

Original article

## Worry and Meta-Cognitive beliefs in Childhood Anxiety Disorders

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### Abstract

Worry is a cognitive-emotive process characterized by repetitive and relatively uncontrollable thoughts that anticipate negative outcomes and cause distress in the individuals. According to the meta-cognitive model of Wells (1995), positive beliefs about the benefits of worry and negative beliefs on uncontrollability and danger of worry are associated with "pathological brooding" as the main feature of anxiety disorders. The phenomenon of worry is already present in preschool children and the ability to mull over is refined with the cognitive development and the progress of meta-cognition. The aim of this study is to explore the relationship between anxiety and worry in 184 preadolescents (aged 11-13 years). The measures employed were: RCMAS-2 to assess the levels of anxiety in children; the Penn State Worry Questionnaire for Children (PSWQ-C) and the Meta-cognition Questionnaire for Children (MCQ-C) to detect, respectively, the frequency and content of the worry. Results indicate that children with higher levels of anxiety reported significantly higher scores on PSWQ-C and in all subscales of the MCQ-C, with the only exception of the positive meta-worry. These results also support the reliability of the two instruments (PSWQ-C and MCQ-C-C) in the Italian version and encourage further applications in developmental or clinical researches.

Keywords: worry, anxiety disorders, meta-cognitive beliefs, preadolescents.

### INTRODUCTION

Born in the field of memory and cognitive development (Flavell, 1979), the study of meta-cognition has assumed a central role in understanding the genesis and maintenance of various psychological disturbances, particularly those related to the anxiety sphere (Ellis & Hudson, 2010). Meta-cognition describes the thoughts or beliefs concerning

one's own cognitive processes, together with the strategies that direct the individual's attention on internal states and that are involved in the monitoring of thoughts and emotions. Wells (1995, 2009) developed the model of self-regulatory function (SRE-F) in which beliefs, experiences and meta-cognitive processes are considered crucial in determining individual emotional well-being or dysfunctional thinking styles linked to the persistence of negative emotions.

The basic assumption of Well's theory is that beliefs represent the meta-cognitive component influencing individual thinking style and coping. The author differences positive from negative meta-cognitive beliefs. The positive beliefs are concerned with the advantages or benefits of engaging in cognitive activities; they represent a coping strategy, observed in clinical and non-clinical populations, that leads people to solve problems by a non-pathological way of worrying. Examples of positive meta-cognitive beliefs are "If I worry I'll be prepared" or "It is useful to focus attention on threat"; they are labeled Type 1 worry. The negative meta-cognitive beliefs, on the contrary, include the thoughts of uncontrollability and dangerousness of cognitive experiences and are associated with negative emotions and anxiety, for example the pain that worry can affect concentration or well-being. Examples of these negative beliefs, referred as Type 2 worry (meta-worry), are "I have no control over my thought" or "I could damage my mind by worrying".

According to Vasey and Daleiden (1994, p. 186; cit. in Ellis & Hudson, 2010), worry represents "primarily an anticipatory cognitive process involving repetitive, primarily verbal thoughts related to possible threatening outcomes and their potential consequences". Worry is not necessarily negative, but it becomes dysfunctional when it is used as an inflexible means of coping, leading the individual to use unhelpful control strategies. Some people remain trapped in emotional suffering because, confronted with stressful events, meta-cognitive processes give rise to a pattern of response that is manifested by the phenomena of concern, rumination, attentive focus on negative thoughts and emotions, use of auto-regulation strategies like the dysfunctional monitoring of these processes. Type 2 worry, in other word, is "worry about worry" and concerns negative appraisals on (1) the uncontrollability of worrying, and (2) its dangerous consequences for physical, psychological, and social functioning. Meta-cognitions are associated with "brooding pathological" as a main feature of generalized anxiety disorder and other anxiety manifestations: when negative beliefs of this kind develop, the person experiences an elevation in distress and emotional suffering. Ellis and Hudson (2010, p. 153) describe the process of activation and maintenance of excessive worries as follows: "Negative emotions associated with meta-worry, such as increased anxiety, make it increasingly difficult for the individual to recognize that it is safe to stop worrying (...) and they reinforce negative worry and the need to continue worrying".

