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The role of psychological inflexibility in Beck's cognitive model of depression in a sample of undergraduates

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Título: El papel de la inflexibilidad psicológica en el modelo cognitivo de la depresión de Beck en una muestra de universitarios.

Resumen: El modelo cognitivo de depresión de Beck propone que los esquemas depresógenos dan lugar a síntomas depresivos al incrementar la frecuencia de pensamientos automáticos negativos en respuesta a eventos vitales negativos. Nuestro objetivo fue evaluar un modelo serial de mediación moderada en el que la inflexibilidad psicológica, concepto central del modelo de psicopatología de la Terapia de Aceptación y Compromiso (ACT), media y modera la relación entre los esquemas depresógenos y la frecuencia de pensamientos automáticos negativos. Se utilizó un diseño transversal donde 210 estudiantes universitarios respondieron cuestionarios que evaluaban los constructos de interés. Los resultados apoyaron el modelo de mediación moderada propuesto. Tanto la inflexibilidad psicológica como los pensamientos automáticos negativos fueron mediadores significativos de la relación entre esquemas depresógenos y síntomas depresivos, y la inflexibilidad psicológica también medió el efecto de los esquemas depresógenos en los pensamientos automáticos negativos. Se concluye señalando que el papel de la inflexibilidad psicológica en el modelo cognitivo merece mayor atención.

Palabras clave: terapia cognitiva; terapia de aceptación y compromiso; inflexibilidad psicológica, evitación experiencial; esquemas depresógenos.

Abstract: Beck's cognitive model of depression proposes that depressogenic schemas have an effect on depressive symptoms by increasing the frequency of negative automatic thoughts in response to negative life events. We aimed to test a moderated, serial mediation model where psychological inflexibility, a core concept of the Acceptance and Commitment Therapy (ACT) model of psychopathology, both mediates and moderates the relationship between depressogenic schemas and the frequency of negative automatic thoughts. A cross-sectional design was used in which 210 undergraduates responded to questionnaires assessing the constructs of interest. Results supported the proposed moderated mediation model. Both psychological inflexibility and negative automatic thoughts were significant mediators of the relationship between depressogenic schemas and depressive symptoms, and psychological inflexibility also moderated the effect of depressogenic schemas on negative automatic thoughts. We conclude that the role of psychological inflexibility in the cognitive model of depression deserves more attention.

Key words: cognitive therapy; acceptance and commitment therapy; psychological inflexibility; experiential avoidance; depressogenic schemas.

Introduction

Cognitive therapy (CT; Beck, Rush, Shaw, & Emery, 1979) is based on a diathesis stress model of depression that proposes dysfunctional schemas as the main cognitive vulnerability to depression. These depressogenic schemas contain extremely inflexible beliefs mainly focused on the need to be perfect and have others' approval in order to be happy (De Graaf, Roelofs, & Huibers, 2009). Depressogenic schemas are thought to be shaped by early negative life experiences, to be relatively stable, and to remain latent until the individual encounters negative events that activate them (Beck et al., 1979). In this case, depressogenic schemas would skew the information processing system, leading to the production of negative automatic thoughts that constitute the cognitive triad (i.e., negative views about oneself, the world, and the future). These negative automatic thoughts are unstable and state-dependent and are considered to be the most proximal cause of depressive symptoms (Kwon & Oei, 1994).

The CT model of depression has been tested in a number of cross-sectional and longitudinal studies (see more general reviews on the role of dysfunctional schemas in Beck, 2008; Jacobs, Reinecke, Gollan, & Kane, 2008; Scher, Ingram, & Segal, 2005). Although not always (e.g., Barnett & Gotlib, 1990), most studies have supported the mediational

role of negative automatic thoughts in the relationship between dysfunctional schemas and depressive symptoms (e.g., Cui, Shi, & Oei, 2013; Estévez & Calvete, 2009; Kitamura & Tanaka, 2012; Kwon & Oei, 1992). However, it remains relatively uninvestigated whether dysfunctional schemas lead directly to increases in the frequency of negative automatic thoughts in response to negative life events, or whether there are some psychological constructs that mediate or moderate this effect (for alternative mediators and moderators between depressogenic schemas and depression, see Ruiz & Odriozola-González, 2015; Şenormanci et al., 2014; Vanderhasselt et al., 2014).

In the current study, we analyze the role of psychological inflexibility, a key concept of the Acceptance and Commitment Therapy (ACT; Hayes, Strosahl, & Wilson, 1999) model of psychopathology, in the CT model of depression. Recent research has shown that psychological inflexibility is involved in a wide range of psychological disorders (Ruiz, 2010). Unlike the specific inflexible beliefs that characterize depressogenic schemas, psychological inflexibility is a general construct that describes the dominance of ongoing private experiences (e.g., thoughts, feelings, memories, etc.) over chosen values and contingencies in guiding action (Bond et al., 2011). Psychological inflexibility is usually described in terms of six interrelated middle-level processes (e.g., Hayes et al., 2007) that will be condensed here in the following three: cognitive fusion, experiential avoidance, and lack of values clarity.

