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Testing the Psychometric Properties of the Ways of Coping Questionnaire (WCQ) in Turkish University Students and Community Samples

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Ways of Coping Questionnaire (WCQ) has been extensively used to assess coping styles in the clinical or non-clinical context. The present study investigates the psychometric properties of WCQ in Turkish culture and attempts to get its shorter version by using three separate and independent samples (two groups of university students and one community sample). The constructive study was conducted with a sample of full-time university students ($N = 472$) and it indicated that the most relevant factor structure was seven-factor model. The factors were planful problem-solving, seeking refuge in supernatural forces, keep to self, seeking social support, seeking refuge in fate, escape/avoidance and accepting responsibility. After that, confirmatory factor analysis was performed to test the adequacy of these factors with two different samples. Study 1 was conducted with a sample of university students ($N = 485$) and Study 2 was conducted with a sample of community ($N = 416$). Results demonstrated that seven-factor solution revealed better results in both samples in terms of goodness of fit indexes in confirmatory factor analysis. The results of reliability and validity analysis revealed that psychometric properties of WCQ were acceptable. In addition to getting shorter version of WCQ, the present study enhances cross-cultural information that increases awareness about the coping styles in a non-western culture. Copyright © 2010 John Wiley & Sons, Ltd.

Key Practitioners Message:

- Ways of Coping Questionnaire (WCQ) is a feasible measure especially for non-native clinicians to understand the client's coping styles by exploring and being sensitive to his/her cultural values in order to establish therapeutic alliance throughout the therapy assess.

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- Turkish version of WCQ includes specific dimensions of seeking refuge in fate and supernatural forces.
- Clinicians can assess behavioural as well as cognitive responses of coping behaviours by WCQ.
- WCQ can be used to identify focal point of the therapy when dealing with depression, negative affect and self esteem problems of Turkish clients.

Keywords: Ways of Coping Questionnaire, Psychometric Properties, Exploratory Factor Analysis, Confirmatory Factor Analysis, Cross-Cultural

Coping is described as 'constantly changing cognitive and behavioral efforts to manage specific external or internal demands that are appraised as taxing or exceeding the resources of a person' (Lazarus & Folkman, 1984, p. 141). It is also defined as the adaptation of one's self to the environment or regulation of environment on the basis of desires (Schuster, Hammitt, & Moore, 2006). If individuals fear the demands of the environment, they escape from the situation; on the other hand, if they feel anger, they try to confront those demands (Folkman & Lazarus, 1988).

Basically, two types of coping are *problem-focused coping* and *emotion-focused coping*. The former is related with 'dealing with the problem causing distress' and the latter is related with 'regulating emotion' (Folkman, Lazarus, Gruen, & DeLongis, 1986, p. 572). Individuals use *problem-focused coping* if they think something can be done to cope with the event; on the other hand, if they feel that they must accept the consequences of a situation, they use *emotion-focused coping* (Schuster et al., 2006). In more detail, Folkman et al. (1986) said that 'problem-focused forms of coping include aggressive interpersonal efforts to alter the situation, as well as cool, rational, deliberate efforts to problem solve and emotion-focused forms of coping include distancing, self-controlling, seeking social support, escape/avoidance, accepting responsibility, and positive reappraisal' (p. 572).

There are many measures to assess coping (treating as a trait) such as COPE inventory (Carver, Scheier, & Weintraub, 1989), Coping Stress Inventory (Gadzella, Pierce, & Young, 2008) and the Multidimensional Coping Inventory (Endler & Parker, 1990). One of the most commonly and recently used is the Ways of Coping Questionnaire (WCQ) (i.e., Kuyken, Peters, Power, & Lavender, 2003; Lachapelle & Hadjistavropoulos, 2005; Lundqvista & Ahlströmb, 2006; Sinha & Watson, 2007). WCQ, being prepared as a process measure, not as a trait measure, was developed according to the theoretical framework of Lazarus's cognitive-phenomenological analyses of psychological stress and related literature (Folkman & Lazarus, 1980) and later revised by Folkman and Lazarus in 1985. The 1980 scale included 68 items, 27 items for problem-focused coping strategies and 41 items for emotion-focused coping strategies were selected on the basis of judges' agreement. In 1985, Folkman and Lazarus studied with a 66-item self-report scale, and then they obtained a 42-item scale at the end of their study. For the scale, they changed the response format into a 4-point Likert-type scale (0 = not used, 1 = used a little, 2 = used, 3 = used too much) while they had previously preferred a 'yes-no' response format. This new version of WCQ (42 items) consisted of eight subscales: one problem-focused coping strategy, six emotion-focused coping strategies (wishful thinking, distancing, emphasizing positive, self-blame, tension reduction and self-isolation) and one combination of problem- and emotion-focused coping strategies (seeking social support [SSS]). After that, Dunkel-Schetter, Folkman, and Lazarus (1987) administered a 67-item scale to middle-aged community residents and found a two-factor solution: problem-focused coping (including seeking support, problem solving, positive reappraisal and confronting the problem) and emotion-focused coping (including distancing, accepting responsibility [AR] and escape/avoidance [EA]).

In literature, there have been many attempts to develop a version of the WCQ that is time costly, universally acceptable and culturally sensitive in order to use the scale in research or therapeutic applications. Solomon, Mikulincer, and Avitzur (1988) used WCQ with 44 items to evaluate soldiers' coping styles. They found that a four-factor solution (problem-focused coping, emotion-focused coping, SSS and distancing) was relevant according to factor analysis. Likewise, when the scale

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was administered to married couples, 50 items revealed eight subscales based on oblique rotation; confrontative coping, distancing, self-controlling, SSS, AR, EA, planful problem-solving (PPS) and positive reappraisal (Folkman, Lazarus, Dunkel-Schetter, Delongis, & Gruen, 1986). Similarly, Lundqvista and Ahlströmb (2006) found that an eight-factor solution was relevant in a sample of clinically disabled patients, their next of kin and students. However, when comparing the four- and the eight-factor models of WCQ administered to the couple sample, the eight-factor solution (distancing/avoidance, confrontation/SSS, problem-focused coping and denial) revealed better results according to the level of approximation in confirmatory factor analyses (CFA) (Bouchard, Sabourin, Kussier, Wright, & Richer, 1997). Parker, Endler, and Bagby (1993) started with 66 items, but decided that 38 items were the most relevant for the analyses of factor structure. They found four factors, which were distancing/avoidance, confrontive/SSS, problem-focused coping and denial by means of using oblique rotations. When the scale was administered to elderly people by Folkman, Lazarus, Pimley, and Novacek (1987), 31 items were selected from WCQ according to factor loadings. The scale was composed of eight factors including confrontive coping, distancing, self-control, SSS, AR, EA, PPS and positive reappraisal.