Consistently with the S-REF model, meta-cognition has been investigated as a main feature of generalized anxiety disorder (GAD) and other anxiety manifestations, like posttraumatic stress disorder (Holeva, Tarrier and Wells, 2001), obsessive-compulsive and panic disorder (Cucchi, Bottelli, Cavadini et al., 2012), and depression (Papageorgiou & Wells, 2003) on adult population. Recent studies have extended the meta-cognitive model in childhood, evaluating its applicability to children and adolescents (Wilson, Budd, Chernin et al., 2011; Ellis & Hudson, 2010). In fact, it's well documented in clinical studies that internalizing disorders and worry-related symptoms often have their beginning in childhood and they persist in adolescence: approximately 25% of adolescents experience uncontrollable worry, and many adults with pathological worry report that their uncontrollable worry started when they were adolescents (Laugesen,

Dugas, & Bukowski, 2003). Therefore, it's become interesting for clinical and developmental scholars to investigate if the meta-cognitive models developed with adults can be applied to explain dysfunctional worry also in youth.

Some researchers focused on the development of cognitive processes associated with emotional adjustment in children and adolescents, showing that the phenomenon of the worry is yet experienced in preschoolers and that it is refined with the progress of meta-cognition (Ellis & Hudson, 2010). Muris et al. (2000), using as assessment method an interview about worry, found that approximately 67.4% of school-aged children (4-12 years old) reported the experience of worrying. The older children, of course, are more able to provide details about their internal processes, and the age-based differences appear not depending to advances in verbal fluency.

Other studies have investigated the association between meta-cognitive worry and childhood internalizing disorders. Weems et al. (2000), for example, found in a clinical sample that the excessive worry - measured as frequency, intensity, and frequency of worry - was related to the anxiety levels referred by children and adolescents (aged 6 to 16). More recently, Wilson et al. (2011) found that positive and negative meta-cognitive beliefs were significantly associated with problematic worry in children.

Alternatively to interviews as assessment method, other scholars have measured worrying in children and adolescents using self-report instruments, which generally derive from an adaptation of adults' questionnaires. The difficulties in developing these assessment tools derive from the characteristic of worry as internal experience and the ability of younger children to give accurate evaluations of their cognitive processes using written questions. A self-report instrument designed to measure worry in children is the Penn State Worry Questionnaire (PSWQ) adapted for children and adolescents by Chorpita et al. (1997) from the adults' questionnaire (Meyer, Miller, Metzger, & Borkovec, 1990). The child version was developed with the aim to rewording and making simpler in grammar form the 16 items of the adult version. With a sample of 199 children (aged 6 to 18 years) from community schools, Chorpita et al. (1997) tested the factor structure of the instrument which resulted one-factor composed (14 item) and with a good internal consistency (alpha coefficient = .89). Convergent validity was tested by correlations with the RCMAS-worry /oversensitivity scale ( $r = .71, p < .05$ ; Reynolds & Richmond, 1978); 1-week test-retest reliability with 35 children aged 7 to 18 years yielded .92 ( $p < .001$ ). These results confirm that the PSWQ-C is simple to administer to young people, even if the instrument capture only part of anxiety feature, that is, the frequency and intensity of worry, but it does not distinguish the meta-cognitive components associated to pathological or non-pathological worry (Wilson, Budd, Chernin et al., 2011). Another limit is that there is not its Italian version, whereas we have the PSWQ adaptation for measuring adult worrying (Morani, Pricci, & Sanavio, 1999).

Another well-know instrument for assessing meta-cognitive beliefs associated with anxiety disorders is the Metacognitions Questionnaire for Children (MCQ-C). Bacow, Pincus, Ehrenreich, and Brody (2009) developed this questionnaire after the version for adolescent (MCQ-A; Cartwright-Hatton et al. 2004) for extending its application with youth (7-17 age range). The MCQ-C (24 item) was tested with a sample of 78 children and adolescents with clinical anxiety disorders and 20 non-clinical youth. According to Wells' model (Wells, 1995; 2009), its characteristic is to distinguish the meta-cognitive processes in functional or dysfunctional forms: (1) positive beliefs about worry (Positive meta-worry); (2) negative beliefs about worry (Negative meta-worry); (3) superstitious, punishment and responsibility beliefs (SPR beliefs); and (4) cognitive monitoring (awareness of one's own thought). Results show good internal consistency for these subscales (alphas from .64 to .87) and convergent validity with the anxiety and other

internalising symptoms (worry and depression). To date, there are not studies aimed to test the MCQ-C with Italian population, despite the relevance of the meta-cognitive approach in clinical research and practices with children (Ellis & Hudson, 2010; Wilson & Hughes, 2011).