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Cognitive fusion refers to a verbal process by which individuals become attached to ongoing private experiences and fail to discriminate that they are only experiences that do not necessarily have to guide behavior. A typical example in depression is fusing with negative thoughts and feelings. When the person does not have the skills to distance herself from private experiences, she often gets entangled in their content, losing contact with the present moment contingencies and engaging in some form of experiential avoidance (e.g., Luciano, Valdivia-Salas, & Ruiz, 2012). Experiential avoidance is a pattern of verbal regulation based on deliberate efforts to either avoid or escape from discomfiting private experiences, or to retain pleasant ones, even when doing so leads to actions that are inconsistent with one's values and goals (Hayes, Wilson, Gifford, Follette, & Strosahl, 1996). Examples of experiential avoidance strategies in depression are using rumination as a way to realize why the person is feeling sad, avoiding activities that lead to negative thoughts and feelings, etc. When rigidly applied, experiential avoidance has a paradoxical effect because, although it often works in the short term to reduce discomfort and increase the feeling that one is doing what one is supposed to do, it usually expands unwanted private experiences in the long term and further prevents the person from moving toward valued directions. Lastly, in the ACT context, values are seen as verbally constructed, freely chosen, positive reinforcers that promote patterns of behavior that are meaningful and fulfilling (e.g., Hayes et al., 1999; Wilson & DuFrene, 2009; Wilson & Luciano, 2002). Lack of values clarity prevents the person from behaving towards long-term abstract consequences, and makes acting towards short-term contingencies more probable, fusing with unwanted private experiences and involving in a pattern of destructive experiential avoidance. A typical example of lack of values clarity in depression is the person feeling that she does not know what she wants in her life.

In this study, we suggest two relevant effects of psychological inflexibility in the relationship between depressogenic schemas, frequency of negative automatic thoughts, and depressive symptoms. First, depressogenic schemas would lead to increases in negative automatic thoughts by increasing levels of psychological inflexibility (i.e., mediator variable) because they promote cognitive fusion with social rejection, thus making more difficult the construction of freely chosen values, and leading to experiential avoidance strategies (e.g., rumination) to reduce discomfort. In this way, normal appearance of automatic negative thoughts in response to negative life events can be extended and perpetuated because of cognitive fusion and the engagement in experiential avoidance strategies. Second, we suggest that depressogenic schemas have an effect on the frequency of negative automatic thoughts as a function of the individual's level of psychological inflexibility (moderator variable). For instance, individuals with depressogenic schemas but with a history of interactions that have shaped patterns of psychological flexibility would not necessarily present an elevated frequency of negative thoughts in response to negative life events because they

would not get entangled in those thoughts and, therefore, would not use experiential avoidance as a way of reducing them.

The first suggestion has been partially tested in two recent studies (Cristea, Montgomery, Szamoskozi, & David, 2013; Ruiz & Odriozola-González, 2015); however, to our best knowledge, the second suggestion has never been tested. With regard to the first hypothesis, Cristea et al. (2013) found in a cross-sectional study that psychological inflexibility mediated the relationship between dysfunctional schemas and emotional distress in a sample of undergraduates (Study 1). In Study 2, with a small sample of patients diagnosed with generalized anxiety disorder (GAD), they found that the effect of dysfunctional schemas on emotional distress was mediated by psychological inflexibility, whose effect was further extended by increasing the frequency of negative automatic thoughts, which were the most proximal cause of emotional distress. In a longitudinal study across 9 months, Ruiz and Odriozola-González (2015) found that psychological inflexibility mediated the effect of depressogenic schemas on depressive symptoms.

According to the previous suggestions, the current study analyzed an ACT version of the CT model of depression. Specifically, a moderated, serial mediation model was tested in which psychological inflexibility acts both as a mediator and moderator of the relationship between depressogenic schemas and the frequency of negative automatic thoughts (see Figure 1).

Method

Participants

The sample consisted of 210 undergraduates (age range 18-45, $M = 20.46$, $SD = 3.45$) from a university from the north of Spain: 64% were studying Psychology, 15% Speech Therapy, and 21% Teaching. Eighty-four percent were women. Nineteen percent had received psychological or psychiatric treatment at some time, but only 4% were currently in treatment. Also, 4% of participants were taking some psychotropic medication.

