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The Development and Psychometric Evaluation of Iranian Coping Style Scale (ICSS): Associations with Individual Differences

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Abstract

Historically, psychologists have been interested in categorizing and measuring coping styles. Moreover, development of culture-specific measures has been neglected in the coping literature. The present study is intended to develop and validate a parsimonious and broad measure of coping style in Iran. An item pool of 80 items was administered on a random sample of 911 university students in ten groups. A principled components analysis was performed on a subsample and a confirmatory factor analysis was performed on the remaining subsample. Twelve concurrent measures were used to ensure concurrent validity. A principled components analysis suggested a nine-factor solution. A confirmatory factor analysis on a distinct subsample confirmed the nine-factor structure. Subscales were labeled as turning to religion, procrastination, positivity, self-blame, avoidance, seeking social support, problem solving, wishful thinking, and passivity. All subscales were significantly correlated with theoretically related constructs. Alpha coefficients of the subscales ranged from 0.77 (problem solving) to 0.92 (turning to religion). The present study developed and validated the 45-item Iranian Coping Style Scale (ICSS) with nine subscales. Therefore, ICSS may be used as a reliable and valid measure of coping styles in research and clinical settings.

Keywords: Stress, Coping style, Scale development, Psychometrics, Iran, Factor analysis.

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Introduction

In all stages of human development, individuals experience adversity, resistance, and stress. Generally, people cope with these challenging situations in various ways. Some might directly confront the challenge while some others turn to family, friends or religion to seek help. Some people may resort to substances to manipulate their sensory system and some others may amuse themselves with other irrelevant activities. Historically, psychologists have been quite interested in recognizing, distinguishing, categorizing and assessing different styles of coping in stressful conditions. Researchers have developed a number of measures to assess distinct styles of coping in specific stressful situations as well as general situations.

Broadly reasoning, coping may be considered as a reactive process that is triggered in response to a stressful incident. The causal role of stressful incident is relatively crucial in the abovementioned definition. The element of external triggering conceptually distinguishes between coping and general notion of self-regulation (Folkman & Moskowitz, 2004). Animal models consider coping as a set of acts aimed at resolving an environmentally aversive condition, and subsequently resulting in reduction of psychophysiological distress (Ursin, 1980). Coping depends on both the person and the situation. That is, a certain individual may cope differently from one stressful situation to another. Moreover, personal characteristics of a certain person may play an important role in their coping behavior. The process of coping should be regarded as distinct from the result of coping (Lazarus & Folkman, 1984; Schwarzer & Schwarzer, 1996).

There are a large number of strategies utilized in coping with stressful situations. Yet, researchers are interested in identifying the most frequent behaviors and principal dimensions in order to categorize coping strategies (Skinner, Edge, Altman, & Sherwood, 2003). Identifying parsimonious dimensions of coping strategies can help researchers investigate coping and its correlates in the broadest meaningful way, as is true about personality. For example, a theoretical model suggests that a fundamental distinction exists between avoidance and approach (Roth & Cohen, 1986). That is, to confront the stressful situation or to, somehow,

run away. Another theoretical notion is the distinction between assimilation and accommodation (e.g., Brandstadter & Renner, 1990). That is, to change the threatening stimuli or to accept the situation and look for its positive aspects. The categorizations of approach-avoidance and assimilation-accommodation may provide helpful theoretical taxonomies to categorize specific coping behaviors into higher-order models of coping. Many measures have been constructed using these theoretical models. Yet, of course, these taxonomies have been subjected to criticism (e.g., Skinner et al., 2003). For example, it has been suggested that these taxonomies are theoretically useful; however, specific instruments that assess a broad array of coping strategies may capture the conceptual nature of coping in a better way.

Another current debate in coping literature relates to measurement of dispositional coping versus situational coping. Coping "styles" are dispositional tendencies toward particular way of coping which are considered to be relatively stable across various stressful conditions (e.g., Carver, Scheier, & Weintrab, 1989). Coping "strategies", on the other hand, are flexible responses to situational demands (Lazarus & Folkman, 1984) and are considered to be dynamic and responsive moment-by-moment efforts in a particular threatening condition. In this respect, coping style seems more like a trait while coping strategy appears to be a state. As theoretically predicted, trait coping is strongly associated with personality constructs (e.g., Connor-Smith & Flachsbart, 2007). State coping is, instead, a better predictive factor in specific situations basically because of it dynamicity. (Daniels & Harris, 2005). Carver *et al.* (1989) suggested that after repeated exposures to stressful situations and successful resolution of them, people may behaviorally come to prefer the specific coping strategies that previously led to success. Then, coping styles provide the dispositional scaffolding that predisposes people to use a specific kind of coping.

