effects of metacognitive beliefs on depression via anxiety provide additional support for the hypothesis suggesting that anxiety and depression share common sources of psychopathology.

It should be also noted that our study has some methodological limitations. The main limitation is that our sample was relatively small, and therefore future studies should be conducted on larger samples. Secondly, our mediation analysis was correlational in nature, which obviously means that causal interpretations are precluded. For this reason, an alternative model should be established, with depressive symptoms as a possible mediator and trait anxiety as the dependent variable. Therefore, a future study should be carried out to verify the findings indicated in our model and to subsequently examine relationships between the varables in the reverse-causal model. Another concern is that our sample consisted mostly of female psychology students; therefore, generalizations should be made with caution. Finally, our sample is restricted to a nonclinical population, which is why inferences based on our study should be limited to the general population. Nevertheless, we are inclined to believe that our study also adequately applicable to explaining clinical cases of depression.

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