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The Validity and Reliability of the Turkish Version of the Meta-Worry Questionnaire

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ABSTRACT

Introduction: This study aims to investigate the validity and reliability of the Meta-Worry Questionnaire in the Turkish version as a contribution to clinical practice.

Method: The research sample consisted of two groups. Cases were people who have General Anxiety Disorder (n=165) and controls were age and sex-matched healthy volunteers (n=158). To evaluate the psychometric properties of the scale, Meta-Worry Questionnaire, Metacognition Questionnaire-30, Beck Depression Inventory, Beck Anxiety Inventory, Penn State Worry Questionnaire and Generalized Anxiety Disorder-7 Questionnaire were used.

Results: In this study, Cronbach's alpha coefficient values of frequency and belief components were found 0.92 and 0.94, respectively. At the same time, excluding each item, Cronbach's alpha coefficient values of these two components also remained above 0.90, regardless of which item was chosen. While the frequency component accounted for 69.07% of the total variance, the belief component accounted for 72.95%. The area under the ROC curve is 0.948 for the frequency component and 0.944 for the belief component. The construct validity of the scale was tested with Exploratory and Confirmatory Factor Analysis and the one-dimensional structure of the scale was shown. To evaluate the psychometric properties of the scale, other scales which are related to metacognition were used.

Conclusion: All items in the tool displayed a high correlation with the overall questionnaire. High total variance of the scale indicates its high validity. These results suggest high reliability of the tool as well as consistency of every item it includes.

Keywords: Generalized anxiety disorder, meta-cognition, meta-worry, reliability, validity

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INTRODUCTION

Generalized anxiety disorder (GAD) is the most prevalent anxiety disorder and is characterized by restlessness, tension, concentration difficulty, excessive worry, sleep disorders, anxiety, and hypersensitivity (1). The main cognitive feature of GAD is worry (2). Borkovec et al. (1983) describe worry as a negative, uncontrolled chain of thoughts and images the objective of which is to solve the problem (3). Tallis et al. (1992) argued that the worry symptoms of individuals with GAD and normal individuals differed (4); however, Craske et al. (1989) claimed that there was minimal difference between normal and GAD worry symptoms (5). Wells developed the Anxious Thoughts Inventory (AnTI), which covers both the process and symptom components of pathological worry (6). According to Adrian Wells (2009), meta-worry is a novel psychometric construct related to GAD. As a result, meta-worry occurs when a person views worrying as a negative concept/process and is worrying about worry and the results of worrying; in other words, individual sees worrying and its effects as a threat (7). Anxiety symptoms are similar in GAD and other anxiety disorders. On the other hand, persons with GAD report these thoughts as more uncontrollable and have less success in lowering and managing their worry than people with other anxiety disorders (5).

Type 1 and Type 2 (meta-worry) worry are mentioned in the metacognitive model of GAD. Worrying is used as a coping mechanism in Type 1 worry to deal with potential future issues and threats. Worrying is described as a series of negative thoughts that seek an answer to the question "what if. . ." in order to solve problems and cope with threats. Worrying is egosyntonic, and it does not harm the person's self-image (7). Type 1 worry is caused by positive metacognitive beliefs about the utility of

Highlights

- **Metacognitive beliefs and the meta-worry effects the formation and continuity of Generalized Anxiety Disorder (GAD).**
- **Meta-Worry Questionnaire (MWQ) was developed to assess GAD within the framework of the metacognitive model.**
- **Turkish version of the MWQ is valid and reliable.**
- **A score of 11 and above from the MWQ indicates the diagnosis of GAD.**
- **MWQ is used to assess the treatment and follow-up in research and clinical practice.**

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worrying, such as "worrying helps me deal with," "worrying helps me cope better," "worrying enhances my motivation," and "worrying prepares me." Positive metacognitions can be prevalent in non-clinical groups as well. However, the presence of these positive metacognitions does not imply that they have pathological worry or GAD. GAD and pathological worry are determined by negative metacognitive thoughts. There are two types of negative metacognitive beliefs: "worrying is uncontrollable" and "worrying is dangerous." The activation of negative metacognitive beliefs results in a negative evaluation of worry and anxiety, which increases anxiety even more. Worry about worrying is known as meta-worry or Type 2 worry, and it is characterized as worrying that one would lose control, go insane, or suffer physical injury as a result of worrying itself or emotional, somatic, and cognitive results of worrying. Although worrying is first viewed as a coping method, after a while, the individual may come to worry about the worrying process itself (7). According to the metacognitive model, metacognitive beliefs and meta worry have a role in the development and progression of GAD (2). People with GAD have both positive and negative metacognitive beliefs (6). Negative metacognitive beliefs, in particular, and the accompanying meta-worry, are effective in the emergence and progression of GAD (8).