Instruments

Acceptance and Action Questionnaire – II (AAQ-II; Bond et al., 2011). The AAQ-II is a general measure of psychological inflexibility. It consists of 7 items that are rated on a 7-point Likert-type scale (7 = *always true*; 1 = *never true*). The items reflect unwillingness to experience unwanted emotions and thoughts (e.g., “I am afraid of my feelings,” “I worry about not being able to control my worries and feelings”) and the inability to be in the present moment and behave according to value-directed actions when experiencing psychological events that could undermine them (e.g., “My painful experiences and memories make it difficult for me to live a life that I would value,” “My painful memories prevent me from hav-

ing a fulfilling life"). In this study, we used the Spanish version by Ruiz, Langer, Luciano, Cangas, and Beltrán (2013), which has shown a one-factor solution, good internal consistency (mean $\alpha = .88$), and discriminant, convergent, and divergent validity.

Dysfunctional Attitude Scale (DAS; Weissman & Beck, 1978). The DAS is a measure designed to evaluate depressogenic schemas that would constitute a main underlying factor of depression according to Beck's CT (Beck et al., 1979). It comprises 40 items that are rated on a 7-point Likert-type scale (7 = *fully agree*, 1 = *fully disagree*) mainly concerning perfectionism/performance evaluation (e.g., "It is difficult to be happy unless one is good looking, intelligent, rich, and creative," "If I do not do as well as other people, it means I am an inferior human being") and dependency ("My value as a person depends greatly on what others think of me"). In the present study, we used the Spanish version by Sanz and Vázquez (1993), which showed good psychometric properties.

Automatic Thoughts Questionnaire (ATQ; Hollon & Kendall, 1980). The ATQ is a measure of the frequency of negative automatic thoughts experienced during the past week. It consists of 30 negative automatic thoughts that are rated on a 5-point Likert-type scale (5 = *all the time*, 1 = *not at all*) and is commonly used as a process measure in Beck's CT. Examples of items are "I'm no good," "Nothing feels good anymore," "What's wrong with me?" and "I'm worthless." In this study, we used the Spanish version by Cano-García and Rodríguez-Franco (2002), which showed good internal consistency and convergent validity.

Beck Depression Inventory – II (BDI-II; Beck, Steer, & Brown, 1996). The BDI-II is a widely used 21-item self-report measure of depressive symptoms in adolescents and adults. It was specifically designed to cover all diagnostic criteria of depressive disorders proposed by the DSM-IV (1994). Participants are asked to rate how they have felt during the past two weeks on a scale ranging from 0 (*not present*) to 3 (*severe*). The cutoffs usually used are: 0-13 (minimal depression), 14-19 (mild depression), 20-28 (moderate depression), and 29-63 (severe depression). In the present study, we used a Spanish version by Sanz, Perdigón, and Vázquez (2003), which presented adequate psychometric properties as well as convergent, discriminant, and predictive validity.

Procedure

Participants were recruited from undergraduate Psychology, Speech Therapy, and Teaching students from a university in the north of Spain. The study was presented in participants' classes. Students were invited to participate in a research that aimed to investigate some variables involved in the development of depression. Individuals who provided informed consent were given a questionnaire packet including the self-report instruments in the order listed above with two additional, non-validated questionnaires about cognitive fusion and self-as-context that were presented at the end and

have no relevance for the current study. Students did not receive any compensation for their participation. Upon completion of the study, participants were debriefed about the aims of the study and thanked for their participation.

Data analysis

All data analyses were conducted with SPSS 22[®]. After computing descriptive data, Cronbach's alphas, and zero-order relationships between all constructs, mediation and moderator analyses were conducted. Figure 1 shows the conceptual model tested in the current study. As in Cristea et al. (2013), a multiple-step mediation analysis is tested where the effect of depressogenic schemas on depressive symptoms is mediated by psychological inflexibility, whose effect is further extended by increasing the frequency of negative automatic thoughts, which is the most proximal cause of depressive symptoms. Additionally, the model also includes psychological inflexibility as a moderator of the relationship between dysfunctional schemas and the frequency of negative automatic thoughts (see Figure 1).

Mediation and moderation analyses were conducted with the non-parametric bootstrapping procedure to estimate direct and indirect effects using the PROCESS package (Hayes, 2013). As this specific conceptual model is not covered in the PROCESS, we followed Hayes' suggestion and first conducted the multiple-step mediation analysis of the effect of depressogenic schemas on depressive symptoms, with psychological inflexibility and negative automatic thoughts as mediators 1 and 2, respectively (Model 6 in PROCESS). Second, a simple moderation analysis was conducted to analyze whether psychological inflexibility would moderate the relationship between depressogenic schemas and the frequency of negative automatic thoughts (Model 1 in PROCESS).