The main purpose of this research is to explore the association between worrying and anxiety experiences in a community sample of children (aged 11-13 years old). The study hypothesis are:

1. verifying if excessive worrying experiences, that was measured by the Penn State Worry Questionnaire for children (PSWQ-C), are more frequent and intrusive in subjects with higher anxiety levels;
2. exploring if the content of worry, that is, beliefs and processes related to worrying (that is, meta-worry processes as measured by the MCQ-C), are linked to children anxiety. The hypothesis is that children with higher levels of anxiety present more frequently dysfunctional meta-cognitive beliefs (such as the idea that worry helps to solve problems), ruminative thoughts and monitoring of these processes;
3. examining gender differences in worry experiences. In line with other developmental studies (Bacow, et al., 2009), we suppose that girls reported higher scores than boys on the worrying frequency index (PSWQ-C) and the meta-cognitive awareness (MCQ-C subscales) of their thoughts and negative emotions correlate to anxiety.

Finally, this study give also the first contribution for the validation of measures of meta-cognitive processes in an Italian sample. The aim was to test the reliability of the first adaptation of PSW-C and MCQ-C items in Italian language, thus giving the initial measures for developing a standardized Italian version of these assessment instruments.

## METHOD

### 2.1 Participants

The sample consisted of 184 students, aged 11-13 years ( $M= 11.96$  ,  $SD= 0.9$ ) who frequented middle level schools situated in the urban areas of two cities in the South of Italy. With regard to the distribution of children according to gender, it was found a balanced percentage of males (46.7 % ,  $n=98$ ) and females (53.3%,  $n= 86$ ) and no differences in the three grades [ $\chi^2(2)= .92$ ,  $p=.63$ ].

The composition of the sample is showed in table 1.

Middle school grade	Males		Females		Total	
	N	%	N	%	N	%
First	25	13.6	35	19	60	32.6
Second	30	16.3	31	16.8	61	33.2
Third	31	16.8	32	17.4	63	34.2
Total	86	46.7	98	53.3	184	100

Table 1. Distribution of participants subdivided by grade and gender

## 2.2 Measures and procedure

The participants were recruited in middle schools through an informative letter mailed to the families. Consent for participation was obtained from adolescents' parents prior to the submission of the questionnaires that were then collectively proposed in the classrooms by an university student of psychology.

2.2.1 Penn-State Worry Questionnaire for Children (PSWQ-C). It's a brief, self-report instrument (14 item) that assesses the tendency to experience an excessive and uncontrollable worry in children and adolescents (7-17 years). It was developed by Chorpita, Tracey, Brown, Collica, and Barlow (1997) from the Penn State Worry Questionnaire for adults (Meyer, Miller, Metzger, & Borkovec, 1990). The subject must respond by referring his/her experiences of ruminations (i.e. "I can't stop thinking of the things that I worry about"). The responses are rated on a 4-point Likert scale from 0 ("Not at all true") to 3 ("Always true"). So, items are scored from 0 to 3, resulting in a possible range of total scores from 0 to 56, with higher scores reflecting a greater degree of worrying.

For the purpose of this study, after getting the consent from the authors, the PSWQ-C was translated in Italian language and tested with a small, non clinical sample of children (n=10) using individual interview for verify items comprehension. The internal consistency of this Italian adaptation, based on the results of this research sample, has provided an adequate coefficient (Alpha = .86).

2.2.2 Metacognitions Questionnaire for Children (MCQ-C; Bacow, Pincus, Ehreinreich, & Brody, 2009). The MCQ-C was developed with the aim to extend the MCQ-A (Cartwright-Hatton et al. 2004) from adolescents (ages 13-17) to a broader age range (both children and adolescents, ages 7-17). The adaptation by Bacow et al. (2009) consisted in simplifying the language of some items for use with younger children. The final MCQ-C comprised of 24 items and four subscales; the names of the factors were modified with respect to the MCQ-C, with the exception of the Superstition, Punishment and Responsibility subscales. In the MCQ-C the cognitive self-consciousness subscale was labeled as Cognitive Monitoring (i.e. "I play a lot of attention to the way that I think"); positive beliefs about worry subscale was referred as Positive Meta-worry (i.e. "If I worry about things now, I will have fewer problems in the future"); uncontrollability and danger subscale was renamed as Negative Meta-worry (i.e. "If I worry a lot, I could make myself sick"); finally, the name of the Superstition, Punishment and Responsibility subscale (here shortened as SPR) was not changed (i.e. "If I can't stop my thoughts, bad things will happen"). Participant respond on a 4-point Likert scale indicating the agreement with each statement (from 1 "do not agree to 4 "agree very much). Scores

range from 24 to 96 points and higher scores indicate greater negative metacognitive activity. The internal consistency (Cronbach's alphas) of this Italian version of the MCQ-C, adapted with the authors' consent for this study, ranged from 0.61 (Positive Meta-worry scale) to 0.78 (Negative Meta-worry scale).