Cultural differences and the nature of the stressful events may lead to diversity in the factor structure of WCQ (Sorlie & Sexton, 2003) because culture has an influence on human behaviour and experience (Draguns & Tanaka-Matsumi, 2003). Similarly, it is recommended that multidimensionality of WCQ should be examined in a particular sample (Parker et al., 1993) since coping with stress is also affected by culture. For instance, in a study carried out by Li and Lambert (2007), breast cancer survivors living in China displayed higher scores from coping subscales of planning and positive reframing. In this research, this result is linked with the effect of Chinese culture which emphasizes on a continuous struggle with the events.

Needless to say, therapy process between the therapist and the client is also affected by their cultural orientation (Draguns & Tanaka-Matsumi, 2003). Therefore, a therapist should know and understand the client's coping styles by exploring and being sensitive to his/her cultural values in order to establish therapeutic alliance throughout the therapy, and to create permanent changes. Also, the therapist considers the client's cognitive, emotional and behavioural reactions affected by his/her cultural values. For example, strict rules and laws can be beneficial for Turkish people, especially in ambiguous situations (Hofstede, 2001). This may also be true for Turkish clients in the therapeutic process because the Turkish clients can expect from a therapist to form the therapeutic process as more concrete or to be more direct. Similarly, when trying to cope with a problem, the Turkish clients may prefer to practice superstitious efforts instead of focusing on the strategies that explain the problem by concrete terms, SSS from others or modifying/regulating his/her emotions. In addition, Goral, Kesimci, and Gencoz, (2006) suggested that emotion focused coping is more adaptive in uncontrollable events (e.g., traumatic experiences, serious illness) and problem focused coping is more adaptive in controllable events (e.g., adaptation to a new environment) for Turkish participants. Therefore, cultural aspects of coping may be disregarded by the non-native therapists who do not know and understand the Turkish client's cultural backgrounds.

To observe cultural differences, WCQ was adapted into Turkish culture by Siva in 1991. Since Turkish people are quite inclined to use superstitious beliefs and fatalism to cope with the stressful situations, Siva added eight new items related to fatalism and supernatural forces and obtained seven factors from WCQ: PPS, fatalistic approach, mood regulation/emotional control, being reserved, acceptance, maturation/growth and helplessness/seeking help. The dimensions of fatalism and supernatural forces included by Siva are not specific to Turkish culture only; supernatural strategies are also used in different cultures such as USA (Colbert, Jefferson, Gallo, & Davis, 2009), Germany (Padgett & Jorgenson, 1982), New Zealand and Australia (Case, Fitness, Cairns, & Stevenson, 2004) and Israel (Keinan, 2002). While the western researchers have not included the items related to fatalism or supernatural forces in WCQ, Siva considers the religious attempts as a part of coping due to the wide effect of Islam over daily life.

The scale standardized by Siva was applied by many other Turkish studies, as well. For example, Karancı, Alkan, Akşit, Sucuoğlu, and Balta (1999) recently applied the scale to the survivors of the 1995 Dinar earthquake and revealed five factors: problem solving/optimistic, fatalistic approach, helplessness approach, SSS and escape. Similarly, the five-factor solution was also found by Şahin and Durak (1995) by using three different samples (university students, bank workers and the

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residents of Ankara). However, they named factors differently as optimistic approach, self-confidence approach, submissiveness, helplessness and SSS.

Despite the studies mentioned above, there is no time costly, universally applicable and culturally sensitive coping measure that can be used in Turkish culture for research and therapy purposes. To form such a measure, the present study was conducted with two main aims. The first aim of the present study is to see how many items of this universally applicable scale are necessary to measure coping styles and to obtain a relevant factor structure. The second aim is to check whether this short form is valid for different samples: Turkish university students and adults. This study was conducted in three phases to determine the best factor structure during the constructive study and to test the factor structure of the scale by using CFA while conducting Study 1 and Study 2.

THE CONSTRUCTIVE STUDY

Method

Participants

The sample of the constructive study is composed of 416 full-time students (295 females and 177 males). The mean age of the participants is 21.01 (SD = 1.81) with a range of 18–29. In terms of average income level, the participants' average monthly family income was 1477.81 Turkish Liras (TL) that equals to US$ 985.21 (SD = 1430.13 TL or US$ 953.42). Approximately, 36% of the subjects are fresher, 24% is sophomore, 19% is junior, 19% is senior and 2% is post-graduate.

Measures

The data was gathered by administering the WCQ, and Demographic Information Form, which was used to obtain demographic information such as age, sex, education level and income level of the families of the participants.

WCQ. WCQ was developed by Folkman and Lazarus (1980) and later revised by Folkman and Lazarus (1985) to measure coping styles, specifically the problem-focused and the emotion-focused types of coping. The revised scale consists of 66 items and is scored on a 4-point Likert-type scale from 'not used' (0) to 'used a great deal' (3). The adaptation of the scale into Turkish was made by Siva (1991). The Turkish form of the scale has 74 items including new concepts of fatalism and superstition. Consistent with Siva's study, 5-point Likert-type scale from 'not used at all' (1) to 'used a great deal' (5) was used in the present study. Siva's form has been used in a great deal of research thus far (Gençöz, Gençöz, and Bozo, 2006; Karancı et al., 1999; Şahin & Durak, 1995). However, these studies were not in agreement with each other concerning the number of the factors of WCQ.