Negative metacognitive beliefs heighten anxiety and make it difficult to offer the essential stop signal to put an end to the worrying process. As worrying is perceived as uncontrollable, the individual takes little or no effort to halt or lessen the worry process. Failure to quit worrying does not inhibit the flow of dysfunctional knowledge regarding uncontrollability of worrying. To prevent worrying and its potential effects, people with GAD may employ dysfunctional and reactive coping mechanisms such as escaping, avoidance, and reassurance-seeking. There is no emotional extinction as a result of these rebound coping mechanisms, and the chance to learn that worry episodes are not uncontrollable and dangerous is lost. At the same time, individuals with GAD, according to the metacognitive model, adopt mental strategies such as suppressing thoughts and distraction, which help in the short term but feed negative metacognitive beliefs about uncontrollability and become a dangerousness of worrying in the long run because individuals use these strategies to escape from anxiety. They are unable to realize that they can control worry on their own and anxiety is not dangerous while attempting to control anxiety and worry with external agents. Individuals credit their avoidance of threat or not to lose control to the measures they take; as a result, no learning or emotional habituation occurs, and psychopathology persists (8).

The Meta-Worry Questionnaire (MWQ) was developed to assess GAD in the context of the metacognitive model. There is no scale for assessing Meta-worry in Turkey. Prior to the development of MWQ, the concept of meta-worry was assessed using several subscales of Wells' AnTI, and while these subscales were generally related to the uncontrollability of worry (6), MWQ is a scale designed to assess people's views about how dangerous the worry is (8). MWQ places less emphasis on "uncontrollability of worry," one of the negative metacognitive beliefs, and more emphasis on "beliefs that worry is dangerous." It also evaluates the frequency of meta-worry and the degree of the metacognitive beliefs. The aim of this study is to adapt the MWQ into Turkish and prove its validity and reliability in Turkish.

METHODS

Sample

The present cross-sectional study included 323 volunteers, 165 of them were GAD patients and 158 were healthy controls. The research was conducted between January 2019 and September 2019. Patients with GAD were those who applied to the psychiatric clinic at İstanbul Haydarpaşa Numune Hospital, subjected to the Structured Clinical Interview for DSM-IV Axis I Disorders (SCID-I) (9) and The Structured Clinical Interview for DSM-5 Personality Disorders (SCID-5-PD) (10) assessments by clinicians, and were diagnosed with GAD using the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5) (11) diagnostic criteria (9–11). According to the inclusion criteria, individuals aged 18–65, who did not have any major psychiatric disorders other than GAD, who did not have a physical illness that may induce anxiety, and who volunteered to participate were included in the study. The healthy control group consisted of volunteers who applied to the same hospital's health board compatible with the GAD group in terms of age, gender, and educational background, and who agreed to be involved in the study despite having no medical or mental condition.

Evaluation Tools

The socio-demographic data form was designed to collect demographic information such as age, gender, marital status, employment, level of education, psychiatric history, family history, and alcohol and substance use.

Penn State Worry Questionnaire (PSWQ) was established by Meyer et al. in 1990 to assess the prevalence, intensity, and controllability of generalized and trait anxiety (12). The questionnaire has 16 items on a 5-point Likert scale. The questionnaire was adapted into Turkish by Yilmaz et al. in 2008 (13). The questionnaire's Cronbach's alpha coefficient is 0.91, and the test-retest reliability value is 0.88. The questionnaire features a single factor structure, much as its original version. Questionnaire scoring is calculated by adding all scores ranging from 16 to 80. A rise in scores suggests a rise in pathological anxiety.

The Generalized Anxiety Disorder-7 Scale (GAD-7) was created by Spitzer et al. to assess GAD (1). Konkan et al. developed the Turkish adaption of the scale in 2013. The scale's Cronbach's alpha coefficient is 0.85. The scale is made up of seven 4-point Likert-type items (14).

Beck Anxiety Inventory (BAI) was created by Beck et al. in 1988 to assess the frequency of anxiety symptoms. The scale consists of 21 4-point Likert style items with scores ranging from 0 to 3. The Turkish validity and reliability studies of the scale were conducted by Ulusoy et al. in 1998. The Cronbach's alpha value of the scale is 0.92. A high score on the scale shows the degree of the individual's anxiety (15).