2.2.3 Revised Children's Manifest Anxiety Scale (RCMAS-2; Reynolds and Richmond, 2008; Italian version by Sozzari, Sella, & Di Pietro, 2012). It is a self-report instrument consisting of 49 items assessing the level and nature of anxiety in children and adolescents (aged from 6 to 19). The items describe the mood or the subject's actions using a dichotomous answer ("Yes" or "No"). The RCMAS-2 provides scores for four separate scales: Physiological Anxiety, that analyzes somatic concerns such as nausea, sleep problems, headaches and fatigue; Worry/Oversensitivity, that measure how much the respondent is frightened, nervous, hypersensitive to environmental pressures; the Social Anxiety scale that assesses performance anxiety that children experience to achieve, academically and socially; the defensiveness scale, a Lie parameter not taken into account in the finding of this study. The Anxiety Index total (TOT) is obtained by summing the scores of the first three subscales.

## RESULTS

### 3.1 Statistical analysis

The data were analyzed using SPSS 17.0 (Statistical Package for Social Sciences) for Windows. First, descriptive data (Means and Standard Deviations) were calculated for all measures. Gender differences were then tested by separate one-way ANOVA (for PSWQ-C measures) and MANOVA (for MCQ-C and RCMAS-2 measures). A .05 significance level was allocated in all tests.

Second, to test the main hypothesis on the association of meta-cognitive beliefs with children's anxiety, the correlations between PSWQ-C and MCQ-C measures and anxiety levels (RCMAS-2 data) were calculated using Spearman's Rho coefficient. The sample was then subdivided in two groups considering as grouping variable the anxiety levels reported by children on RCMAS-2; the cut-off ( $T=60$ ) on the Anxiety Index total score, as reported in the manual, was assumed for dividing children with normal levels of anxiety ( $T<60$ ) from those with elevate anxiety levels ( $T>60$ ).

The means obtained from these two groups (normal vs. elevate anxiety) were then compared considering both PSWQ-C and MCQ-C scores as dependent variables.

Measure	Boys (n= 86 )	Girls (n= 98 )	Comparisons
	Means (SD)	Means (SD)	F (1,1 82 )
PSWQ-C Worry	29.09 (6.96)	31.18 (7.66)	3.711 *
MCQ-C Cognitive Monitoring	15.57 (3.77)	15.29 (3.75)	.254
Positive Meta-worry	8.84 (2.62)	8.27 (2.65)	2.153
Negative Meta-worry	11.67 (3.82)	12.14 (4.26)	.812
Superstition, Punishment and Responsibility	11.93 (3.55)	11.99 (3.99)	.014
RCMAS-2 Physiological Anxiety	46.60 (9.02)	46.82 (10.12)	.022
Worry	45.83 (.81)	48.77 (9.90)	4.074 *
Social Anxiety	46.24 (8.43)	47.38 (9.51)	.723
Anxiety Total	45.78 (8.55)	47.50 (9.67)	1.616

Table 2 . Means and Standard Deviations for all measures separated for boys and girls  
(\*) Significant at  $p < .05$

### 3.2 Descriptive data and gender differences

Table 2 shows Means (and Standard Deviations) for all measures, with results separated for boys and girls. One-way ANOVA on the results of PSWQ-C indicates significantly higher scores ( $p < .05$ ) for girls ( $M = 31.18$ ) in comparison to boys ( $M = 29.09$ ). Differences in worry experienced by girls emerge also from RCMAS-2 worry scale, where girls ( $M = 48.77$ ) scored significantly higher than boys ( $M = 45.83$ ,  $p < .05$ ). There were no significant differences in the other meta-cognitive variables (MCQ-C) or anxiety subscales (RCMAS-2).

### 3.3 Anxiety, worry and meta-cognitive beliefs

The association between children worry, meta-cognitive beliefs and anxiety levels were tested by Spearman's correlations as showed in table 3. All the measure resulted positively associated, either those related to worry (PSWQ-C) and meta-cognitive beliefs about worry (Positive, Negative, Superstition, and Cognitive Monitoring) or those derived from anxiety index (RCMAS-2 Total).