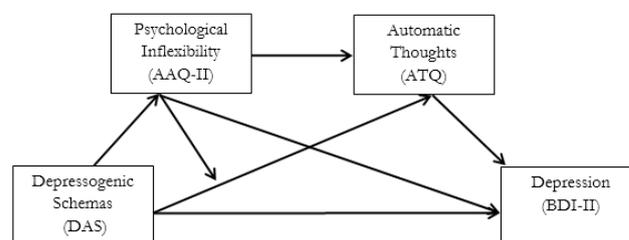


Figure 1. The moderated mediation model tested in which psychological inflexibility acts both as mediator and moderator of the relationship between depressogenic schemas and negative automatic thoughts.

It is worth mentioning that some controversy exists with regard to the possibility that a variable could simultaneously be a mediator and a moderator of the same relationship (Kramer, Kiernan, Essex, & Kupfer, 2008), which seems to have originated because of different existing definitions of moderation (Hayes, 2013). However, prominent experts in this topic (e.g., Kenny, 2013) state that it is possible for a variable to be both a mediator and a moderator, and suggest this

as a case of moderated mediation (Preacher, Rucker, & Hayes, 2007).

Indirect and conditional effects were deemed significant if the 95% bias corrected (BC) bootstrap confidence intervals (CI) for those effects based on 20,000 bootstrapped samples did not include zero. The effect sizes of mediation were computed using the completely standardized indirect effect (ab_{cs} ; Preacher & Hayes, 2008; Preacher & Kelley, 2011) and providing 95% BC bootstrap confidence intervals. This effect size measure relies on the product of betas for paths a and b , and can be interpreted as the expected change in the dependent variable (e.g., BDI-II scores) per unit change in the predicting variables (e.g., DAS) that occurs indirectly through the mediator (e.g., ATQ). Following Kenny's (2011) suggestion based on Cohen (1988), small, medium, and large effect sizes would be, respectively, .01, .09, and .25. Lastly, the Johnson-Neyman technique (Hayes & Matthes, 2009) was used to derive the value of the moderator (i.e., AAQ-II scores) at which the effect of the predictor variable (i.e., DAS scores) transitions between statistically significant and nonsignificant at an alpha level of .05.

Results

Descriptive data, internal consistencies and zero-order correlations

Table 1 shows the descriptive data, internal consistencies obtained for each scale, and the correlations between measures in the current study. Participants' mean scores on the BDI-II were slightly higher than in previous studies (Sanz et al., 2003). Specifically, 24% of the sample showed at least mild levels of depression, 7.3% showed at least moderate levels, and 1% showed severe levels. Participants' mean scores on the remaining measures did not differ significantly from scores obtained with nonclinical populations in other studies (e.g., Mera-Rosales, Hernández-Pozo, Gómez-Reséndez, Ramírez-Guerrero, & Mata-Mendoza, 2012; Ruiz et al., 2013; Sanz & Vázquez, 1993). The internal consistencies of the scales ranged from .86 (BDI-II) to .95 (ATQ) and were similar to previous evidence using these instruments. As expected, all constructs were strongly correlated.

Table 1. Descriptive Data, Internal Consistencies, and Correlations

	2	3	4	<i>M</i>	<i>SD</i>	<i>a</i>
1 Beck Depression Inventory – II (BDI-II)	.47*	.70*	.58*	9.6	7.0	.86
2 Dysfunctional Attitudes Scale (DAS)		.56*	.59*	113.4	25.9	.89
3 Automatic Thoughts Questionnaire (ATQ)			.65*	51.0	18.3	.95
4 Acceptance and Action Questionnaire – II (AAQ-II)				20.2	7.7	.88

* $p < .001$.

Testing an ACT version of the CT model of depression. A multiple-step mediation analysis of the relationship

between depressogenic schemas and depressive symptoms was conducted with psychological inflexibility as Mediator 1 and frequency of negative automatic thoughts as Mediator 2 (see Figure 1). Table 2 shows the results of the models tested in this mediation analysis. In the first model, depressogenic schemas (DAS) were a significant predictor of Mediator 1 (psychological inflexibility). The second model shows that both depressogenic schemas and psychological inflexibility were significant predictors of Mediator 2 (frequency of negative automatic thoughts). According to the third model, the total effect of depressogenic schemas on depressive symptoms (BDI-II) was significant ($TE = .126$, $SE = .017$, $p < .001$). Lastly, the fourth model shows that only negative automatic thoughts were a significant predictor of depressive symptoms when all three variables were included in the regression analysis. With respect to the previous model, the coefficient of depressogenic schemas decreased from .126 to .012.

Table 2. Results from the Regression Analyses Examining the Serial Multiple Mediator Model of the Effect of Depressogenic Schemas (X) on Depressive Symptoms (Y) through Psychological Inflexibility (M₁) and Negative Automatic Thoughts (M₂).

