

# Cognitive Control and Anxiety Disorders: Metacognitive Beliefs and Strategies of Control Thought in GAD and OCD

## Control Cognitivo en Trastornos de Ansiedad: Creencias y Estrategias Metacognitivas

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**Abstract.** In the present paper the relevance that cognitive control processes may have in anxiety disorders such as GAD and OCD is assumed. It is pretended to identify the metacognitive beliefs deriving from S-REF model by Wells and Mathews (1996; Wells, 2000) specially in GAD and TOC, and explore the effect that those beliefs may have when using cognitive control strategies. A sample of 75 participants, 24 of them diagnosed with GAD or TOC and 51 of them without mental disorders, were assessed through MCQ-30 and TCQ. ANOVA analysis found that subjects with anxiety disorders obtained higher scores in beliefs about the dangerousness of not controlling their worries than subjects without mental disorders. Regression analysis found that this kind of beliefs led to the use of desadaptative cognitive control strategies, such as the self-punishment.

*Key words:* metacognitive beliefs, control thought, GAD, OCD.

**Resumen.** En el presente trabajo se asume la relevancia que los procesos de control cognitivo pueden tener en trastornos de ansiedad como el GAD o el TOC. Se pretende identificar las creencias metacognitivas derivadas del modelo S-REF (Wells y Mathews, 1996, Wells, 2000) que se vincularán en mayor medida al espectro del trastorno de ansiedad generalizada y del trastorno obsesivo-compulsivo y el efecto que dichas creencias pueden tener en el uso de estrategias de control cognitivo. Para ello, una muestra de 75 participantes, 24 con diagnóstico de GAD o de TOC, y 51 sin diagnóstico mentales, fueron evaluados mediante el MCQ-30 y el TCQ. El ANOVA entre los grupos permitió encontrar significativas las mayores puntuaciones en creencias sobre la peligrosidad de no controlar las preocupaciones por parte de los participantes con trastorno de ansiedad. Los análisis de regresión permitieron comprobar que ese tipo de creencias favorecían, además, el uso de estrategias de control cognitivo poco adaptativas, como el castigo.

*Palabras Clave:* creencias metacognitivas, control del pensamiento, Trastorno de Ansiedad Generalizada, Trastorno Obsesivo Compulsivo.

### Introduction

Last decade, the study of control cognitive has become one of the most developed subjects within

clinical psychology research. However, its study has remarkably evolved from a position where cognitive control was fundamentally linked to attentional processes and automatic bias, to a position where cognitive control is also linked to every process that can be controlled, such as appraisal processes and interpretation bias (Yiend, 2004). Cognitive control

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in attentional field is enough validated taking into account the “executive control” of attention proposed by Posner (see Posner and Dehaene, 1994; Posner and Petersen, 1990) and regarding to emotion and clinical fields, Eysenck (1992) and Mathews and MacLeod (1994) gave enough evidence about the relevance of cognitive control of attention and its bias.

It is precisely in the anxiety disorders field where the concept of cognitive control was broadened beyond the control of attentional bias to be also focused on the control of intrusive thought. The difficulty to voluntarily or controllingly suppressing intrusive thoughts and its negative consequences that positively feedback those intrusive thoughts had already been proved by Wegner et al. and the idea of “white bear” (Gold and Wegner, 1991; Wegner, Schneider, Carter and White, 1987). In clinical field some works have shown the ability of repressing emotional thoughts meanwhile physiological and behavioral reactions are going on (Calvo and Eysenck, 2000).

In this context, Wells and Mathews’ model (1994, 1996) about the cognitive operation and emotional responses and its consequences tackling some psychological disorders has been widely assumed by clinical researching, specially referring to anxiety disorders (e.g. Mathews and Wells, 2000) and also to positive symptomatology of schizophrenia, particularly to hallucinations (e.g. Baker and Morrison, 1998; Cangas, García-Montes, Olivencia and Moldes, 2005; García-Montes, Cangas, Pérez-Álvarez, Hidalgo and Gutiérrez, 2006; García-Montes and Pérez-Álvarez, 2003; Koren, Seidman, Poyurovsky, Goldsmith, Viksman, Zichel and Klein, 2004; Krabbendam, Myin-Germeys and Van Os, 2004; Laroí and Van der Linden, 2005; Morrison and Wells, 2003). There are also some studies about the role of metacognition in personality disorders (Carcione, Semerari, Dimaggio and Nicolo, 2005), in addictions (Toneatto, 1999) or in depression (Papageorgiou and Wells, 2000).