The Beck Depression Inventory (BDI) was created by Beck et al. in 1961 (16). The 21 items evaluating depressive symptoms are rated on a scale of 0 to 3. The scoring depicts the severity of depression. The Cronbach's alpha value of the questionnaire was found to be 0.74. The Turkish validity and reliability study of the scale was conducted by Hisli in 1988 (17).

The Metacognition Questionnaire-30 (MCQ-30) was created by Wells and Cartwright-Hatton in 2004. The questionnaire aims to assess individual variations in metacognitive belief, judgment, and monitoring tendencies (18). The questionnaire is made up of 30 4-point Likert-type items with scores ranging from 1 to 4. A high score indicates high pathological metacognitive activity. The Cronbach's alpha value of the questionnaire is 0.93. The Turkish validity and reliability studies of the scale were conducted by Tosun and Irak in 2008 (19).

The Meta-Worry Questionnaire (MWQ) was developed by Adrian Wells in 2005 (8). The questionnaire assesses the frequency and level of belief in meta-worry. The questionnaire is made up of seven items that assess the risk component of worry. The frequency scale has a Cronbach's alpha value of 0.88, whereas the belief component has a Cronbach's alpha value of 0.95. The frequency scale is graded from 1 to 4 as "Never, Occasionally, Frequently, Almost Always." On the other hand, the belief scale is scored between 0 and 100, with descriptions such as "I do not believe in this thought at all" and "I totally believe in the truth of this thought."

Procedure

The approval of the Marmara University Non-Interventional Clinical Studies Ethics Committee was obtained to conduct the study with ethical approval no: 09.2018.350 on the 04.05.2018. Following that, four psychiatrists with professional expertise and foreign language proficiency translated the scale into Turkish. The agreed-upon translated scale text was then double-checked by two independent psychiatrists who possess knowledge in this field. The scale was translated back into English after being evaluated on healthy and GAD patient groups with a small sample who were not included in the research. The scale inventors' comments were also taken into account.

First and foremost, volunteers were subjected to SCID-1 (9) and SCID-PD (10) and those with significant psychiatric diagnoses (schizophrenia, bipolar disorder, etc.) and personality disorders were excluded from the study. Following that, the participants signed an informed consent form and used data collection tools. Following the conclusion of the medical board procedures, the Symptom Checklist (SCL-90) (20) was administered to the healthy control group, and those who did not have psychiatric issues in their mental examination were told about the study and offered to participate. Data collection tools were applied to those who volunteered. In an average of 12–14 minutes, data collection tools, such as a socio-demographic data form, MWQ, MCQ-30, PSWQ, GAD-7, BDI, and BAI ranking were applied to the healthy and patient groups. The forms obtained were appropriately scored and statistically analyzed.

Statistical Analysis

The Statistical Package for the Social Sciences (SPSS) version 20.0 and AMOS 24.0 package programs were used to analyze the research data. Descriptive data of participants are presented as mean ± standard deviation for continuous variables and as frequency and percentage for categorical variables. After confirming for conformity with normal distribution, the Independent Sample t-test was employed to compare continuous variables between the two groups. A value of $p<0.05$ was regarded as statistically significant in statistical procedures.

Cronbach's alpha values, item-total score correlations, alpha values when the item was removed, and scale mean values when the item was removed were used to examine the reliability of the scale's components. Exploratory factor analysis (EFA) was used to assess the scale's construct validity. The Kaiser-Meyer-Olkin (KMO) sample adequacy criterion and the Barlett sphericity test were used to determine the suitability of data for factor analysis. Confirmatory factor analysis (CFA) was used to test the structure estimated in EFA. DFA fit indices were analyzed with Chi square/standard deviation (χ^2/SD), Root mean square error of approximation (RMSEA), Comparative fit index (CFI), Goodness of fit index (GFI) and p values.

The scale's content validity was tested by measuring the correlation coefficient with other scales that were used concurrently. Pairwise comparisons of items, component sums, and other scales between the healthy control and patient groups were used to assess content validity. The right cut-off value, as well as sensitivity and specificity values, were determined using ROC analysis.