Procedure

Before collecting the data, all items in Siva's form of WCQ were examined in accordance with the original WCQ items due to the weakness of her form. There is an inconsistency between the original form of Folkman and Lazarus (1985) and Siva's form in that the translation of the items into Turkish was not word-for-word. Moreover, Siva did not check the accuracy of translation of her items and used only one translator. For this reason, in the present study, the items of the original WCQ were translated into Turkish by three independent native English-speaking translators fluent in Turkish and then reviewed with three native Turkish-speaking psychologists fluent in English to check for accuracy. Any discrepancies were discussed carefully by the three translators and three psychologists and then resolved by joint agreement. Therefore, the present form has obviously advantages over other versions.

WCQ and demographic information form were distributed to the students in the classroom environment. They were informed about the aim of the present study and their consent was obtained. All subjects participated voluntarily.

RESULTS

Data Cleaning

Prior to the analyses, all data were examined through various SPSS programmes for accuracy of data entry, missing values, fit between their distributions and the assumptions of multivariate analysis. One case with extremely high *z* scores in their groups was found to be univariate outlier. The remaining 472 cases were examined for analyses.

The Criteria for Factor Analyses

Considering the importance of sample size for factor analysis, over 300 subjects (Comrey and Lee, 1992; cited in Tabachnick & Fidell, 1996) were administered in all three studies: 472 subjects in the constructive study, 485 subjects in Study 1 and 416

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subjects in Study 2. In this study, multiple criteria were considered for factor analysis in constructive study. To examine exploratory factor analyses, several methods could be considered for the suitability of the data for factor analysis (i.e., the Kaiser-Meyer-Olkin [KMO] measure, and Bartlett's test of sphericity) and to determine the number of factors to retain (i.e., Kaiser's eigenvalue-greater-than-one rule, Cattell's scree test, Velicer's minimum average partial [MAP] correlation, Horn's parallel analysis [PA] and the interpretability of the factors) (Henson & Roberts, 2006; Tabachnick & Fidell, 1996; Zwick & Velicer, 1986). However, each method, excluding MAP correlation and Horn's PA, has been criticized in terms of its inadequacy in factor analysis such as the 'inconsistency results' of Bartlett's test of sphericity in large samples (Henson & Roberts, 2006), 'overestimation' or 'underestimation' when deciding the number of factors of Kaiser's rule, and 'overextracting' of factors of Cattell's scree. However, MAP and PA have several advantages, such as not being influenced by sample size.

In this study, KMO measure was performed to decide the sampling adequacy for factor analysis and MAP correlation, PA, and Principal Components Analysis (PCA) with oblique rotation to estimate the number of principal components that should be retained in the constructive study.

The number of principal components is determined by means of calculating principal components from the correlation matrix and the average squared partial correlation in MAP correlation. As a rule of thumb, no components should be extracted from the correlation matrix after any step in which the lowest average squared partial correlation is obtained (O'Connor, 2000).

To decide the number of factors, the real data matrix is compared with the random data matrix that is generated with the same sample size and the number of variables in PA. Based on the work of several researchers, PA is accepted as one of the most accurate methods for factor analysis (Henson & Roberts, 2006). In general, the observed eigenvalues extracted from the correlation matrix should be higher than expected eigenvalues obtained from generated random data. The factor is not retained if observed eigenvalues do not exceed the eigenvalues of the random data matrix. MAP correlation analysis and PA lead to approximately the same result in terms of the number of components to retain; however, Zwick and Velicer (1986) recommend running both analyses because identical results do not always emerge. In this situation (i.e., when differences emerge), optimal decisions are thus likely to be made after considering the results of both analytic procedures (O'Connor, 2000).

It is an important issue in principal component analysis which rotation type should be selected. In the present study, oblique rotation is chosen as suggested by Folkman et al. (1986) and Tabachnick and Fidell (1996). Folkman et al. (1986) stated, theoretically, individuals are more likely to use many different kinds of coping strategies instead of just one. Therefore, oblique rotation is better than orthogonal rotation for deciding the factor structure of the WCQ. This view is consistent with Tabachnick and Fidell's (1996) suggestion that oblique rotation, instead of orthogonal rotation, should be used when the factors might be correlated (p. 666).

After deciding the type of rotation, numerous factor analyses were conducted to decide the best factor structure of the WCQ by repeating the scree test and examining the residual correlation matrix. Additionally, the loading of the items under any factor was considered when the factors were interpreted. In terms of item quality, any item not adequately loaded (<0.45, 20% overlapping variance called fair) under any factor or any item exhibiting salient loading (>0.32, 10% overlapping variance called poor) under more than one factor was excluded (Comrey & Lee, 1992; cited in Tabachnick & Fidell, 1996).

Exploratory Factor Analyses

Initially, the Kaiser-Meyer-Olkin Measure (KMO) was conducted to test the sampling adequacy. The Kaiser-Meyer-Olkin Measure value was 0.84, indicating that the quality of the sampling was meritorious.

After performing KMO, MAP correlation, and PAs were conducted to estimate the number of principal components that should be retained.

Velicer's MAP correlation results (N = 472, k = 74 items) demonstrated seven components were retained according to the revised MAP correlation test (O'Connor, 2000) with the smallest average squared partial correlation as 0.0051 and the smallest average fourth power partial correlation as 0.0001. Moreover, the results of PA demonstrated that there were eight components (see Figure 1). According to results (N = 472, k = 74 items), the raw data eigenvalues was 1.782, mean was 1.576, and the percentile random data eigenvalues was 1.607 at the eighth root.