There are a large number of psychometric instruments assessing coping styles. Miller Behavioral Style Scale (MBSS; Miller, 1987), Mainz Coping Inventory (MCI; Krohne, 1993), Coping Inventory for Stressful Situations (CISS; Endler & Parker, 1990), and COPE Inventory (COPE; Carver et al., 1989) are commonly cited as the most frequently

used measures that assess coping styles with adequate psychometric qualities. These measures of coping have been used and validated across a large number of cultures and languages. While these measures have substantially contributed in our present understanding of coping styles, they have theoretical and psychometric limitations. For example, MBSS has been criticized on its theoretical background as well as context and response format. Limited research has been conducted on English form of MCI. Moreover, CISS was developed mainly from items adapted from previous measures of coping and it is known for its psychometric characteristics, rather than its theoretical novelty. Finally, COPE has limitations in its length and cross-cultural stability of its psychometric properties.

While most of the previously mentioned measures have been validated in Iran, no measure has been constructed considering the specific cultural aspects in Iranian population. The present study intended to develop and validate the Iranian Coping Style Scale (ICSS) by overcoming the shortcomings of previous measures and considering cultural variables in Iran. In order to make sure that the present scale adheres to Iranian cultural background, a mixed-methods approach and an extensive literature review were used to provide the preliminary item pool measuring different coping behaviors.

Method

Participants: A total of 911 university students were selected using stratified random sampling. While stratified random sampling is practically quite difficult to implement, it has a small sampling error as it is a probability sampling strategy and ensures that all strata of the population are adequately present in the sample. Ten groups of university students were recruited from 12 major universities in Tehran, Iran. As a whole, 1000 surveys were printed; however, after meeting inclusion criteria, 911 surveys were included into the analysis. Demographic characteristics of the sample are presented in Table 1. Each group's participants responded to demographic details, an 80-item pool of items for Iranian Coping Style Scale (ICSS), and one or two concurrent

measures. Overall, 12 concurrent measures were used in this study to ensure convergent and concurrent validity of the ICSS.

Table 1. Demographic Details of the Participants

Variable	Sample (N = 911)
Age	
Mean (*SD*)	22.49 (3.48)
Range	18-45
Sex	
Male	51.92%
Female	46.87%
Missing	1.21%
Marital Status	
Single	89.12%
Married	10.88%
Educational Level	
Bachelor's degree	68.38%
Master's degree	27.99%
Doctorate degree	2.31%
Missing	1.32%
Major	
Humanities	35.45%
Engineering	42.59%
Arts	1.21%
Basic sciences	16.47%
Medical sciences	2.52%
Missing	1.76%
Socio-Economic Status	
Very low	2.31%
Low	6.69%
Moderate	52.91%
High	30.07%
Very high	5.05%
Missing	2.97%

Measures

Iranian Coping Style Scale (ICSS). In order to form a preliminary item pool, 25 in-depth unstructured interviews were designed to extract sample items regarding coping in different stressful situations. Interviewees were prompted to consider a stressful situation and name 10 strategies that they would generally choose to cope with. Additionally, a comprehensive literature review was performed. Resulting from qualitative data and the

above-mentioned literature, a total of 150 items were prepared. Face validity assessment performed by three experts supported 120 items. Subsequently, the 120-item scale was administered on a distinct sample of 80 university students to ensure readability among this population. Also, these 80 students were asked to comment on the whole scale and any item that needs revision. According to students' comments and views of 4 psychologists qualified in stress literature, 40 items were discarded and a pool of 80 items was prepared to be used in the final stage of data collection. Theoretically, these items were related to seeking social support, turning to religion, problem solving, avoidance, procrastination, self-blame, passivity, wishful thinking, and positivity. A 6-point Likert-type scale was prepared for each declarative sentence ranging from 0 (*never*) to 5 (*always*).

Iranian Mental Health Scale (IMHS). This scale has two parts and seven subscales (Poursharifi et al., 2013). The first part has two subscales (i.e., positive affect and life satisfaction) and the second part has five subscales (i.e., depression, anxiety, obsessions, social anxiety, and sleep disturbance). Items are provided with a 6-point Likert-type response option ranging from 1 (completely disagree) to 6 (completely agree). In the present study, Cronbach's alpha coefficients ranged between 0.78 (life satisfaction) and 0.95 (positive affect). Also noteworthy, 98 participants responded to this measure concurrently (group 1).