RESULTS

Sociodemographic Features

The study comprised 323 individuals, with 54.7% (n=175) being female and 46.3% (n=148) being male. Of the patients, 27.2% (n=88) were married and 65.9% (n=213) were single. Primary school graduates made up 7.4% (n=24), high school graduates made up 58.3% (n=190), and university graduates made up 33.7% (n=109). Furthermore, 39.6% (n=128) of the individuals smoked, 31.9% (n=103) drank alcohol, and 8.4% used substances. Finally, according to SCID-I findings, 48.9% (n=158) of volunteers were healthy controls, whereas 51.1% (n=165) had GAD. The sociodemographic characteristics of the patients are presented in Table 1.

Table 1. Descriptive characteristics of the participants

Descriptive characteristics		Participant (n=323) Mean ± SD/n%	
Age, (years)		31.93±12.42	
Gender	Female	175	54.7
	Male	148	45.3
Education status	Primary school	24	7.4
	High school	190	58.3
	University	109	33.7
Marital status	Married	88	27.2
	Single	213	65.9
	Divorced	14	4.3
	Living together	4	1.2
	Married lives separately	4	1.2
Child	Yes	65	21.1
	No	258	79.9
Profession	Student	102	31.6
	Officer	30	9.3
	Employee	76	23.5
	Small business	29	9.0
	Not working	48	14.9
	Other	38	11.8
Income	Low	32	9.9
	Middle	184	57.0
	High	107	33.1
Disorder status	Generalized anxiety disorder	165	51.1
	Healthy control	158	48.9
Psychiatric history	No	218	67.5
	Yes	105	32.5
Psychiatric disorder in the family	No	270	83.6
	Yes	53	16.4
Smoking	No	195	60.4
	Yes	128	39.6
Alcohol	No	220	68.1
	Yes	103	31.9
Psychoactive substances	No	296	91.6
	Yes	27	8.4

SD: Standart deviation

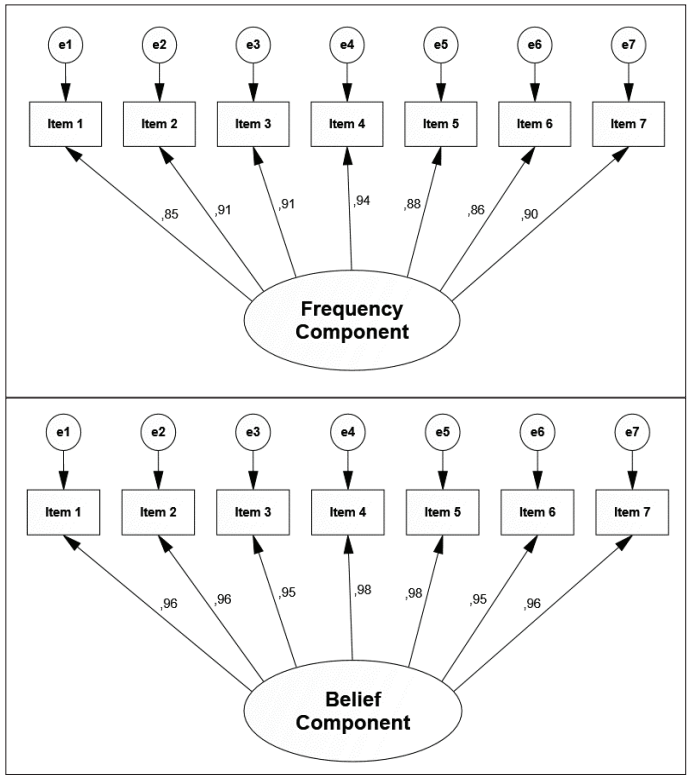
Reliability Analysis

Internal consistency analysis was used to assess the reliability of the MWQ components. Table 2 presents the findings of the internal consistency analysis as well as the item features. The Cronbach's alpha coefficient of the questionnaire's frequency component was found to be 0.92, while the Cronbach's alpha coefficient of the scale's belief component was calculated to be 0.93. The correlation coefficients of each scale item with the scale total range from 0.714 to 0.791 for the frequency component and from 0.760 to 0.830 for the belief component. Furthermore, after removing each item, the Cronbach's alpha coefficient was determined to range between 0.90 and 0.91 for the frequency component and 0.92 and 0.93 for the belief component. These calculated values demonstrate MWQ's high level of dependability.