An initial principal component with oblique rotation analysis was performed; it revealed 20 factors

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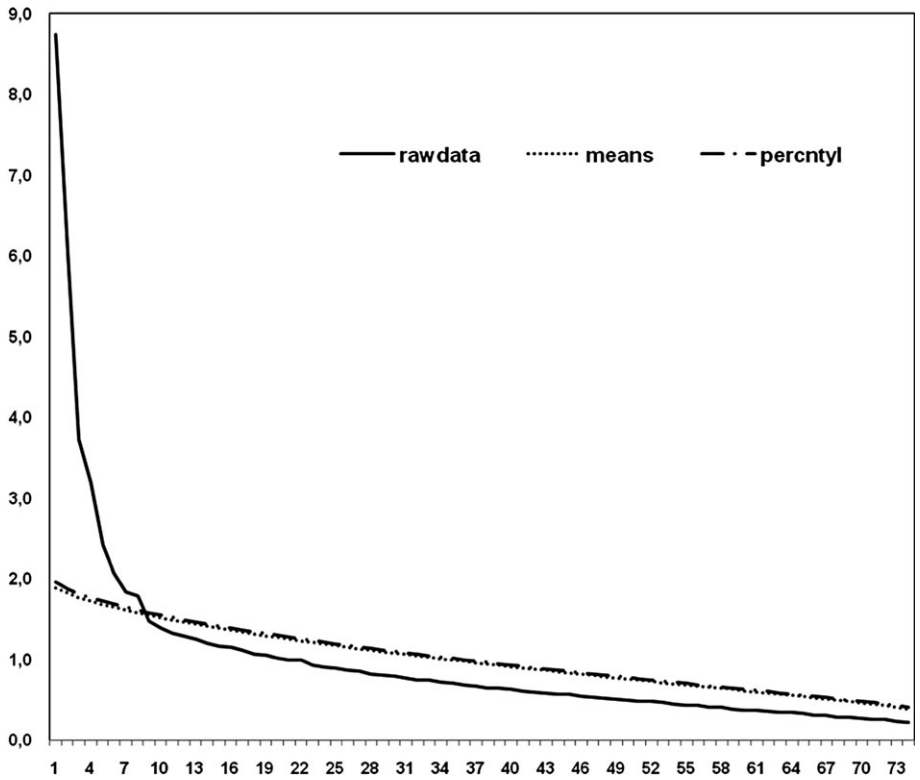

Figure 1. Parallel analysis for the Ways of Coping Questionnaire (N = 472, k [number of variables] = 74)

with eigenvalues over 1, accounting for 59.91% of the total variance. But this was not enough to decide the number of factors since eigenvalues over 1 may lead to an overestimation of the number of factors (Zwick & Velicer, 1986). When comparing the results of eight-factor solution (suggested by PA results), seven-factor solution (suggested by MAP correlation results) seemed to be most relevant in terms of the results of principal component with oblique rotation analysis. The factor analyses demonstrated that the seven-factor solution accounted for 38.22% of the total variance. On the basis of Comrey and Lee's guidelines, eight items that were not adequately loaded (<0.45) under any factor (i.e., 5, 50 and 73) or 35 items that were highly loaded (>0.32) under more than one factor (i.e., 3, 4 and 8) were excluded due to the fact that the shorter the measure the more practical the assessment (Macgowan & Newman, 2005).

After removing these 43 items, seven factors totally explained 58.71% of the total variance. The first factor (PPS) explained 13.83% of the variance, the second factor (seeking refuge in supernatural forces [SRSF]) 11.55%, the third factor (keep to self [KS]) 9.05%, the fourth factor (SSS) 7.39%, the fifth factor (seeking refuge in fate [SRF]) 6.70%, the sixth factor (EA) 5.39%, and the seventh factor (AR) 4.80% of the variance.

Internal Consistency Reliability

Reliability was computed by internal consistency indexes. All subscale scores had discrete internal consistency and adequate item total correlations shown in Table 1.

STUDY 1

Method

Participants

Four hundred eighty-five Turkish university students participated in Study 1. The sample included 279 (57.53%) females and 206 (42.47%) males. The mean age of the participants was 20.92 (SD = 1.89) with a range of 17–35. The average monthly family income was 1384.42 TL that equals to US$ 923.01

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Table 1. The pattern matrix of the WCQ, the corrected item-total correlations and the alpha values of any factors

		F1 PPS	F2 SRSF	F3 KS	F4 SSS	F5 SRF	F6 EA	F7 AR
7	Trying to understand the seriousness of the problem	0.769	0.002	–0.013	–0.024	0.070	–0.058	0.082
25	Planning the action and then following the plan	0.726	–0.133	–0.009	0.042	–0.008	–0.035	–0.130
30	Thinking of the problem deeply to understand the causes of the problem	0.716	0.079	–0.083	–0.058	–0.046	–0.005	–0.050
3	Trying to analyse the problem in order to understand it better	0.666	0.108	0.186	0.027	–0.007	–0.032	0.159
21	Just concentrating about what I have to do on the next step	0.651	–0.262	–0.134	0.036	–0.164	0.028	–0.068
16	Waiting to see what would happen before doing anything	0.610	0.111	0.099	0.123	0.078	0.047	0.082
22	Applying to a prayer leader for his praying to God about the solution of the problem	0.094	0.811	–0.074	–0.060	0.115	–0.041	–0.081
6	Giving money to the poor to get rid of the problem	0.033	0.766	0.035	0.062	–0.195	0.049	0.029
18	Offering vow for the solution of the problem	0.033	0.758	0.042	–0.007	–0.134	–0.020	–0.042
28	Carrying blue bead, written charm or amulet to prevent similar problems in the future	–0.139	0.704	–0.094	–0.044	–0.053	–0.064	0.034
1	Not wanting anyone to know my problem	–0.116	–0.098	0.821	0.083	0.094	0.019	0.019
14	Keeping others from knowing what has happened	–0.055	–0.046	0.770	–0.003	–0.071	–0.082	–0.011
11	Keeping others from knowing how bad things are	0.133	0.084	0.760	–0.117	–0.053	–0.014	–0.071
29	Not sharing my feelings with others, trying to keep my feelings to myself	0.170	–0.007	0.569	–0.382	–0.005	0.141	–0.142
2	Talking to someone to find out what to do more about the situation	–0.206	–0.038	–0.075	0.759	–0.077	0.073	–0.034
17	Talking to a respected relative for advice	0.167	0.068	0.015	0.733	0.063	–0.021	0.040
27	Talking to someone who could do something concrete about the problem	0.277	0.053	–0.083	0.664	0.137	–0.118	–0.158
12	Asking a friend for advice before taking a decision	0.096	–0.226	–0.053	0.659	–0.236	–0.074	0.057
4	Giving solace to myself considering it to be the God's decision	–0.078	0.153	–0.092	0.021	–0.798	0.081	–0.161
23	Praying for help from God	–0.035	0.003	0.013	0.162	–0.780	–0.008	–0.070
10	Thinking that 'every cloud has a silver lining'	0.141	0.172	0.087	0.110	–0.776	0.018	0.077
20	Believing that it is my destiny and it wouldn't change	–0.005	0.000	0.036	–0.271	–0.703	–0.166	0.074
15	Having a rest or taking a vacation in order to get away from it for a while	–0.008	0.069	–0.084	–0.004	0.073	–0.788	0.033
5	Engaging in different jobs to escape from the situation	0.102	–0.125	–0.009	0.005	–0.202	–0.679	0.098
19	Trying to get away of the problem by delaying the decision	–0.040	–0.009	–0.016	–0.171	–0.113	–0.566	–0.177
24	Trying to make myself feel better by eating, drinking or smoking	–0.216	0.120	0.188	0.155	0.113	–0.564	–0.036
8	Jogging or exercising to escape from the situation	0.266	0.069	–0.005	0.106	0.076	–0.525	–0.021
9	Accusing myself as the cause of the problem	–0.062	0.090	0.150	0.284	–0.042	0.072	–0.740
13	Criticizing or lecturing myself about the problem	0.089	–0.110	0.208	0.065	–0.181	–0.020	–0.696
31*	Trying to be tolerant to myself about the causes of the problem	0.089	–0.037	0.113	0.217	–0.225	–0.056	0.687
26	Thinking I brought the problem on myself	0.015	0.050	–0.021	–0.008	–0.091	–0.183	–0.600
ITC (Item Total Correlations)	Minimum	0.47	0.53	0.51	0.48	0.50	0.35	0.33
	Maximum	0.61	0.63	0.64	0.58	0.68	0.52	0.54
IC (Internal Consistency)		0.80	0.79	0.77	0.76	0.80	0.65	0.67