The model, named “Self-Regulatory Executive Function” (S-REF) by Wells (2000; Wells and Mathews, 1994, 1996), is based on the concept of metacognitive beliefs and its implication during the information processing, both in voluntary or controlled processing such as appraisal and coping

processes, and automatic processing, such as attention. The concept of metacognition assumed in the model is taken from Flavell (1979, 1987) and would involve both the awareness of our own cognitive processes and the ability of experiencing and regulating them. Specifically, Flavell proposed that the ability of regulation can be achieved through that awareness. This knowledge could be divided into three categories: knowledge of personal variables, knowledge of task variables and knowledge of strategic variables. This conceptualization of metacognition is still used and it explains that the knowledge must be about the appraisal and attentional processes and about the effort of cognitive monitoring (Moses and Baird, 1999).

From S-REF model it can be understood that metacognitive beliefs, in a general way, would be an important factor of vulnerability to psychopathology (García-Montes, Pérez-Álvarez, Soto, Perona and Cangas, 2006), and in fact, as it has been pointed out before, evidences seem to confirm the relevance that certain metacognitive beliefs may have in several disorders, specifically in those linked to anxiety and stress, such as generalized anxiety disorder (Wells and Carter, 2001), obsessive-compulsive disorder (Fisher and Wells, 2005; Myers and Wells, 2005; Wells and Papageorgiou, 1998), posttraumatic stress disorder (Holeva, Tarrrier and Wells, 2001) and hypochondriasis (Bouman and Meijer, 1999). A general approach would explain the clinical alteration in emotional regulation as an effect of a low self-knowledge about the own cognitive operation, given that it would favour monitoring the sense of threat and the perseverance in worrying (Mathews and Wells, 2000).

Accurately, researching tries, on the one hand, to identify specific metabeliefs that favour clinical alteration in emotional regulation, and also to identify cognitive control strategies that, linked to desadaptative metabeliefs, favor the clinical alteration. In this sense, recent studies seem to identify metabeliefs about a high need of control or about a perceived danger of non-controlling the own cognitive operation, as beliefs clearly associated to anxiety (Luciano and Algarabel, 2006), more specifically to obsessive symptoms (Sica, Steketee, Ghisi, Ghiri and Franceschini, 2007) and symptoms related to a generalized anxiety disorder (Barahmand,

2009). In non-clinical samples this kind of metabeliefs has also correlated to desadaptative cognitive control strategies, such as punishment when the subject is not able to suppress his worry or such as being more worried about the worry in a try of monitoring it (see Pérez Nieto, Redondo and Martín, 2005; Reuven-Magril, Rosenman, Leberman and Dar, 2009). This link between desadaptative metabeliefs, such as the danger of non-controlling the own cognitive operation, and desadaptative cognitive control strategies, such as the punishment or the increase in worrying, it is also shown in samples diagnosed with GAD (Wells & Carter, 2009).

Thus, the aim of the present work is to identify the metacognitive beliefs derived from S-REF model that will be linked to GAD and OCD and the effect that those beliefs may have in the use of cognitive control strategies.

## Method

### *Participants*

The sample consists of 75 participants, 24 of which fulfil DSM-IV-TR criteria (APA, 2001) to be mainly diagnosed with GAD or OCD. The clinical sample was selected from two private clinics in Madrid. This selection was made by two psychologists, both PhD, specifically trained in anxiety disorders and having more than ten years of practice, that assess and diagnose the participants. Tests were filled at the clinics. The rest of participants were defined as a non-clinical sample because of the lack of diagnosis of mental disorders at the moment of the study. Randomly selected by a snowball sampling, participants were not played and could remain anonymous, even though they were told to have the possibility of obtaining their results of the assessment tests through a number code.

### *Instruments*

We followed the recommendations made regarding to the use of Spanish translations (see Muñoz and Hambleton, 1996).