Table 2. Item properties table

Item	Item Mean (Mean ± SD)	Scale mean if item deleted	Corrected item-total correlation	Scale Variance if item deleted	Cronbach's alpha if item deleted	Component Cronbach's Alpha Value
Frequency component						
Item 1	1.74±0.92	10.66	0.763	23.723	0.91	0.92
Item 2	1.73±0.93	10.67	0.773	23.564	0.91	
Item 3	1.92±1.08	10.48	0.798	22.176	0.90	
Item 4	1.67±0.95	10.72	0.791	23.324	0.91	
Item 5	1.67±0.87	10.73	0.769	24.098	0.91	
Item 6	1.88±1.02	10.52	0.714	23.344	0.91	
Item 7	1.78±0.94	10.62	0.740	23.759	0.91	
Belief component						
Item 1	24.51±30.37	164.77	0.775	26363.999	0.92	0.93
Item 2	25.37±29.51	163.90	0.830	26137.354	0.92	
Item 3	31.21±34.19	158.07	0.830	24822.859	0.92	
Item 4	24.01±30.39	165.27	0.799	26154.575	0.92	
Item 5	25.02±29.45	164.26	0.803	26378.087	0.92	
Item 6	31.58±34.21	157.70	0.760	25466.901	0.93	
Item 7	27.59±30.77	161.69	0.781	26198.954	0.92	

SD: Standart deviation



	CMIN/DF	p value	GFI	CFI	RMSEA
	1.889	0.023	0.959	0.991	0.071
Belief Component	1.991	0.015	0.958	0.994	0.075

DF: Degrees of freedom; CFI: Comparative fit index; CMIN: Chi-square statistics; GFI: Goodness of fit index; RMSEA: Root mean square error of approximation

Figure 1. Confirmatory factor analysis of components.

Validity Analysis

Construct Validity used EFA to determine the factor structure of the scale. The KMO and Barrett Sphericity tests were used to determine the appropriateness of the data prior to analysis. KMO value of the frequency component was calculated to be 0.895, and the Chi-square value was to be 1566.766 (Df=21, p<0.001) as a result of the Barrett Sphericity test. KMO value of the frequency component was calculated to be 0.916, and the Chi-square value was to be 1818.038 (Df=21, p<0.001) as a result of the Barrett Sphericity test. The EFA done to assess the construct validity of the MWQ Frequency Component revealed that the component had a one-dimensional structure consisting of seven items with an eigenvalue of 4.83, accounting for 69.07% of the total variance. EFA revealed that the Belief Component has a one-dimensional structure consisting of seven items, with an eigenvalue of 5.10, explaining 72.95% variance. The factor loads of the items for the two scale components ranged from 0.790 to 0.881. A rise in the scale's score was related to an increase in meta-worry. Table 3 displays the EFA findings for the scale components.

The one-dimensional structure of the MWQcomponents identified by EFA was evaluated using CFA. The following are the CFA goodness of fit criteria: 3–5 is acceptable and <3 is excellent for χ^2/SD; 0.08–0.05 is acceptable and <0.05 excellent for RMESA; 0.90–0.95 is acceptable and >0.95 excellent for GFI; and 0.95–0.97 is acceptable and >0.97 excellent for CFI (21). When the measurement model's fit indices were investigated, it was discovered that the Frequency Component model had outstanding fit index values as a consequence of CFA (χ^2/SD=1.889, RMSEA=0.071, GFI=0.959, CFI=0.991, ve p=0.023). It was discovered that the belief component model had a perfect fit index value as well (χ^2/SD=1.991, RMSEA=0.075, GFI=0.958, CFI=0.994 ve p=0.015). The CFA factor loading values of the frequency component were found to range between 0.85 and 0.94. The CFA factor loading values of the belief component were found to range between 0.95 and 0.98. Figure 1 depicts the path diagrams of the MWQ components in the CFA sample.

Table 3. Factor loads of the scale

	Standardized item factor value	Eigenvalue	Variance %		
Frequency component		4.83	69.07	Kaiser-Meyer-Olkin Measure of Sampling Adequacy=0.895	Bartlett's Test of Sphericity Chi-square=1566.766 Df=21 P value=<0.001
Item 1	0.830				
Item 2	0.840				
Item 3	0.858				
Item 4	0.852				
Item 5	0.835				
Item 6	0.790				
Item 7	0.811				
Belief component		5.10	72.95	Kaiser-Meyer-Olkin Measure of Sampling Adequacy=0.916	Bartlett's Test of Sphericity Chi-square=1818.038 Df=21 P value=<0.001
Item 1	0.838				
Item 2	0.881				
Item 3	0.879				
Item 4	0.855				
Item 5	0.860				
Item 6	0.823				
Item 7	0.841				