Factor 1: PPS = planful problem-solving, Factor 2: SRSF = seeking refuge in supernatural forces, Factor 3: KS = keep to self, Factor 4: SSS = seeking social support, Factor 5: SRF = seeking refuge in fate, Factor 6: EA = escape-avoidance, Factor 7: AR = accepting responsibility.
Item with * was reversed item.

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(SD = 1372.30 TL or US$ 914.87) with a range of 150–10 000. Approximately, 2% of subjects were preparatory, 26% were freshman, 27% were sophomore, 27% were junior and 18% were senior.

Measures

In Study 1, three questionnaires in addition to the demographic information form and the brief version of the WCQ formed in the constructive study were administered to collect the data. The scales were Beck depression inventory (BDI), Rosenberg self-esteem scale (RSES) and positive and negative affect scale (PANAS).

BDI. BDI was developed by Beck, Ward, Mendelson, Mock, and Erbaugh in 1961 to measure emotional, motivational and cognitive symptoms of depression with 21 items rated on a 4-point Likert-type scale (0 = having no depressive symptoms, 3 = having severe depressive symptoms; minimum score = 0, maximum score = 63). The scale was adapted to Turkish by Hisli (1988) who found split-half reliability as.74 and the correlation between BDI and depression subscale of the Minnesota Multiphasic Personality Inventory (MMPI) as 0.63 for convergent validity.

RSES. RSES was developed by Rosenberg in 1965 to measure degree of self esteem with 10 items rated on a 4-point Likert-type scale (1 = completely agree, 4 = completely disagree). Internal consistency of the scale was found as 0.88; test–retest reliability of the scale over 1 week interval was found as 0.82 in another research (Fleming & Courtney, 1984). On the other hand, the scale was adapted into Turkish by Cuhadaroğlu (1986) and was used on a 5-point Likert-type scale (minimum score = 0, maximum score = 50). She found internal consistency as 0.76. Besides, RSES correlation between the subscales of the Symptom Checklist-90 (SCL-90) was satisfactory ('depression' subscale = 0.66, 'psychosomatic symptoms' subscale = 0.70 and 'interpersonal threat' subscale = 0.45). Turkish version of RSES with 5-point interval was also used in the present study.

PANAS. PANAS was developed by Watson, Clark, and Tellegen (1988) to measure positive and negative affect with 20 items rated on a 5-point Likert-type scale (1 = very slightly or not at all, 5 = extremely). The respondents made their ratings in terms of the last 2 weeks. There are 10 items in each of the positive affect and negative affect subscales. Internal consistency (alpha) estimates for the PANAS measuring mood across seven different time periods (same day to a year) range from 0.84 to 0.87 for the negative affect scale. Factor analysis supports the structures of both the positive affect and negative affect scales. The Turkish version of the scale was studied by Gençöz (2000) who revealed internal consistency reliability as 0.83 and 0.86 and test–retest reliability as 0.40 and 0.54, for positive affect and negative affect. In Gençöz's study, the criterion-related validity of the scale was studied through BDI and Beck anxiety scale, which revealed correlations of –0.48 and –0.22 for positive affectivity, respectively and 0.51 and 0.47, for negative affectivity, respectively.

Procedure

In Study 1, all measures (demographic information form, WCQ, BDI, RSES and PANAS) were distributed to the university students in a classroom environment after explaining the aim of the study and taking their informed consent. It took about 30 minutes for them to fill out the questionnaires. The participants were then debriefed. All subjects participated voluntarily. The refusal rate of the questionnaire was approximately 12%.

RESULTS

Data Cleaning

Four cases with extremely high z scores in their groups were found to be univariate outliers; therefore these cases were deleted. After extracting four cases, 485 cases were examined for the analysis.

Internal Consistency Reliability

Reliability was computed by internal consistency indexes. All subscale scores had discrete internal consistency ($\alpha > 0.67$) ranging from 0.67 (for the SRSF) to 0.84 (for the KS) in the 7-factor model shown in Figure 2.