Perceived Stress Scale (PSS). The Perceived Stress Scale (PSS; Cohen, Kamarck, & Mermelstein, 1983) was used to assess perceived levels of stress. This scale measures an individual's appraisal of their life as stressful (i.e. unpredictable, uncontrollable and overloading), consisting of 10 items. Items examples include, ''How often have you felt nervous or stressed?''. People rated how often they had experienced these feelings in the last month on a five-point Likert scale from 0 (*never*) to 4 (*very often*). The PSS scores were obtained by reversing the scores on the four positively worded items; i.e. #4, 5, 7 and 8. Total scores range from 0 to 40, with higher scores indicating greater overall distress. The scores on the PSS have good reliability and satisfactory patterns of validity (e.g., Cohen et al., 1983). In this study, the scale was internally consistent (α =

0.77). Of note, 84 participants responded to this measure concurrently (group 2).

Kessler psychological distress scale (K10). As a measure of general psychological distress, the K10 (Kessler et al., 2002) detects symptoms found in several common disorders, including anxiety and depression. Participants rate the 10 questions in reference to the last month. Total scores range from 10 to 50, with higher scores indicating higher psychological distress. The K10 is widely used in clinical screening and research. This measure also shows high factorial validity and internal consistency, and performs well compared to other similar measures (Andrews & Slade, 2001; Baillie, 2005; Furukawa et al., 2003; Hides et al., 2007; Kessler et al., 2002; Kessler & Üstün, 2004). Internal consistency was excellent in the present sample ($\alpha = 0.89$). Of note, the K10 was used as a concurrent measure with 84 participants along with the PSS (group 2).

Procrastination Assessment Scale–Students (PAS-S). The Procrastination Assessment Scale–Students (PAS-S; Solomon & Rothblum, 1984) was selected because it consists of items measuring dysfunctional delay (Steel, 2007, 2010) associated with six academic tasks (i.e., writing papers, studying for exams, reading assignments, general administrative academic tasks such as completing forms and registering for class, attending meetings, participating in school activities). Responses are provided on a five-point scale. In the present study, the Cronbach's alpha was 0.81. Of note, 85 participants responded to PAS-S concurrently (group 3).

Penn State Worry Questionnaire (PSWQ). The PSWQ consists of 16 self-report items to measure pathological worry. Items are directed at the excessiveness, duration and uncontrollability of worry as experienced in clients diagnosed with Generalized Anxiety Disorder (GAD), for example: "Once I start worrying, I can't stop". The PSWQ has shown high internal consistency as well as high temporal stability and substantial validity in the assessment of trait worry (Meyer et al., 1990; van Rijsoort et al., 1999). In the current study, the internal consistency coefficient was high ($\alpha = 0.90$). Of note, 95 participants responded to PSWQ concurrently (group 4).

Stress Response Inventory (SRI). All participants completed the Stress Response Inventory (SRI; Koh et al., 2001), a self-report measure that evaluates stress responses. The SRI includes 22 questions designed to address the following dimensions: somatization, depression, and anger. Each question is scored on a 5-point Likert-type scale ranging from 0 (*not at all*) to 4 (*absolutely*). The reliability of the SRI was indexed by internal consistency coefficient ($\alpha = 0.94$). Of note, 80 participants responded to the SRI as a concurrent measure (group 5).

Self-Talk Scale (STS). The STS (Brinthaupt et al., 2009) was originally developed to measure one's frequency of self-talk. Respondents indicate times when they might talk to themselves either silently or out loud by using the common frame "*I talk to myself when …"* The 16 STS items are scored on a Likert-type scale ranging from 1 (*never*) to 5 (*very often*). The total STS score is calculated by summing the ratings of all items. Subscale scores can also be calculated by summing the ratings on four items that correspond to each self-talk function (i.e., social-assessment, self-critical, self-reinforcement, and self-management). The STS has good psychometric properties in Iran (Khodayarifard, Brinthaupt, Akbari-Zardkhaneh, & Azar, 2014). In the present study, Cronbach's alpha coefficients ranged between 0.76 (social assessment) and 0.82 (self-reinforcement). Of note, 95 participants responded to the STS concurrently (group 6).