Table 4. Correlation coefficients between Meta-Worry Questionnaire components and other scales

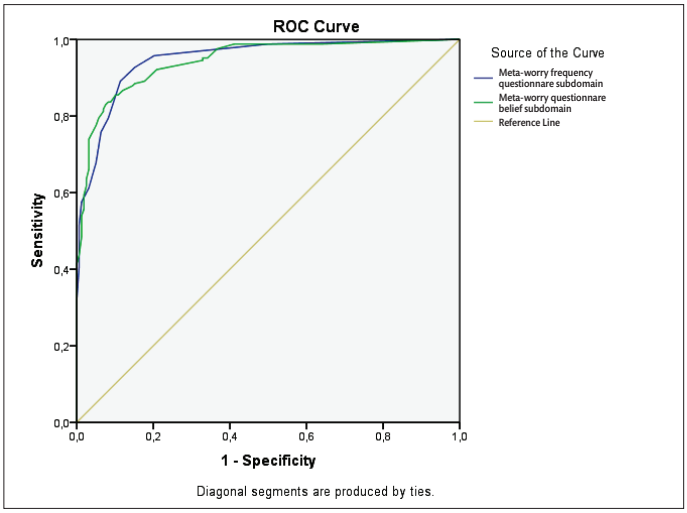
		Meta-Worry Questionnaire frequency component		Meta-Worry Questionnaire Belief component	
		R	P	R	P
Meta-Worry Questionnaire frequency component		1		0.900**	<0.001
Meta-Worry Questionnaire Belief component		0.900**	<0.001	1	
Beck Depression Inventory		0.798**	<0.001	0.763**	<0.001
Beck Anxiety Inventory		0.716**	<0.001	0.681**	<0.001
Generalized Anxiety Disorder-7 Scale		0.800**	<0.001	0.761**	<0.001
Penn State Worry Questionnaire		0.771**	<0.001	0.758**	<0.001
Metacognition Questionnaire-30	Positive beliefs	0.045	0.417	0.002	0.974
	Negative beliefs	0.401**	<0.001	0.406**	<0.001
	Cognitive confidence	0.388**	<0.001	0.335**	<0.001
	Beliefs about the need to control thoughts	0.782**	<0.001	0.787**	<0.001
	Cognitive self-consciousness	0.343**	<0.001	0.337**	<0.001
	Total	0.618**	<0.001	0.590**	<0.001

Criterion Validity: The correlations of frequency and belief components with the BDI, BAI, GAD-7, PSWQ, and MCQ-30 scale were used to investigate the criterion validity of the MWQ. The MWQ Frequency component has a high and statistically significant positive correlation with the BDI (r=0.798, p<0.001), BAI (r=0.716, p<0.001), GAD-7 (r=0.800, p<0.001), and PSWQ (r=0.771, p<0.001), according to our findings. The MWQ Belief component has a high and statistically significant positive correlation with the BDI (r=0.763, p<0.001), BAI (r=0.681, p<0.001), GAD-7 (r=0.761, p<0.001), and PSWQ (r=0.758, p<0.001). The MWQ Frequency Component has a positive, moderate, and high correlation with the MCQ-30 total (r=0.618, p<0.001), Uncontrollability, and Danger (r=0.401, p<0.001), Cognitive Confidence (r=0.388, p<0.001), Need for Thought Control (r=0.782, p<0.001), and Cognitive Awareness (r=0.743, p<0.001). The Belief Component has a statistically significant, moderate, and high correlation with the MCQ-30 total (r=0.590, p<0.001), Uncontrollability and Danger (r=0.406, p<0.001), Cognitive Confidence (r=0.335, p<0.001),

Table 5. Comparison of Meta-Worry Questionnare items and components with other scales between the patient and healthy control group