Factor Validity by CFAs

To test the adequacy of 7-factor model of the WCQ, CFAs were conducted. To see model fit, the incremental fit index (IFI), Tucker–Lewis index (TLI) and comparative fit index (CFI) were reported for each model in CFAs. These three measures varied between 0.00 and 1.00; the larger values indicated that the model was a better fit. As a rule of thumb, values of 0.90 or greater ones are interpreted as evidence of models that fit well. In addition to these indexes, smaller root mean square error of

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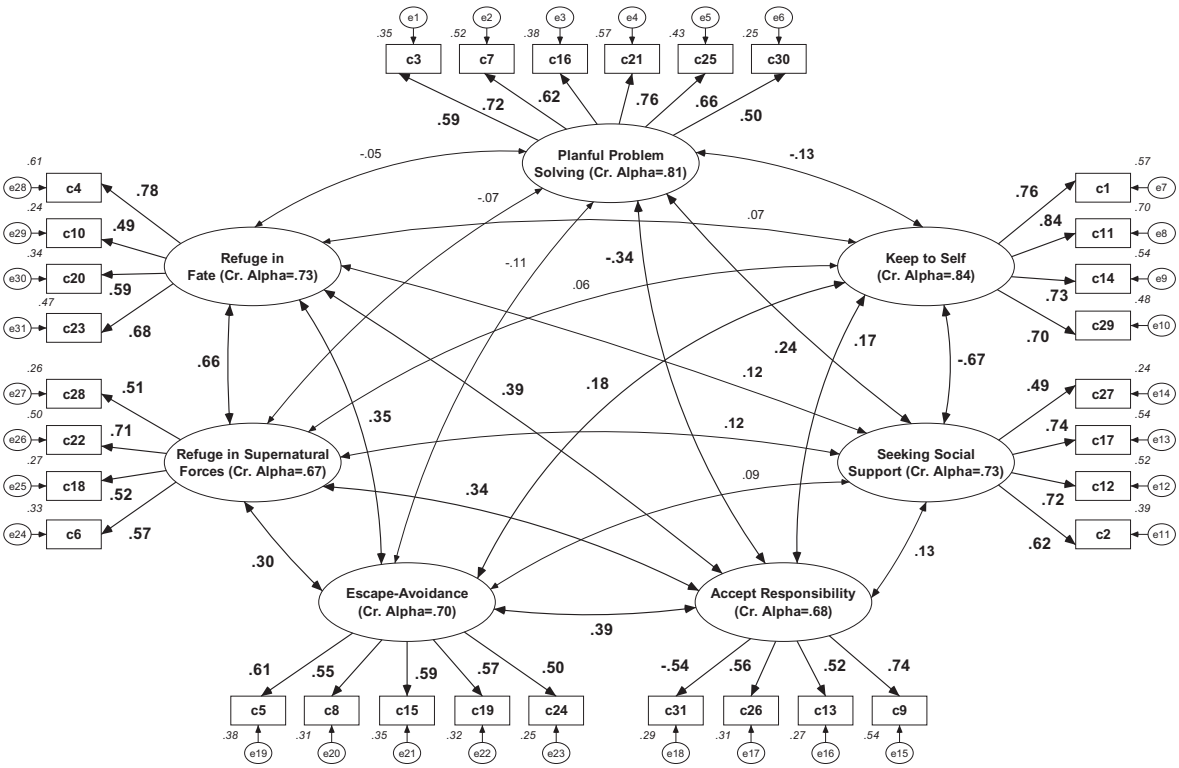

Figure 2. Seven-factor, 31-item, WCQ model with subscale coefficient alphas, student sample (N = 485)

approximation (RMSEA) values supports better-fitting models, especially values of 0.05 or lesser ones indicating good fit. The ratio of χ^2 to degrees of freedom (df) should be less than 3 (Kline, 2005). However, χ^2 is not recommended solely because of being affected by sample size and complexity of the model for factor analyses (Raykov, 1998). Therefore, all indexes mentioned above are handled to evaluate model fit. In addition to RMSEA, it is suggested to use standardized root mean square residual (SRMR) (Bentler, 1995) 'which is a more sensitive index to simple misspecified models than the rest of other fit indices' (Hu & Bentler, 1998, p. 438). SRMR should be between 0 and 0.05 for good fit and between 0.05 and 0.10 for acceptable fit (Schermelleh-Engel & Moosbrugger, 2003).

All models were tested by AMOS 7.0 (Arbuckle, 2006) software programme to examine the relationship between the theoretical model and the data. AMOS uses the maximum likelihood method of parameter estimation that is recommended for use when the sample size is suitable and the variables have five or more categories (Bentler & Chou, 1987).

Items of these models were selected on the basis of the results of the constructive study. Seven-factor model was composed of seven correlated latent factors representing PPS (six items), SRSF (four items), SRF (four items), KS (four items), SSS (four items), EA (five items) and AR (four items). When looking at the seven-factor model solution, the model revealed adequate fit, χ^2 (413, N = 485) = 654.442, p = 0.000. Apart from the suggested χ^2/df ratio (χ^2/df = 1.585), goodness of fit index showed that the fit could be regarded as adequate: RMSEA = 0.035, SRMR = 0.049, IFI = 0.939, TLI = 0.931 and CFI = 0.939. The model is presented in Figure 2.

Concurrent Validity

The principle of concurrent validity is the assessment of the relationship between the measure with another measure. For this reason, concurrent validity was assessed by correlating WCQ subscales with RSES, positive affect and negative affect subscales of PANAS and BDI. The correlations were generally consistent with the expectations of which

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domains measuring the most similar constructs would have the highest correlations.

Self-esteem revealed significant positive correlations with PPS (N = 485, r = 0.339, p = 0.000), and significant negative correlation with KS (N = 485, r = –0.187, p = 0.000), AR (N = 485, r = –0.514, p = 0.000), EA (N = 485, r = –0.173, p = 0.000), SRSF (N = 485, r = –0.157, p = 0.001) and SRF (N = 485, r = –0.247, p = 0.000).

Similarly, positive affect revealed significant positive correlations with PPS (N = 485, r = 0.316, p = 0.000) and SSS (N = 485, r = 0.142, p = 0.002), and significant negative correlation with AR (N = 485, r = –0.257, p = 0.000).

Negative affect revealed significant positive correlations with AR (N = 485, r = 0.493, p = 0.000), EA (N = 485, r = 0.105, p = 0.021), SRSF (N = 485, r = 0.128, p = 0.005) and SRF (N = 485, r = 0.142, p = 0.002) and significant negative correlation with PPS (N = 485, r = –0.209, p = 0.000).