	Coefficient	<i>SE</i>	<i>P</i>
MODEL M₁ (AAQ-II)			
X (DAS)	.173	.017	< .001
Constant	.758	1.993	.704
$R^2 = .349$			
$F = 27.136$, $p < .001$			
MODEL M₂ (ATQ)			
X (DAS)	.204	.044	< .001
M ₁ (AAQ-II)	1.215	.150	< .001
Constant	2.997	4.131	.469
$R^2 = .516$			
$F = 101.623$, $p < .001$			
MODEL Y (BDI-II) TOTAL EFFECT			
X (DAS)	.126	.017	< .001
Constant	-4.627	1.999	.022
$R^2 = .22$			
$F = 54.155$, $p < .001$			
MODEL Y (BDI-II)			
X (DAS) (Direct effect)	.012	.018	.494
M ₁ (AAQ-II)	.133	.068	.051
M ₂ (ATQ)	.219	.028	< .001
Constant	-5.585	1.609	.006
$R^2 = .502$			
$F = 63.786$, $p < .001$			

Note. AAQ-II = Acceptance and Action Questionnaire – II; ATQ: Automatic Thoughts Questionnaire; BDI-II = Beck Depression Inventory – II; DAS = Dysfunctional Attitude Scale.

Table 3 presents the overall and specific indirect effects (IE). The results showed significant mediation, with a total IE of .114 ($SE = .016$, 95% BC CI of .085 to .146) and very large effect size ($ab_{cs} = .423$, 95% BC CI of .318 to .547). All specific indirect effects were also significant (IE1: $TE = .023$, $SE = .011$, 95% BC CI of .003 to .045, $ab_{cs} = .086$; IE2: $TE = .046$, $SE = .009$, 95% BC CI of .030 to .066, $ab_{cs} = .171$; IE3: $TE = .045$, $SE = .011$, 95% BC CI of .025 to .070, ab_{cs}

= .166). Indirect effects did not significantly differ in magnitude (see Table 3).

Table 3. Indirect Effects of the Serial Multiple Mediator Model of the Effect of Depressogenic Schemas (X) on Depressive Symptoms (Y) through Psychological Inflexibility (M₁) and Negative Automatic Thoughts (M₂)

	Coefficient	SE	Bootstrapping BC 95% CI	
			Lower	Upper
Overall indirect effect	.114	.016	.085	.146
IE1: DAS=>AAQ-II=>BDI-II	.023	.011	.003	.045
IE2: DAS=>AAQ-II=>ATQ=>BDI-II	.046	.009	.030	.066
IE3: DAS=>ATQ=>BDI-II	.045	.011	.025	.070
IE1 - IE2	-.023	.015	-.056	.003
IE1 - IE3	-.022	.018	-.057	.012
IE2 - IE3	.001	.014	-.026	.030

Note: AAQ-II = Acceptance and Action Questionnaire – II; ATQ: Automatic Thoughts Questionnaire; BDI-II = Beck Depression Inventory – II; DAS = Dysfunctional Attitude Scale; IE = Indirect effect.

Table 4. Results of a Regression Analysis Examining the Moderation of the Effect of Depressogenic Schemas (DAS) on the Frequency of Automatic Negative Thoughts (ATQ) by Psychological Inflexibility (AAQ-II) and the Conditional Effect at Values of Psychological Inflexibility Based on the Johnson-Neyman Technique.

Antecedent	Coefficient	SE	p
X (DAS)	-.102	.095	.288
M (AAQ-II)	-.182	.403	.652
X x M	.012	.003	<.001
Constant	38.376	10.177	<.001

R² = .498
F = 63.048, p < .001

Johnson-Neyman Technique			
AAQ-II scores	Coefficient	SE	T
7.00	-.021	.076	-.270
8.95	.002	.071	.028
10.9	.025	.067	.369
12.85	.047	.062	.759
14.80	.070	.058	1.203
16.75	.092	.054	1.701
17.74	.104	.052	1.973*
18.70	.115	.051	2.249*
20.65	.138	.049	2.833**
22.60	.160	.047	3.430***
24.55	.183	.046	4.004***
26.50	.205	.045	4.519***
28.45	.228	.046	4.944***
30.40	.251	.048	5.263***
32.35	.273	.050	5.478***
34.30	.296	.053	5.604***
36.25	.318	.056	5.660***
38.20	.341	.060	5.665***
40.15	.365	.065	5.637***
42.10	.386	.069	5.590***
44.05	.409	.074	5.530***
46.00	.431	.079	5.457***

Note. AAQ-II: Acceptance and Action Questionnaire – II; DAS: Dysfunctional Attitude Scale.

*p < .05. **p < .01. ***p < .001.