Life Orientation Test (LOT). This 8-item Life Orientation Test (LOT) was developed by Scheier and Carver (1985) in order to measure individual differences in generalized optimism versus pessimism. Four items are positively worded and 4 others are negatively worded. Response options are provided on a 4-point Likert-type scale. Adequate psychometric properties of the LOT have been previously reported (Marshall & Lang, 1990). Several studies have reported low levels of internal consistency coefficient for the LOT (e.g., Atari, Akbari-Zardkhaneh, Mohammadi, & Soufiabadi, 2015). Cronbach's α was 0.66 in the present study. Of note, 96 participants responded to LOT as a concurrent measure (group 7).

Ten-Item Personality Inventory (TIPI). The Ten-Item Personality Inventory (TIPI; Gosling, Rentfrow, & Swann, 2003) is comprised of 10

items that measure the Big Five personality dimensions: Openness, Conscientiousness, Extraversion, Agreeableness, and Emotional Stability. Participants are asked to indicate the extent to which they agree with each item. Response options are provided on a 7-point Likert-type scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). The TIPI measure possesses strong convergent validity (Ehrhart et al., 2009). This measure has been used with adequate reliability and validity in Iran (Afhami, Mohammadi-Zarghan, & Atari, 2017; Atari & Yaghoubirad, 2016). Given the fact that the measure has only two items per personality dimension, reliability coefficients are usually low. Of note, 96 participants responded to TIPI and LOT as concurrent measures (group 7).

State-Trait Anger Expression Inventory (STAXI). Spielberger *et al.* (1999) developed and validated State-Trait Anger Expression Inventory. In the present study, four subscales of anger expression-out, anger expression-in, anger control-out, and anger control-in were used. A response option with a 4-point Likert-type scale was provided. Alpha coefficients ranged between 0.54 (anger expression-in) and 0.88 (anger control-out). This measure has good psychometric properties in Iran (see Khodayari-Fard, Lavasani, Akbari-Zardkhane, & Liaghat, 2010). Of note, 87 participants responded to these subscales concurrently (group 8).

Social Problem Solving Inventory-Revised (SPSI-R). The Social Problem Solving Inventory-Revised (SPSI-R; D'Zurilla, Nezu, & Maydeu-Olivares, 2002) is a 52-item measure of social problem solving abilities. Participants rated each question on a 5-point Likert scale ranging from *not very true of me* (coded as 0) to *extremely true of me* (coded as 4). Higher scores represent better abilities of effective problem-solving in social settings. The SPSI-R is based on a five-dimensional model of problem-solving and includes five subscales. Two of the SPSI-R subscales measure problem orientation dimensions: Positive Problem Orientation and Negative Problem Orientation. The other three subscales are considered problem-solving skills subscales: Rational Problem-Solving, Impulsive/Careless Style and Avoidant Style. In the current study, internal consistency coefficients ranged between 0.44 (impulsive

style) and 0.76 (avoidant style). Of note, 96 participants responded to this measure concurrently (group 9).

Connor-Davidson Resilience Scale (CD-RISC). The Connor-Davidson Resilience Scale (CD-RISC; Connor & Davidson, 2003) is a 10-item measure used to assess the level of resilience. Participants were presented with a series of descriptors (e.g., "*Having to cope with stress can make me stronger*") and rate themselves on a Likert scale ranging from "*rarely true*" (coded as 0) to "*true nearly all the time*" (coded as 4). A total raw score is calculated, ranging from 0 to 40. The CD-RISC has been shown to demonstrate excellent psychometric properties (Yu & Zhang, 2007). Of note, 96 participants responded to this measure concurrently (group 10).

Data analytic strategy: After data entry, the main sample (N = 911), who all answered to ICSS, was divided into two virtually equal subsamples. Then, these subsamples were randomly labeled "validation subsample" (n = 460) and "cross-validation subsample" (n = 451). The validation subsample was used to extract factor structure and item analysis through exploratory methods, while, the cross-validation subsample was used to confirm the factor structure of the model. The issue of factor retention was addressed using parallel analysis (Patil, McPherson, & Friesner, 2010). As a result, 1000 random datasets were generated and Confidence Interval (CI) of 95% was used. Various fit statistics were used to examine the fit of the data to the hypothesized model (Hu & Bentler, 1999). Comparative Fit Index (CFI), Goodness of Fit Index (GFI), Tucker-Lewis Index (TLI), Root-Mean-Square Error of Approximation (RMSEA), and comparative chi-square (CMIN/df) were used as fit indices. Modification indices were also examined. The data were analyzed by SPSS 22 and AMOS 19.