Measure	1	2	3	4	5	6
1. Positive meta-worry	—	.300(**)	.158(*)	.172(*)	.225(**)	.292(**)
2. Negative meta-worry		—	.436(**)	.404(**)	.700(**)	.645(**)
3. Superstition, Punishment and Responsibility			—	.352(**)	.468(**)	.421(**)
4. Cognitive Monitoring				—	.297(**)	.205(**)
5. Worry/Oversensitivity					—	.652(**)
6. Total Anxiety						—

Table 3. Correlations coefficients between children worry, meta-cognitive factors, and anxiety total levels (RCMAS-2 Total)

(\*) Significant at  $p < .05$  (\*\*) Significant at  $p < .01$

Measure	Normal anxiety (n= 165)	Elevate anxiety (n= 19)	Comparisons	
	Means (SD)	Means (SD)		F (1, 182)
PSWQ-C Worry	28.98 (6.60)	40.89 (5.06)	57.981 ***	
MCQ-C				
Cognitive Monitoring	15.57 (3.77)	15.29 (3.75)	.195	
Positive Meta-worry	8.84 (2.62)	8.27 (2.65)		4.35 *
Negative Meta-worry	11.67 (3.82)	12.14 (4.26)		52.38 ***
Superstition, Punishment and Responsibility	11.93 (3.55)	11.99 (3.99)		13.96 ***

Table 4. Means and Standard Deviations for all measures as a function of anxiety levels (normal vs elevate).

(\*) Significant at  $p < .05$ ; (\*\*\*) Significant at  $p < .001$

Finally, to test the hypothesis that children with elevate anxiety levels would obtain higher scores in worry content (PSWQ-C) and meta-cognitive factors (MCQ-C), we compare these measures in the two groups obtained on the basis of children's reported anxiety (table 4).

The results of the MANOVA showed that children with high levels of anxiety reported significantly higher scores in the PSWQ-C [ $F_{(1, 182)} = 57.981, p < .001$ ] and in all subscales of the MCQ-C - Negative Meta-worry [ $F_{(1, 182)} = 52.38, p < .001$ ], Superstitious beliefs [ $F_{(1, 182)} = 13.96, p < .001$ ] and Cognitive Monitoring [ $F_{(1, 182)} = 4.35, p < .05$ ] - except for the Positive Meta-worry.



## DISCUSSION

The primary scope of current research was to extend the meta-cognitive model of worry in anxiety disorders, widely studied with adults (Wells & Carter, 2001; Wells, 2005), to a community sample of pre-adolescents. The application of adult models to young people, in fact, needs to be carefully evaluated with the support of empirical data, in that the child's cognitive, social, and emotional abilities that change along the development may impact on his/her experience of worry (Ellis & Hudson, 2011). Developmental studies confirm that the phenomenon of worry is already present in childhood and that its excessive occurrence often causes emotional distress in children (Bacow et al, 2010). From clinical literature derive the supposition that worry and meta-cognitive beliefs about worry can be linked to anxiety symptoms in children as well as in the adults population. The main hypothesis to test, therefore, was that worry experiences and meta-cognitive beliefs about worry were more frequent in children with elevated anxiety levels.

First, differences in worrying measures, as reported by children, emerged in groups with elevated vs. normal anxiety levels, confirming the strong links between worry and anxiety problems evidenced by other scholars. Weems, Silverman, and La Greca (2000), among others, found that the number, intensity, and frequency of worry, in a sample of clinical youth (aged from 6 to 16), were related to self-reported anxiety levels; similar results were reported with nonreferred community children by Muris, Merckelbach, Meesters, and van den Brand (2002). In present research we used two different self-report measures of worrying and both measures confirm the existence of these differences as a function of anxiety levels. The first measure was the Worry/oversensitivity from RCMAAS-2, a subscale that captures the content of common worrisome thoughts in child experience (i.e. "I worry when I go to bed at night" and "I worry about what is going to happen"). The second measure, the PSWQ-C, is a mono-factorial scale more specific for assessing the tendency of children to engage in excessive, generalized, and uncontrollable worry. The data derived from both tools converge in showing higher levels of worry in anxious children, and particularly evidence the sensitivity of PSWQ-C to capture differences in worrying experiences as well in a non-clinical sample of children. Other studies confirm that PSWQ-C scores are significantly associated with all types of anxiety symptoms, particularly with symptoms of generalized anxiety disorder (Chorpita et al, 1997; Esbjørn et al., 2013).