	Healthy control (n=158)	Patient (n=165)		
	Mean ± SD	Mean ± SD	t	p
Frequency component	8.22±2.05	16.40±4.98	-19.416[a]	**<0.001***
Item 1	1.23±0.47	2.24±0.98	-11.765[a]	**<0.001***
Item 2	1.18±0.44	2.26±0.98	-12.873[a]	**<0.001***
Item 3	1.13±0.40	2.67±0.98	-18.429 [a]	**<0.001***
Item 4	1.07±0.25	2.25±1.01	-14.590 [a]	**<0.001***
Item 5	1.19±0.45	2.13±0.93	-11.507 [a]	**<0.001***
Item 6	1.23±0.46	2.50±1.04	-14.177[a]	**<0.001***
Item 7	1.19±0.48	2.35±0.93	-14.117[a]	**<0.001***
Belief component	48.86±69.32	323.73±163.70	-19.795[a]	**<0.001***
Item 1	7.09±14.33	41.19±32.29	-12.352[a]	**<0.001***
Item 2	6.96±12.24	43.00±30.44	-14.062[a]	**<0.001***
Item 3	5.63±10.24	55.70±31.00	-19.651[a]	**<0.001***
Item 4	5.32±10.98	41.91±32.23	-13.771[a]	**<0.001***
Item 5	7.66±14.54	41.64±30.53	-12.853[a]	**<0.001***
Item 6	7.97±11.81	54.18±33.36	-16.727[a]	**<0.001***
Item 7	8.23±15.20	46.12±30.51	-14.214[a]	**<0.001***
Beck Depression Inventory	4.05±4.25	21.73±10.04	-20.769[a]	**<0.001***
Beck Anxiety Inventory	6.48±6.90	25.51±13.87	-15.710[a]	**<0.001***
Generalized Anxiety Disorder-7 Scale	2.50±2.51	11.27±4.70	-21.024[a]	**<0.001***
Penn State Worry Questionnaire	35.06±8.71	60.58±10.89	-23.289[a]	**<0.001***
MCQ-30 positive beliefs	11.75±4.14	11.68±3.92	0.166[a]	0.868
MCQ-30 negative beliefs	12.80±3.52	15.73±3.65	-7.333[a]	**<0.001***
MCQ-30 cognitive confidence	10.46±3.83	13.92±4.84	-7.149[a]	**<0.001***
MCQ-30 beliefs about the need to control thoughts	10.03±3.06	17.67±3.77	-19.988[a]	**<0.001***
MMCQ-30 cognitive self-consciousness	15.73±3.32	17.98±2.77	-6.601[a]	**<0.001***
MCQ-30 total	60.79±11.76	77.00±11.25	-12.657[a]	**<0.001***

[a]Student's t-test was used for statistical analysis; *p<0.001; MCQ-30: Metacognition questionnaire-30; SD: Standanrd deviation



Frequency Component			Belief Component		
Cutoff	Sensitivity	Specificity	Cutoff	Sensitivity	Specificity
≥ 9	0.958	0.797	≥ 85	0.891	0.823
≥ 10	0.927	0.848	≥ 95	0.885	0.848
≥ 11	0.891	0.886	≥ 105	0.879	0.854
≥ 12	0.794	0.918	≥ 115	0.867	0.880
≥ 13	0.758	0.937	≥ 125	0.855	0.892

Frequency Component area under the ROC curve: 0.948, p value:<0.001.
Belief Component ROC area under the ROC curve: 0.944, p value:<0.001.

Figure 2. ROC curve and cut-off values table.

Need for Thought Control (r=0.787, p<0.001), and Cognitive Awareness (r=0.337, p<0.001). However, there was no statistically significant correlation between the Frequency and Belief Component and MCQ-30 Positive Beliefs (Table 4).

Comparison of the Meta-Worry Questionnaire items and component scores, BDI, BAI, GAD-7, PSWQ, MCQ-30 scale total and subscale scores between the healthy control group and the GAD group is presented in Table 5. As a result, statistical significance was discovered between the two groups in all test parameters (p<0.001).

The discriminative capacity of MWQ was determined using ROC curve analysis. The area under the ROC curve for the Frequency component was 0.948, while the area under the ROC curve for the Belief component was 0.944 (p<0.001) (Figure 2). The existence of GAD for the Frequency component may be regarded as 11 predicted values with 89.1% sensitivity and 88.6% specificity as a result of the research. The existence of GAD is acceptable for the belief component, with a sensitivity of 87.9% and a specificity of 85.4%, with a predictive value of 105 (Figure 2).

DISCUSSION

The notion of meta-worry has been frequently encountered in international research in the field of mental health recently. The rise in the number of reviews addressing all elements of worry, as well as research demonstrating the link between excessive, recurrent, and uncontrolled worry cycles and various psychopathologies, has had a significant influence

on this recent interest. In several of these research, it is suggested that the MWQ can be used in future studies regarding anxiety disorders and other psychopathologies (22–24). The findings of our study have demonstrated that the Turkish version of MWQ is valid and credible. Furthermore, it has been discovered that 11 points or above on the scale imply a diagnosis of GAD. It is possible that these findings will be valuable in expanding the information network related to the notion of meta-worry, which has been on the rise in our nation in recent years (25–27).