- *Metacognitions Questionnaire –MCQ–* (Wells and Cartwright-Hatton, 2004). MCQ is a questionnaire with 30 items divided into five groups of factors that assess some dimensions of metacognition. The 30 items are answered by a Likert scale from 1=“I am not agree” to 4=“I totally agree”. Factors are named: 1) Positive beliefs about worry (ex. “Worries help me to avoid future problems”); 2) Negative beliefs about uncontrollable worries and their danger (ex. “When I start worrying about something, I cannot stop”); 3) Low cognitive self-confidence (ex. “I have poor memory”); 4) General negative beliefs about thoughts, including superstition, punishment or need of control (ex. “A sign of weakness consist of not being able to control my thoughts”). It is noteworthy that the first four factors refer to the content of cognitive processes, so the assessment of the metacognitive process is done implicitly, on the other hand, the fifth factor, “cognitive self-awareness”, assesses the metacognitive process explicitly. Reliability of MCQ is good enough, with alpha coefficients ranging from 0,73 in “Cognitive self-awareness” and 0,93 in “Negative beliefs about uncontrollable worries and their danger”. Construct validity is also good, rating a CFI of 0,91 (Wells and Cartwright-Hatto, 2004).
- *Thought Control Questionnaire –TCQ–* (Wells and Davies, 1994). TCQ is a questionnaire that assesses the metacognitive strategies that a subject uses for monitoring intrusive or stressful thoughts. Items were drawn from a semi-structured interview done to samples diagnosed with anxiety disorders and hypochondriasis and non-clinical samples. Factorial analysis allowed to clear five factors showing excellent reliability and validity. These factors are: 1) Distraction (ex. “I do something to be entertained”); 2) Social control (ex. “I ask my friends if they have had similar thoughts”); 3) Worry (ex. “I focus on different negative thoughts”); 4) Punishment (ex. “I punish myself for thinking those thoughts”); and 5) Reappraisal (ex. “I try to reinterpret the thought”). Reliability of TCQ is lower than

MCQ and have alpha coefficients ranging from 0.64 in Punishment to 0.79 in Social Control; test-retest varies from 0.67 in Punishment to 0.83 in Social Control.

## Data analysis and results

To achieve our first aim, that is, to identify the metacognitive beliefs derived from S-REF model that will be linked to GAD and OCD, we used a non parametric test (Mann-Whitney U) to assess differences in MCQ-30 factors related to metacognitive beliefs between the clinical and the non clinical sample. Descriptive statistics of each sample regarding to these MCQ-30 scales are shown in table 1, and the results of the non parametric test are shown in table 2. There it can be noted that variations of each group in MCQ-30 scales are significant for the scale that assesses the need of cognitive control (Negative beliefs about uncontrollable worries and their danger).

In regard to our second aim, that is, the effect that those more common beliefs for GAD and OCD may have in the use of cognitive control strategies, we made a multiple linear regression using as independent variable the significantly different MCQ-30 scale "Negative beliefs about worries and their dan-

ger", and as dependent variables the TCQ scales (Distraction, Social control, Worry, Punishment and Reappraisal). Cognitive control strategies based on punishment was the most significant model for prediction. Table 3 shows a summary of the model and the estimation of its parameters. Figure 1 shows the estimation curve of the significant dependent variable.

## Conclusions and discussion

The study of cognitive control has been traditionally linked to automatical and basically attentional processes and bias, however this conception has evolved to every process that could be monitored, such as appraisal processes and interpretative bias (Yiend, 2004). Wells and Mathews' model (1994, 1996) about cognitive operation and emotional responses also added the concept of metacognition proposed by Flavell (1979, 1987) that would mean both an awareness of our own cognitive processes and the ability to regulate them. Incorporating it to their approach, Wells' model (2000; Wells and Mathews, 1994,1996) allowed, on the one hand, to study its implication for whether a voluntary or involuntary information processing, on the understanding that metacognitive beliefs would be a