Similarly, depressive symptoms (BDI scores) revealed significant positive correlations with KS (N = 484, r = 0.098, p = 0.031), and AR (N = 484, r = 0.296, p = 0.000), and significant negative correlation with PPS (N = 484, r = –0.169, p = 0.000).

STUDY 2

Method

Participants

In Study 2, participants were selected from the community sample. The sample was composed of 416 adults; 188 (45.19%) females and 228 (54.81%) males. The mean age of the participants was 34.45 (SD = 1.89) with a range of 18–75. The average monthly family income was 1405.11 TL that equals to US$ 936.74 (SD = 811.53 TL or US$ 541.02) with a range of 50–6000. The education levels of the participants were university graduation (N = 181; 43.51%), high school graduation (N = 150; 36.06%), secondary school graduation (N = 26; 6.25%) and primary school graduation (N = 59; 14.18%).

Measures

The demographic information form, the brief version of WCQ, BDI, RSES and PANAS that were introduced previously were administered in Study 2.

Procedure

As in Study 1, after explaining the aim of the study, all measures were distributed to the adult volunteers recruited from a wide variety of sources such as public service organizations and university personnel. After explaining the aim of the study and taking their informed consent, participants were asked to answer the questionnaire either in a work or home environment. After they answered the questionnaires, they put them in an envelope to be collected by the researchers. Afterwards, all participants were debriefed at a place where they were invited. All subjects participated voluntarily.

RESULTS

Data Cleaning

Two cases with extremely high z scores in their groups were found to be univariate outliers and were deleted. After extracting two cases, 416 cases were examined for analysis.

Internal Consistency Reliability

Reliability was computed by internal consistency indexes. All subscale scores had discrete internal consistency ($\alpha > 0.67$) ranging from 0.83 (for the PPS factor) to 0.67 (for both the SSS and the EA) in the seven-factor model as shown in Figure 3.

Factor Validity by Confirmatory Factor Analyses

Items used in the analyses were the same with the items used in Study 1 and the same items were forced under the same factor structure. For this purpose, initially, seven-factor domain (PPS, SRSF, KS, SSS, SRF, EA and AR) was constructed and evaluated. According to results, the model revealed adequate fit, χ^2 (413, N = 416) = 679.794, p = 0.000. Both the suggested χ^2/df ratio (χ^2/df = 1.646) and goodness of fit index showed that the fit could be regarded as adequate; RMSEA = 0.039, SRMR = 0.053, IFI = 0.926, TLI = 0.916 and CFI = 0.925. The model is presented in Figure 3.

Concurrent Validity

The concurrent validity was assessed by correlating WCQ subscales with RSES, positive affect and negative affect subscales of PANAS, and BDI. The correlations were generally consistent with the expectations of which domains measuring the most similar constructs would have the highest correlations.

Self-esteem revealed significant positive correlations with PPS (N = 415, r = 0.394, p = 0.000), and significant negative correlation with AR (N = 415, r = –0.441, p = 0.000), EA (N = 415, r = –0.170, p = 0.001), SRSF (N = 415, r = –0.264, p = 0.000) and SRF (N = 415, r = –0.152, p = 0.002).

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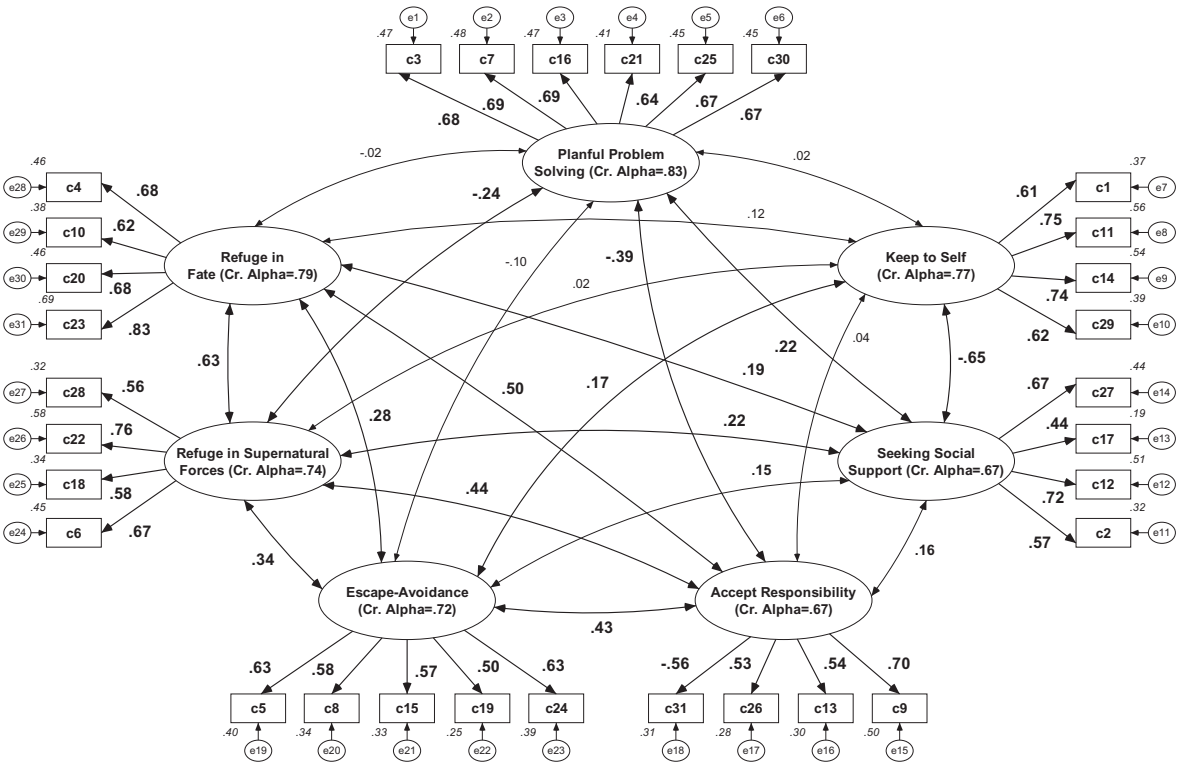

Figure 3. Seven-factor, 31-item, WCQ model with subscale coefficient alphas, community sample (N = 416)

Similarly, positive affect revealed significant positive correlations with PPS (N = 414, r = 0.385, p = 0.000), and significant negative correlation with AR (N = 414, r = –0.102, p = 0.038) and SRSF (N = 414, r = –0.111, p = 0.023).