Following Wells's model (Wells, 1995; 2009), a second aim was to analyze the different role played by positive or negative meta-cognitive beliefs about worry. Measures were collected by the Metacognition Questionnaire for Children (MCQ-C; Bacow et al., 2009), which data from this research constitute the first application on the Italian context. The results confirm that negative beliefs about "brooding", the danger and uncontrollability of worry, and the cognitive monitoring of these internal processes are present in children with higher levels of anxiety, as already noted by Bacow et al. (2009) with adolescents. Positive beliefs about worry solely do not differentiate children with elevated vs. normal anxiety levels, so these thoughts seem to have not a specific role in the manifestation of children's anxiety. These results differ from Smith and Hudson (2013) who found that clinical children endorsed significantly more negative and more positive meta-cognitive beliefs on MCQ-C than nonclinical children. It's possible that these differences are linked to samples composition, particularly for participants of the present study that were not referred for anxiety disorders. In meta-cognitive model, positive beliefs about worry are considered an adaptive coping strategy (i.e. "Worry about things helps me to be organized") not linked to self-report of excessive worrying or anxiety situations (Bacow

et al., 2009) but other studies are necessary to understand the role of these factors in the genesis of children's pathological anxiety. More in general, these results confirm that anxious children are aware that worry is a stressful experience that can cause negative consequences on individual thinking, emotional arousal and the effort to control these intrusive thoughts (meta-worry).

The third hypotheses to test was the presence of higher meta-cognitive beliefs and worry levels in girls, due the more frequent incidence of internalizing disorder in females. We found gender differences only in worry levels (PSWQ-C), and in Worry/Oversensitivity to environmental pressures (RCMAS-2), not in meta-cognitions (MCQ-C), so partially confirming the supposition that girls would detected higher levels of meta-cognitions about worry than boys (Roelofs et al., 2004). A possible explanation of these differences in results can be the restricted range of age of participant, all pre-adolescents (aged 11-13), differently from other studies carried with wider samples wider for age of the participants. Esbjørn et al. (2013), for example, found in a community sample of children and adolescents that gender was associated with increased levels of general meta-cognitions and that this gender effect was mediated by level of anxiety.

Bacow et al. (2009), on the contrary, found higher scores in total scale of the MCQ-C for girls than boys but only for adolescents, in that these gender differences were not confirmed for younger children or for specific MCQ-C subscales. Therefore, it could be that cognitive and emotive functioning in adolescence explain these gender differences in the meta-cognitive processes associated with worry, but another explanation could call into question the evolutionary trend of anxiety disorders.

In fact, it's well know that higher levels of anxiety, rumination and symptoms of depression in girls tend to increase in adolescence (Bernstein, Borchardt & Perwein, 1996; Bacow et al., 2009), so heightening the meta-cognitive awareness and experiences among adolescent girls. Other studies nevertheless are necessary for comprehending these individual differences according to ages and gender, as longitudinal design that can help to comprehend the relationships between meta-cognitive processes about worry and the trajectories of anxiety disorders in boys or girls.

Finally, a limitation to this study is the relatively small size of the sample, but above all the lack of a clinical group of preadolescents diagnosed for GAD or other anxiety disturbances. This confrontation could be useful to evaluate more comprehensively the meta-cognitive theory in childhood anxiety disorders and to comprehend the extent to which clinical model with adults can be applied also with children and adolescents.

As Bacow, May, Brody, and Pincus (2010) remember, Wells' meta-cognitive model of GAD posits that negative meta-worry is more strongly associated with symptoms of GAD than other anxiety disorders in adults, whereas research has to determine whether the same pattern is true for younger individuals. In other words, it's possible that there are different patterns in the relationships between symptoms and meta-cognitive awareness in anxious youth, depending on the type of anxiety disorder (i.e, post-traumatic stress disorder, panic disorder, and so on).

Another reason for replicating this study with a more wider population is to complete the Italian evaluation of the two instruments employed for the assessment of the meta-cognitive beliefs associated to worry, that is, the PSWQ by Chorpita et al. (1997) and the MCQ-C (Bacow, et al. Brody, 2009). Both questionnaires are promising instruments already employed with relevant results in international literature, from which derive validated measures from clinical or non-clinical samples.