Table 4 shows that moderation analysis revealed that the effect of depressogenic schemas on the frequency of negative automatic thoughts was a function of the levels of psychological inflexibility (interaction coefficient: Depressogenic Schemas x Psychological Inflexibility = .012, SE = .003, t = 3.587, p < .001). Specifically, as also shown in Table 4, the Johnson-Neyman technique indicated that the conditional effect of depressogenic schemas on the frequency of negative automatic thoughts transitioned in significance at an AAQ-II score of 17.738 (TE = .104, SE = .053, t = 1.973, p = .05, 95% BC CI of .00 to .208), which was the 42nd percentile of the distribution in our sample. The relationship between depressogenic schemas and frequency of negative automatic thoughts was significant at AAQ-II scores above this 42nd percentile and nonsignificant at AAQ-II scores below this threshold.

Discussion

The cognitive model of depression (Beck et al., 1979) suggests that depressogenic schemas are the main cognitive vulnerability to develop this disorder. Depressogenic schemas are thought to be shaped by early negative life experiences and to remain latent until the individual encounters negative events that activate them. Once they are activated, depressogenic schemas are thought to skew the information processing system, leading to the production of a high frequency of negative automatic thoughts, which are seen as the most proximal cause of depressive symptoms. In other words, the cognitive model of depression suggests that the relationship between depressogenic schemas and depressive symptoms is mediated by negative automatic thoughts, with most studies supporting this hypothesis (e.g., Cui et al., 2013; Estévez & Calvete, 2009; Kitamura & Tanaka, 2012; Kwon & Oei, 1992). Previous research related to ACT (Cristea et al., 2013; Ruiz & Odriozola-González, 2015) has shown that psychological inflexibility might play a relevant role in the CT model of depression. Trying to provide a further step in this direction, the current study tested a moderated mediation model in which psychological inflexibility both mediated and moderated the relationship between depressogenic schemas and the frequency of negative automatic thoughts.

The results of this study provided support to the moderated mediation model tested. The multiple-step mediation analysis conducted suggested that the effect of depressogenic schemas on depressive symptoms was mediated by psychological inflexibility and the frequency of negative automatic thoughts. Specifically, psychological inflexibility acted as a mediator in the effect of depressogenic schemas on the frequency of negative automatic thoughts and, in turn, psychological inflexibility seemed to have an effect on depressive symptoms by increasing the frequency of negative automatic thoughts. The results also confirmed the hypothesis concerning the moderating role of psychological inflexibility. Specifically, depressogenic schemas predicted the frequency of negative automatic thoughts as a function of the levels of psy-

chological inflexibility: the higher the levels of psychological inflexibility, the greater were the effects of depressogenic schemas on the frequency of negative automatic thoughts. Indeed, results of the Johnson-Neyman technique indicated that depressogenic schemas did not significantly predict the frequency of negative automatic thoughts when levels of psychological inflexibility fell below the 42nd percentile in our sample.

Some limitations of the current study are worth mentioning. Firstly, as all data were obtained using self-report measures, relationships among variables might be artificially inflated. Secondly, as the sample was made up of nonclinical participants, most of them young women, generalizability of the current findings may be limited. Thirdly, the questionnaires were applied in a fixed order, which could have influenced participants' responses in a given direction. Fourthly, and more important, the cross-sectional design used precludes determining causal relationships among variables, as such relationships cannot be assumed without establishing temporal precedence. According to the above-mentioned limitations, future studies might explore whether the current findings are confirmed in a longitudinal design with both subclinical and clinical participants and using additional measures (e.g., behavioral measures).

According to the results of the current study, depressogenic schemas seem to be dangerous to the extent that they contribute to elevating levels of psychological inflexibility. However, depressogenic schemas might not be harmful in

individuals with high levels of psychological flexibility because, although they probably experience automatic negative thoughts in response to negative life events, they would not get fused with those thoughts and would not use experiential avoidance as a way of dealing with them. If further study replicates and extends the present findings, some practical implications could be derived. The most important implication is that promoting psychological flexibility seems to be the main objective in the prevention and treatment of depression. This is good news because empirical evidence shows that psychological flexibility can be promoted in few sessions (Ruiz, 2010), whereas changing depressogenic schemas is thought to take time (Beck et al., 1979).

In conclusion, the results of this study are relevant both to the cognitive and the ACT models of depression. For the cognitive model, the results are partly supportive because the frequency of negative automatic thoughts mediated the relationship between depressogenic schemas and depressive symptoms. However, the cognitive model would need to explore how to accommodate the finding that psychological inflexibility seems to mediate and moderate the effect of depressogenic schemas on increasing the frequency of negative automatic thoughts. For the ACT model, these results are very coherent because they support the idea that psychological inflexibility might be central in the etiology of depression and that promoting psychological flexibility might be the main aim of the psychological treatment of this disorder.