Table 1. Descriptive statistics MCQ-30 scales of each group

		N	Mean	Typical Deviation
Mcq1= <i>Positive beliefs about worry</i>	Non clinical	51	11.2549	3.65974
	Clinical	24	10.5833	4.37301
	Total	75	11.0400	3.88497
Mcq2= <i>Negative beliefs about worries and their danger</i>	Non clinical	51	13.1176	3.24744
	Clinical	24	15.7500	3.74456
	Total	75	13.9600	3.60720
Mcq3= <i>Low cognitive self-confidence</i>	Non clinical	51	11.2157	4.82209
	Clinical	24	10.5833	4.84469
	Total	75	11.0133	4.80566
Mcq4= <i>General negative beliefs</i>	Non clinical	51	12.2353	3.50193
	Clinical	24	12.7500	3.55393
	Total	75	12.4000	3.50289
Mcq5= <i>Cognitive self-awareness</i>	Non clinical	51	47.8235	10.26588
	Clinical	24	49.6667	11.10686
	Total	75	48.4133	10.50237

Table 2. Non parametric test showing differences in MCQ-30 scales between clinical and non clinical samples

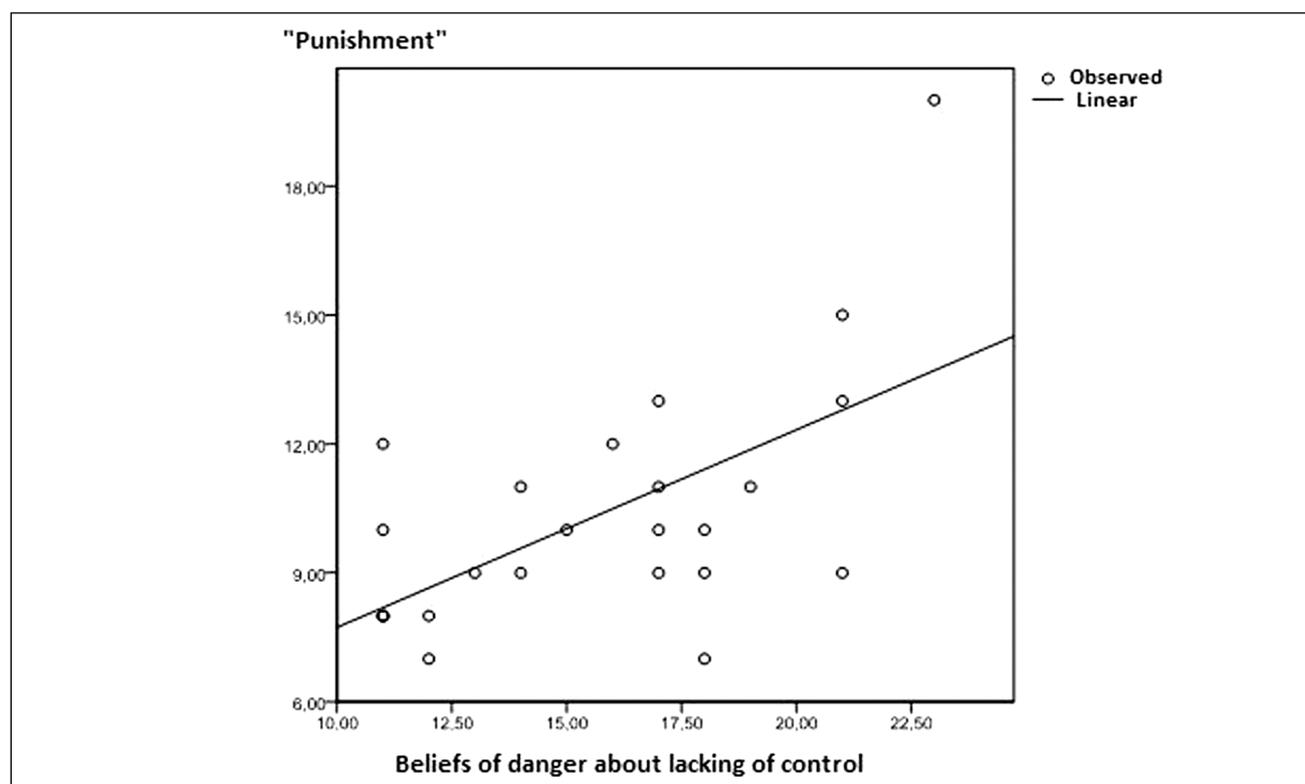
	N total	Mann-Whitney U	Standard error	Statistical contrast	Sig.
Mcq1= <i>Positive beliefs about worry</i>	75	537.000	87.538	-.857	.392
Mcq2= <i>Negative beliefs about worries and their danger</i>	75	852.500	87.559	2.747	<b>.006</b>
Mcq3= <i>Low cognitive self-confidence</i>	75	562.000	87.481	-.572	.568
Mcq4= <i>General negative beliefs</i>	75	655.000	87.587	.491	.623
Mcq5= <i>Cognitive self-awareness</i>	75	647.500	87.970	.404	.687