Examples in this direction are, respectively: for the PSWQ, the normative data by Muris, Meesters, and Gobel (2001), the standardization by Esbjørn et al. (2013) with Denmark population, and by Gosselin et al. (2001) with French samples; for the MCQ-C there are recent standardizations of the questionnaire from childhood to adolescence (Fisak, Mentuccia, & Przeworski, 2013; Smith, & Hudson; 2013), in Turkish language too (Irak, 2011). The Italian adaptations of the two instrument, at moment, are limited to adult population and are referred to the studies by Morani, Pricci, and Sanavio (1999) for the Penn State Worry Questionnaire and by Quattropani and Lenzo (in press) for the Metacognition Questionnaire.

The results of this study give only an initial support to the reliability of the two instruments in the Italian version, but other data are necessary to examine the psychometric properties of the questionnaires and further applications in developmental and clinical studies.

## REFERENCES

Bacow T.L., Ehrenreich J., Brody L.R., & Pincus, D.B. (2010). Are there specific metacognitive processes associated with anxiety disorders in youth? *Psychology Research and Behavior Management*, 3 81–90

Bacow, T.L., Pincus, D.B., Ehrenreich, J.T., & Brody, L.R. (2009). The metacognitions questionnaire for children: Development and validation in a clinical sample of children and adolescents with anxiety disorders. *Journal of Anxiety Disorders*, 23, 727-736.

Bernstein G.A., Borchardt, C.M., & Perwein, A.R. (1996). Anxiety disorders in children and adolescents: A review of the past 10 years. *Journal of the American academy of Child and Adolescent Psychiatry*, 35, 1110-1119.

Cartwright-Hatton, S., Mather, A., Illingworth, V., Brocki, J., Harrington, R., & Wells, A. (2004). Development and preliminary validation of the meta-cognitions questionnaire-adolescent version. *Journal of Anxiety Disorders*, 18, 411-422.

Chorpita, B.F., Tracey, S.A., Brown, T.A., Collica, T.J., & Barlow, D.H. (1997). Assessment of worry in children and adolescents: an adaptation of the Penn state worry questionnaire. *Behaviour Research and Therapy*, 35, 569-581.

Cucchi, M., Bottelli, V., Cavadini, D., Ricci, L., Conca, V., Ronchi, P., & Smeraldi, E. (2012). An explorative study on metacognition in obsessive-compulsive disorder and panic disorder. *Comprehensive Psychiatry*, 53, 564-553.

Ellis, D.M. & Hudson, J.L. (2010). The metacognitive model of generalized anxiety disorder in children and adolescents. *Clinical Child and Family Psychology Review*, 13, 151-163.

- Ellis, D.M. & Hudson, J.L. (2011). Test of the metacognitive model of generalized anxiety disorder in anxiety-disordered adolescents. *Journal of Experimental Psychopathology*, 2, 28-43.
- Esbjørn, B.H., Reinholdt-Dunne, M.L., Caspersen, I.D., Christensen, L.B. & Chorpita, B.F. (2013). Penn State Worry Questionnaire: Findings Form Normative and Clinical Samples in Denmark. *Journal of Psychopathology and Behavioral Assessment*, 35, 113-122.
- Esbjørn, B.H., Sømhøvd, M.J., Holm, J.M., Lønfeldt, N.N., Bender P.K., Nielsen S.K., & Reinholdt-Dunne, M.L. (2013). A Structural Assessment of the 30-Item Metacognitions Questionnaire for Children and Its Relations to Anxiety Symptoms. *Psychological Assessment*, 22, [ahead of print]
- Fisak, B., Mentuccia, M., & Przeworski, A. (2013). Meta-Worry in Adolescents: Examination of the Psychometric Properties of the Meta-Worry Questionnaire in an Adolescent Sample. *Behavioral Cognitive Psychotherapy*, 5, 1-6.
- Flavell, J.H. (1979). Metacognition and cognitive monitoring: A new area of cognitive development inquiry. *American Psychology*, 34, 906-911.
- Gosselin, P., Dugas, M.J., Ladouceur, R., & Freeston, M.H. (2001). Evaluation of worry: validation of a French translation of the Penn State Worry Questionnaire, *Encephale*, 27, 475-484.
- 
- Holeva, V., TARRIER, N., & Wells, A. (2001). Prevalence and predictors of acute stress disorder and PTSD following road traffic accidents: thought control strategies and social support. *Behavior Therapy*, 32, 65-83.
- Irak, M. (2011). Standardization of Turkish form of Metacognition Questionnaire for children and adolescents: the relationships with anxiety and obsessive-compulsive symptoms. *Turkish Journal of Psychiatry*, 23, 46-52.
- Laugesen, N., Dugas, M. J., & Bukowski, W. M. (2003). Understanding adolescent worry: The application of a cognitive model. *Journal of Abnormal Child Psychology*, 31, 55-64. doi:10.1023/A :1021721332181
- Meyer, T.J., Miller, M.L., Metzger, R.L., & Borkovec, T.D. (1990). Development and validation of the Penn State Worry Questionnaire. *Behaviour Research and Therapy*, 28, 587-495.
- Morani, S, Pricci, D., & Sanavio, E. (1999). "Penn State Worry Questionnaire" e "Worry Domains Questionnaire": presentazione delle versioni italiane e analisi della fedeltà. ["Penn State Worry Questionnaire" and "Worry Domains Questionnaire" Italian version and reliability]. *Psicoterapia Cognitiva e Comportamentale*, 5, 195-209.