References

- Barnett, P. A., & Gotlib, I. H. (1990). Cognitive vulnerability to depressive symptoms among men and women. *Cognitive Therapy and Research, 14*, 47-61.
- Beck, A. T. (2008). The evolution of the cognitive model of depression and its neurobiological correlates. *American Journal of Psychiatry, 165*, 969-977.
- Beck, A.T., Rush, A.J., Shaw, B.F., & Emery, G. (1979). *Cognitive therapy of depression*. New York: Guilford.
- Beck, A. T., Steer, R. A., & Brown, G. K. (1996). *Manual for the Beck Depression Inventory-II*. San Antonio, TX: The Psychological Corporation.
- Bond, F. W., Hayes, S. C., Baer, R. A., Carpenter, K. M., Guenole, N., Orcutt, H. K., . . . Zettle, R. D. (2011). Preliminary psychometric properties of the Acceptance and Action Questionnaire – II: A revised measure of psychological inflexibility and experiential avoidance. *Behavior Therapy, 42*, 676-688.
- Cano-García, F. J., & Rodríguez-Franco, L. (2002). Evaluación del lenguaje interno ansiógeno y depresógeno en la experiencia de dolor crónico [Assessment of anxious and depressive self-talk in chronic pain experience]. *Apuntes de Psicología, 20*, 329-346.
- Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd edition). Hillsdale, NJ: Erlbaum.
- Cristea, I. A., Montgomery, G. H., Szamoskozi, S., & David, D. (2013). Key constructs in "classical" and "new wave" cognitive behavioral psychotherapies: Relationships among each other and with emotional distress. *Journal of Clinical Psychology, 69*, 584-599.
- Cui, L., Shi, G., & Oei, T. P. S. (2013). A study of cognitive vulnerability-stress model of depressive symptoms among Chinese adolescents. *Stress and Health, 29*, 383-391.
- De Graaf, L. E., Roelofs, J., & Huibers, M. J. H. (2009). Measuring dysfunctional attitudes in the general population: The Dysfunctional Attitude Scale (form A) Revised. *Cognitive Therapy and Research, 33*, 345-355.
- Estévez, A., & Calvete, E. (2009). Mediación a través de pensamientos automáticos de la relación entre esquemas y síntomas de depresión [Mediation through automatic thoughts of the relationship between schemas and depressive symptoms]. *Anales de Psicología, 25*, 27-35.
- Hayes, A. F. (2013). *Introduction to mediation, moderation, and conditional process analysis. A regression-based approach*. NY: Guilford Press.
- Hayes, A. F., & Matthes, J. (2009). Computational procedures for probing interactions in OLS and logistic regression: SPSS and SAS implementations. *Behavior Research Methods, 41*, 924-936.
- Hayes, S. C., Masuda, A., Shenk, C., Yadavaia, J. E., Boulanger, J., Vilardaga, R., . . . Hildebrandt, M. J. (2007). Applied extensions of behavior principles: Applied behavioral concepts and behavioral theories. In D. W. Woods & J. W. Kanter (Eds.), *Understanding behavior disorders. A contemporary behavioral perspective* (pp. 47-80). Reno, NV: Context Press.
- Hayes, S. C., Strosahl, K. D., & Wilson, K. G. (1999). *Acceptance and Commitment Therapy. An experiential approach to behavior change*. New York: Guilford.
- Hayes, S. C., Wilson, K. G., Gifford, E. V., Follette, V. M., & Strosahl, K. D. (1996). Experiential avoidance and behavioral disorders: A functional dimensional approach to diagnosis and treatment. *Journal of Consulting and Clinical Psychology, 64*, 1152-1168.
- Hollon, S. D., & Kendall, P. C. (1980). Cognitive self-statements in depression: Development of an automatic thoughts questionnaire. *Cognitive Therapy and Research, 4*, 383-395.
- Jacobs, R. H., Reinecke, M. A., Gollan, J. K., & Kane, P. (2008). Empirical evidence of cognitive vulnerability for depression among children and adolescents: A cognitive science and developmental perspective. *Clinical Psychology Review, 28*, 759-782.
- Kenny, D. A. (2011). Mediation (August, 2011). Retrieved September 5, 2011 at <http://davidakenny.net/cm/mediate.htm>