One fundamental tenet of the metacognitive theory is that meta-worry is distinct from chronic worry or the inclination to worry frequently and/or persistently (28). Meta-worry (Type 2 worry) is concerned with what the worry process means to the individual independent of content, and how that process is managed (2). However, these structures are not fully independent of one another. Wells (1995) argues that worry becomes a problem when Type 1 worry becomes excessive and causes Type 2 worry, i.e., meta-worry, which reinforces negative beliefs about worrying (2,6). In fact, a study revealed that problem-causing worrying was associated with meta-worry and that this link was independent of trait anxiety and content (type 1) worry (29).

Meta-worry is related to the symptoms of numerous psychopathologies, and the psychiatric disorder it is mostly related to is GAD with a clear distinction. GAD symptoms are followed by symptoms of OCD, social phobia, and depression (30). Meta-worry separates patients with panic disorder, social phobia, and depression from patients with GAD in clinical studies, and GAD patients had greater levels of meta-worry (31). However, meta-worry appears to exacerbate symptoms in people with OCD, social phobia, depression, and GAD (32). Davis and Valentiner (2000) discovered that participants meeting the GAD criteria showed significantly greater levels of meta-worry than participants found to be either non-worried or non-worried yet anxious and that they also had both positive and negative beliefs about worry (28).

In the MWQ development study, Cronbach's alpha coefficients were specified as 0.88 for the frequency component and 0.95 for the belief component. In our study, Cronbach's alpha coefficients were found to be 0.92 for the frequency component and 0.93 for the belief component. At the same time, Cronbach's alpha coefficients for frequency and belief components remain above 0.90 when each item is removed. These results indicate that the internal consistency of the Turkish version of the scale is high. When the criterion validity of our study is evaluated, it is seen that the frequency and belief component of the scale show a positive, moderate, and strong correlation with all other scales except for the MCQ-30 Positive Beliefs. These findings demonstrate the scale's validity in Turkish. Furthermore, the current study demonstrates that the meta-worry questionnaire has high discriminating power in determining whether a person has GAD (the area under the ROC curve for the frequency component is 0.948, and for the belief component it is 0.944). From this point of view, the meta-worry questionnaire with 11 cut-off values can be employed as a diagnostic tool.

Meta-worry appears to have a direct influence on several psychopathologies, particularly GAD, as well as some indirect consequences. Meta-worry is linked to a number of cognitive structures and cognitive strategies, including cognitive self-consciousness, thought suppression, and intrusive thoughts (22,33).

The present study's findings confirm the metacognitive model, which proposes that meta-worry is the major cause of the persistence of pathological worry and GAD (29). However, research suggests that meta-worry can differentiate between normal and pathological worry and that it can predict pathological worry irrespective of Type 1 or chronic worry (28). These evaluations imply that meta-worry may be an independent risk factor for the excessive worry that is in the center of GAD, (30) and they lend credence to the notion that MWQ might be utilized in diagnosis. On the other hand, whether meta-worry is unique to GAD is still debatable. While some studies suggest that meta-worry is a distinct notion for GAD (31), others contend that it may also be a predictor of other psychopathologies such as obsessive-compulsive disorder (22). More study in the field is required to investigate these correlations and determine the link between meta-worry and psychopathology.

The results of our study can be evaluated within some limitations. Although the subjects in the research were chosen following a mental evaluation and organized interviews, the use of self-report scales stands out as a drawback because it is possible for individuals to manipulate self-report scales. Furthermore, the study's single-centered design may limit the generalization of results.

In conclusion, the current study demonstrates that the Turkish version of a scale designed for the assessment of increasingly significant meta-worry is valid and reliable. It should be noted that the evaluation of the notion of meta-worry, which is gaining prominence in the field of mental health, can lead to therapeutic methods to be used. Furthermore, objective evaluation of meta-worry by researchers will be helpful both in academic studies and in treatment follow-up of patients.

Ethics Committee Approval: The approval of the Marmara University Non-Interventional Clinical Studies Ethics Committee was obtained to conduct the study with 09.2018.350 ethical committe number on the 04.05.2018.

Informed Consent: The participants signed an informed consent form.

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