Muris, P., Meesters, C., & Gobel, M. (2001). Reliability, validity, and normative data of the Penn State Worry Questionnaire in 8–12-yr-old children. *Journal of Behavior Therapy and Experimental Psychiatry*, 32, 63-72.

Muris, P., Merckelbach, H., Gadet, B., & Moulaert, V. (2000). Fears, worries, and scary dreams in 4- to 12-years-old children: Their content, developmental pattern, and origins. *Journal of Clinical Child Psychology*, 29, 43-52.

Muris, P., Merckelbach, H., Meesters, C., & van den Brand, K. (2002). Cognitive development and worry in normal children. *Cognitive Therapy and Research*, 26, 775-785.

Muris, P., Roelofs, J., Meesters, C., & Broosma, P. (2004). Cognitive development and worry in normal children. *Cognitive Therapy and Research*, 28, 539-554.

Papageorgiou, C., & Wells, A. (2003). An empirical test of a clinical metacognitive model of rumination and depression. *Cognitive Therapy and Research*, 27, 261-73.

Quattropani, M.C., & Lenzo V. (in press). Psychometric properties of the Italian version of the short form of the Metacognitions Questionnaire (MCQ-30) *Bollettino di Psicologia Applicata*.

Reynolds, C.R., & Richmond, B.O. (1978). What I think and feel: a revised version of the Children's Manifest Anxiety Scale. *Journal of Abnormal Child Psychology*, 5, 237-249 (It. ad. Sozzari, S., Sella, F., & Di Pietro, M., *Organizzazioni Speciali*, 2012).

Smith, K. E., & Hudson, J. L. (2013). Metacognitive Beliefs and Processes in Clinical Anxiety in Children. *Journal of Clinical Child & Adolescent Psychology*, (ahead-of-print), 1-13.

Vasey, M.W., & Daleiden, E.L. (1994). Worry in children. In G.C.L. Davey & F. Tallis (Eds.), *Worrying: Perspectives on theory, assessment and treatment* (pp. 185-207). Oxford, England: Wiley.

Wells, A. (1995). Meta-cognition and worry: A cognitive model of generalized anxiety disorder. *Behavioural and Cognitive Psychotherapy*, 23, 301-320.

Wells, A. (2005). The meta-cognitive model of GAD: assessment of meta-worry and relationship with DSM-IV generalized anxiety disorder. *Cognitive Therapy and Research*, 29, 107-121. doi:10.1007/s10608-005-1652-0.

Wells, A. (2009). *Metacognitive therapy for anxiety and depression*. New York, NY: The Guildford Press.

Wells, A., & Carter, K. (2001). Further tests of a cognitive model of GAD: metacognitions and worry in GAD, panic disorder, social phobia and depression, and non-patients. *Behavior Therapy*, 32, 899-913.

Wilson, C., Budd, B., Chernin, R., King, H., Leddy, A., MacLennan F., & Mallandain, I. (2011). The role of meta-cognition and parenting in adolescent worry. *Journal of Anxiety Disorders*, 71-79.

Wilson, C.; & Hughes, C. (2011). Worry, beliefs about worry and problem solving in young children. *Behavioural and Cognitive Psychotherapy*, 39, 507-521.

Weems, C.F., Silverman, W.K., & La Greca, A.M. (2000). What do youth referred for anxiety problems worry about? Worry and its relation to anxiety and anxiety disorders in children and adolescents. *Journal of Abnormal Child Psychology*, 28, 63-72.

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