- Kenny, D. A. (2013). Moderation (May, 2013). Retrieved at <http://davidakenny.net/cm/moderation.htm>
- Kitamura, T., & Tanaka, N. (2012). Contribution of perceived rearing to depression: The role of cognitive patterns as a mediator. *The Open Psychology Journal*, 5, 38-43.
- Kramer, H. C., Kiernan, M., Essex, M., & Kupfer, D. J. (2008). How and why criteria defining moderators and mediators differ between the Baron & Kenny and MacArthur approaches. *Health Psychology*, 27, S101-108.
- Kwon, S. M., & Oei, T. P. S. (1992). Differential causal roles of dysfunctional attitudes and automatic thoughts in depression. *Cognitive Therapy and Research*, 16, 309-328.
- Kwon S. M., & Oei, T. P. S. (1994). The roles of two levels of cognitions in the development, maintenance and treatment of depression. *Clinical Psychology Review*, 14, 331-358.
- Luciano, C., Valdivia-Salas, S., & Ruiz, F. J. (2012). The self as the context for rule-governed behavior. In L. McHugh, & I. Stewart (Eds.), *The self and perspective taking: Research and applications* (pp. 143-160). Oakland, CA: Context Press.
- Mera-Rosales, A., Hernández-Pozo, M. R., Gómez-Reséndez, J. L., Ramírez-Guerrero, N., & Mata-Mendoza, M. A. (2012). Características psicométricas del Cuestionario de Pensamientos Automáticos Negativos (ATQ-30) en población mexicana [Psychometric properties of the Negative Automatic Thoughts Questionnaire (ATQ-30) in Mexican population]. *Journal of Behavior, Health & Social Issues*, 3, 61-75.
- Preacher, K. J., & Hayes, A. F. (2008). Contemporary approaches to assessing mediation in communication research. In A. F. Hayes, M. D. Slater, & L. B. Snyder (Eds.), *The Sage sourcebook of advanced data analysis methods for communication research* (pp. 13-54). Thousand Oaks, CA: Sage.
- Preacher, K. J., & Kelley, K. (2011). Effect size measures for mediation models: Quantitative strategies for communicating indirect effects. *Psychological Methods*, 16, 93-115.
- Preacher, K. J., Rucker, D. D., & Hayes, A. F. (2007). Addressing moderated mediation hypothesis: Theory, methods, and prescriptions. *Multivariate Behavioral Research*, 42, 185-227.
- Ruiz, F. J. (2010). A review of acceptance and commitment therapy (ACT) empirical evidence: Correlational, experimental psychopathology, component and outcome studies. *International Journal of Psychology and Psychological Therapy*, 10, 125-162.
- Ruiz, F. J., Langer, A. I., Luciano, C., Cangas, A. J., & Beltrán, I. (2013). Measuring experiential avoidance and psychological inflexibility: The Spanish translation of the Acceptance and Action Questionnaire. *Psicothema*, 25, 123-129.
- Ruiz, F. J., & Odriozola-González, P. (2015). Comparing the cognitive, metacognitive, and acceptance and commitment therapy models of depression: A longitudinal study survey. *Spanish Journal of Psychology*, 18, e39, 1-9.
- Sanz, J., Perdigón, A. L., & Vázquez, C. (2003). Adaptación española del Inventario para la Depresión de Beck-II (BDI-II). Propiedades psicométricas en población general. [The Spanish adaptation of Beck's Depression Inventory- II (BDI-II): Psychometric properties in the general population]. *Clínica y Salud*, 14, 249-280.
- Sanz, J., & Vázquez, C. (1993). Adaptación española de la Escala de Actitudes Disfuncionales (DAS) de Weissman and Beck: Propiedades psicométricas y clínicas [Weissman and Beck's Dysfunctional Attitudes Scale Spanish adaptation: Psychometric and clinical properties]. *Análisis y Modificación de Conducta*, 19, 705-750.
- Scher, C. D., Ingram, R. E., & Segal, Z. V. (2005). Cognitive reactivity and vulnerability: Empirical evaluation of construct activation and cognitive diatheses in unipolar depression. *Clinical Psychology Review*, 25, 487-510.
- Şenormancı, Ö., Yılmaz, A. E., Saraçlı, Ö., Atasoy, N., Şenormancı, G., & Atik, L. (2014). The mediator role of ruminative thinking style in the relationship between dysfunctional attitudes and depression. *Comprehensive Psychiatry*, 55, 1556-1560.
- Vanderhasselt, M. A., Koster, E. H. W., Onraedt, T., Bruyneel, L., Goubert, L., & De Raedt, R. (2014). Adaptive cognitive emotion regulation moderates the relationship between dysfunctional attitudes and depressive symptoms during a stressful life period: A prospective study. *Journal of Behavior Therapy and Experimental Psychiatry*, 45, 291-296.
- Weissmann, A., & Beck, A. T. (1978, November). Development and validation of the Dysfunctional Attitude Scale: A preliminary investigation. Paper presented at the *Annual Meeting of the American Educational Research Association*, Toronto, Canada.
- Wilson, K. G., & DuFrene, T. (2009). *Mindfulness for two: An Acceptance and Commitment Therapy approach to mindfulness in psychotherapy*. Oakland, CA: New Harbinger.
- Wilson, K. G., & Luciano, M. C. (2002). *Terapia de aceptación y compromiso (ACT). Un tratamiento conductual orientado a los valores* [Acceptance and commitment therapy (ACT). A behavioral treatment oriented to personal values]. Madrid: Pirámide.

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