Results

In order to choose the best items in terms of psychometric sufficiency, an item analysis was conducted on the items of the ICSS in the validation subsample (n = 460). Moreover, an initial principal components analysis was performed. A number of criteria were checked to identify the most appropriate items: (a) ceiling effect; (b) floor effect; (c) standard deviation; (d) skewness; (e) kurtosis; (f) item-total correlation (g)

Cronbach's alpha if item deleted; (h) cross-loading in principal components analysis. Overall, out of the 80-item pool, 45 items showed the best psychometric quality and were subsequently selected for further analysis.

Using the validation subsample, a principal components analysis was performed on the 45-item ICSS with varimax rotation. Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy was 0.88 and Bartlett's test of sphericity was significant ($p < .001$). Nine components had eigenvalues greater than 1. Moreover, parallel analysis with 1000 random data sets confirmed the retention of these nine components. The exploratory factor structure of the 45-item ICSS is presented in Table 2.

Table 2. The Component Structure of the Iranian Coping Style Scale

Item	Component								
	TR	PR	PO	SB	AV	SS	PS	WT	PA
52	.86								
58	.83								
49	.83								
2	.82								
36	.81								
24	.79								
45		.77							
63		.75							
56		.73							
40		.72							
79		.68							
4			.81						
11			.76						
50			.75						
60			.69						
26			.52						
53				.81					
59				.78					
32				.75					
37				.75					
3				.72					
6					.73				
73					.67				
30					.62				
17					.61				
10					.60				
48					.55				

Item	Component								
	TR	PR	PO	SB	AV	SS	PS	WT	PA
72						.74			
78						.71			
43						.63			
54						.62			
61						.50			
33							.85		
28							.85		
55							.83		
13							.56		
8								.77	
15								.72	
21								.69	
44								.63	
51								.56	
19									.83
62									.80
39									.77
14									.47

Note. Loadings below .3 have been suppressed. TR: Turning to religion, PR: Procrastination, PO: Positivity, SB: Self-blame, AV: Avoidance, SS: Social support, PS: Problem solving, WT: Wishful thinking and PA: Passivity

In order to confirm the factor structure of the 45-item ICSS, a confirmatory factor analysis (CFA) was performed on the remaining 451 participants (cross-validation subsample). The component structure (see Table 2) was subjected to confirmatory factor analysis. The CMIN/DF (1.91), RMSEA (.06), RMR (.09), CFI (.88), TLI (.79), and GFI (.79) fell within acceptable ranges. The items of the ICSS are grouped in nine components with adequate path coefficients and model fit.

Pearson correlation coefficients were used to evaluate the relationships between the nine subscales. Cronbach's alpha was calculated for each subscale. The inter-subscale relationships and subscales' internal consistency coefficients are presented in Table 3. As shown in the same table, the lowest alpha coefficient belongs to problem solving subscale ($\alpha = 0.77$) while turning to religion was the most internally consistent subscale ($\alpha = 0.92$).

Table 3. The Correlation Coefficients between Subscales of the ICSS and their Alpha Coefficients

subscale	1	2	3	4	5	6	7	8	9
1. TR	.92	-.06	.32*	-.04	-.01	.20*	.17*	.03	-.17*
2. PR	-.00	.84	-.03	.38*	.59*	.08	-.29*	.46*	.54*
3. PO	.11*	.09	.84	-.13*	.017	.27*	.46*	.075	-.27*
4. SB	-.07	.31*	-.13*	.85	.34*	.05	-.06	.34*	.45*
5. AV	.02	.48*	.20*	.23*	.81	.14*	-.29*	.49*	.55*
6. SS	.18*	.06	.13*	.029	.04	.84	.16*	.12*	.05
7. PS	.14*	-.19*	.35*	-.014	-.19*	.21*	.77	-.14*	-.39*
8. WT	.08	.34*	.12*	.29*	.30*	.18*	-.08	.80	.40*
9. PA	.02	.40*	-.26*	.40*	.37*	.05	-.27*	.36*	.79

Note. Values for men are presented above the diagonal, whereas values for women are presented below the diagonal. Figures on the diagonal represent alpha coefficients. *$p < .01$

A total of 12 concurrent measures were used in this study in order to checking concurrent validity of the ICSS, in 10 different groups (see Methods). Table 4 summarizes the correlation coefficients between nine subscales of ICSS and concurrent measures. As can be seen, theoretically related variables are significantly correlated. In this regard, some of the associations had a well-developed literature (e.g., the associations between coping styles and Big Five personality dimensions) while some relationships were based on an exploratory basis (e.g., the associations between coping styles and self-talk dimensions).