Negative affect revealed significant positive correlations with AR (N = 414, r = 0.255, p = 0.000), SRSF (N = 414, r = 0.122, p = 0.013), and SRF (N = 414, r = 0.119, p = 0.015) and significant negative correlation with PPS (N = 414, r = –0.165, p = 0.001).

Similarly, depressive symptoms (BDI scores) revealed significant positive correlations with KS (N = 414, r = 0.119, p = 0.016), AR (N = 414, r = 0.209, p = 0.000) and SRSF (N = 414, r = 0.108, p = 0.028), and significant negative correlation with PPS (N = 414, r = –0.176, p = 0.000).

DISCUSSION

The present study was conducted with three separate and independent samples: two groups of university students and one community sample. The current results provide a deeper understanding of WCQ's structural validity using careful psychometric methods although it is too difficult to understand the dynamic nature of coping with cross-sectional assessment. Results demonstrate that the psychometric properties of WCQ are satisfactory (items of WCQ are presented in Table 1) and can be used in research and therapy.

Exploratory factor analysis in the constructive study demonstrates that a seven-factor solution is found to be relevant to the present study. The factors were PPS, SRSF, KS, SSS, SRF, EA and AR.

After that, confirmatory factor analysis performed in Study 1 and Study 2 indicate that the fundamental factor structure of WCQ is seven-dimensional in the sampling of both university students and community members on the basis of model fit indices (RMSEA, SRMR, IFI, TLI and CFI). Although investigating the factorial stability and the validity of WCQ by means of using different sampling is certainly desirable to affirm the latent structure, the same factor structure may not be obtained when a scale is administered to different samples. For instance, despite obtaining a four-factor solution with the sample of college students, Parker et al. (1993) did not replicate the same results when they changed the sampling.

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Consequently, the advantage of the present version over the previous ones is that seven-factor solution in the university students could be replicated in the community samples. Therefore, it can be said that factorial invariance across the university students and the community sample was confirmed by obtaining consistency of the factor analyses of WCQ administered to two different samples.

The subscales of WCQ are internally consistent in terms of reliability, and the item-total correlations for the subscales of WCQ are within acceptable ranges. The results of the internal consistency analysis clearly demonstrate WCQ to be highly acceptable for seven-factor solution in the university students and the community samples.

Apart from factorial structure and internal consistency, the scale has satisfactory concurrent validity that is provided by the association amongst the subscales of WCQ and self esteem, positive affect, negative affect and depression. For instance, the present study confirms that such parts of WCQ (higher AR, higher KS and higher SRSF but lower PPS) are related with the depression symptoms. Similarly, the several subscales of WCQ are significantly related with negative affect (higher AR, SRSF and SRF and lower PPS), positive affect (higher PPS and SSS, and lower AR) and self-esteem (higher PPS, and lower AR, EA, SRSF and SRF).

Regarding the clinical implications of these findings, the present version of WCQ can be used to assess the coping styles of patients in the therapeutic process. It can be used as an individual tool or as part of a test battery to recognize the patients' effective or ineffective coping attempts during the assessment process. Especially, it can be helpful to non-Turkish clinicians who might encounter a client with a Turkish cultural background to identify his/her difficulties or strengths in coping with his/her psychological problems. WCQ may serve as a benefit for the clinicians to prepare themselves for Turkish clients. Besides, based on the relationships between WCQ and other measures mentioned above, clinicians can use the results to identify the focal point of the therapy process. For instance, they can focus on helping depressive Turkish students or adults by means of decreasing their attempts to seek refuge in supernatural forces, increasing their willingness to share the loadings of their problems with significant others instead of keeping to self, improving their problem solving skills and increasing the confrontation of their problems instead of passively accepting their consequences. Similarly, Gençöz et al. (2006) mention that depressive individuals living in Turkish culture escape active engagement in the problems. Additionally, dealing with the matters of AR, SRF or SRSF and escaping and avoiding the problem may be identified as the focal point of the therapy of the Turkish students or adults to decrease their negative affect or increase their self esteem.

Moreover, considering that coping includes behavioural responses (SSS, SRSF) as well as cognitive responses (as KS and AR) (Holahan, Moos, & Schaefer, 1996; Rexrode, Petersen, & O'Toole, 2008), a psychotherapist should make use of both behavioural and cognitive techniques in the therapy process. For instance, guided inquiry can be used to assess specific cognitive and behavioural changes in the coping process (Heppner, Rosenberg, & Hedgespeth, 1992).

Further research that will take demographically diverse populations (e.g., clinically significant samples) and different cultures (e.g., western cultures, Turkish people living in western cultures) into account is necessary to strengthen the validity of the results of the present study. For instance, Sahin, Sahin, and Heppner (1993) reveal that American and Turkish cultures are not distinguished in terms of overall problem solving strategies beyond the minor differences. Apart from this strategy, other coping strategies (such as strategies focusing on social support, emotional distancing or religious attempts) may differ from one culture to another. For instance, upon encountering uncertain (Case et al., 2004), uncontrollable and threatening stressful events (Keinan, 2002), Turkish citizens, similar to people in western cultures (Keinan, 2002), prefer to use such religious coping styles due to the effect of Islamic religious beliefs (Goral et al., 2006) and cultural values (Karancı et al., 1999). In Islamic cultures, the individuals believe that the uncontrollable events occur only if the God permits. In fact, these individuals try to decrease the impacts of uncontrollable events by applying the superstitious rituals since they help to find meaning (Goral et al., 2006), to provide order and to increase confidence (Carone & Barone, 2001). The dynamic explanation to use religious coping styles in other cultures may be examined in further studies conducted with a different religious orientation.

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