Table 3. Summary of the model and the estimation of parameters for the independent variable Mcq2 over TCQ scales

Dependent variable	Summary of the model		Estimation of parameters				
	R2 statistic	F	gl1	gl2	Sig.	Constant	b1
<i>Distraction</i>	.118	2.948	1	22	.100	18.799	-.247
<i>Social control</i>	.050	1.159	1	22	.293	14.247	-.129
<i>Worry</i>	.113	2.798	1	22	.109	9.280	.257
<i>Punishment</i>	<b>.359</b>	12.342	1	22	<b>.002</b>	3.135	<b>.460</b>
<i>Reappraisal</i>	.058	1.358	1	22	.256	12.433	.200

Independent variable is "Negative beliefs about worries ant their danger"

Figure 1. Estimation curve of the significant dependent variable



important factor of vulnerability to psychopathology (García-Montes, Pérez-Álvarez, Soto, Perona and Cangas, 2006). On the other hand, metabeliefs became a source of work at clinics, given that the general approach would explain the clinical alteration in emotional regulation as an effect of a low self-knowledge about the own cognitive operation, therefore it would favour monitoring the sense of threat and the perseverance in worrying (Matthews and Wells, 2000). In this sense, the target clinical alterations would be the positive symptomatology of schizophrenia, particularly hallucinations; the addictions (Toneatto, 1999) or the depression (Papageorgiou and Wells, 2000), although the most studied ones have been the anxiety disorders, starting from the idea of “white bear” (Gold and Wegner, 1991; Wegner, Schneider, Carter and White, 1987).

Therefore, in the present work we decided to focus on OCD and GAD in order to explore this double study that Wells’ model allows: on the one hand, to identify the specific metabeliefs that would favour these anxiety disorders; and on the other hand, to identify the cognitive control strategies linked to desadaptative metabeliefs that favour them. Previous studies (Luciano and Algarabel, 2006; Sica, Steketee, Ghisi, Ghiri and Franceschini, 2007; Barahmand, 2009; Pérez Nieto, Redondo and Martín, 2005; Reuven-Magril, Rosenman, Leberman and Dar, 2009) pointed out a high need of control or the danger of uncontrollability as the main metabelief involved. In fact, it was shown that non clinical samples use these metabeliefs which in turn implied desadaptative cognitive control strategies such as punish oneself when not being able to suppress any worry. This fact is reaffirmed by the data presented in this study, noting significative punctuations in MCQ-30 scale that assesses beliefs about need of control (Negative beliefs about uncontrollable worries and their danger). Taking it as the independent variable, model for prediction cognitive control strategies based on Punishment scale from TCQ was significative.

Summing up, a part of the anxious’ cognitive operation would be based on the need of foresee every circumstantial possibilities, generating a cognitive basis of safety and control. However, the multiple and irremediable combinations of vital factors

would end cracking that feeling of safety, emerging then emotional deregulation and the use of desadaptative control strategies. That is, the anxious that does not control the situation becomes more worried, feeding back the first strict schema of need of control. Frustration for not being able to assume a full certainty of what is going to happen entails a high emotional spending, even more if the subject uses control strategies focused on punish precisely that lack of control. Thus, it would be advisable that part of the clinical attention with OCD and GAD patients will be paid to enlarge the awareness of one’s cognitive processes, to make the subject able to prematurely detect desadaptative metabeliefs; promote subject’s exposition to uncertainty and to a lack of full control about the situation and its consequences, in order to get to a more adaptative cognitive model adjusted to the reality that surrounds him, as well as reformulating the control strategies used to face aversive thoughts so that other more adaptative resources of regulation could replace them. However, more studies are needed to generalize the present results, as well as we encourage to go into the study of the relation between metabeliefs and desadaptative cognitive control strategies in depth.

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Manuscrito recibido: 15/01/2010

Revisión recibida: 13/02/2010

Manuscrito aceptado: 20/02/2010