Table 4. The Correlation Coefficients between Subscales of the ICSS and Concurrent Measures

	Measure	TR	PR	PO	SB	AV	SS	PS	WT	PA
TIPI	Openness	.15	-.19	.00	-.10	-.02	-.16	.32*	.09	-.26*
	Conscientiousness	.24*	-.09	.04	-.07	-.07	-.18	.06	.01	-.29*
	Extraversion	-.04	-.10	.02	.00	-.01	.23*	-.02	.02	.13
	Agreeableness	-.14	.21*	.25*	.17	.15	.06	.06	.14	.03
	Emotional Stability	.17	-.25*	.28*	-.16	-.15	-.01	-.02	-.20	-.19
STAXI	Expression-out	.03	.23*	-.05	.20	.22*	.14	-.11	.40*	.19
	Expression-in	.02	.11	.17	.13	.07	-.29*	-.08	.35*	.23*
	Control-out	.04	-.21	.22	-.29*	-.37*	.02	.41*	-.32*	-.41*
	Control-in	.24*	-.17	.23*	-.25*	-.22	.16	.47*	-.17	-.32*
PSI	Positive	.00	-.28*	.40*	-.32*	-.41*	.14	.63*	-	-.66*

	Measure	TR	PR	PO	SB	AV	SS	PS	WT	PA
	orientation								.24*	
	Negative orientation	-.01	.23*	-.46*	.44*	.44*	.12	-.37*	.40*	.52*
	Rational problem solving	.04	-.22*	.52*	-.17	-.40*	.18	.61*	-.12	-.43*
	Avoidance style	-.07	.37*	-.26*	.28*	.50*	-.18	-.42*	.33*	.54*
	Impulsive style	-.05	.30*	-.38*	.38*	.37*	.01	-.42*	.26*	.41*
STS	social evaluation	-.15	.06	-.04	.16	.20	.04	.10	.38*	.17
STS	self-reinforcement	.08	.03	.32*	-.05	.09	.22*	.10	.21*	-.01
STS	self-management	.03	-.05	.07	.01	.14	.16	.28*	.19	.02
STS	self-criticism	-.05	.15	-.12	.28*	.11	.02	.04	.38*	.20
IMHS	Positive affect	-.03	-.28*	.21	-.25*	-.07	.17	.18	-.43*	-.37*
IMHS	Life satisfaction	.12	-.37*	.28*	-.28*	-.40*	.04	.33*	-.27*	-.53*
IMHS	Depression	-.14	.34*	-.26*	.37*	.28*	-.05	-.15	.43*	.54*
IMHS	Anxiety	-.04	.24*	-.22*	.40*	.12	.08	-.04	.51*	.46*
IMHS	Obsession	.26*	.27*	-.08	.35*	.03	.03	-.05	.23*	.37*
IMHS	Social Anxiety	.15	.25*	-.20	.46*	.08	.13	-.10	.38*	.35*
	Sleep Disturbance	-.06	.15	.15	.11	.18	.08	-.10	.29*	.34*
	K10	-.11	.36*	-.19	.33*	.23*	.04	-.10	.31*	.65*
	PSS	-.19	.14	-.31*	.20	.21	-.04	-.28*	.19	.47*
	SRI	-.38*	.23	-.43*	.34*	.10	-.31*	.13	.04	.40*
	PAS-S	-.15	.28*	-.28*	.00	.16	-.06	-.28*	.23	.51*
	PSWQ	.07	.04	-.30*	.52*	.08	-.01	.12	.21*	.42*
	CD-RISC	.33*	-.05	.61*	-.19	.04	.20	.37*	.10	-.31*
	LOT	.23*	-.23*	.19	-.31*	-.42*	.06	.23*	-.32*	-.35*

Note. TIPI= Ten-Item Personality Inventory; STAXI=State-Trait Anger Expression Inventory; SPSI-R=Social Problem Solving-Revised; STS=Self-Talk Scale; IMHS=Iranian Mental Health Scale; K10= Kessler psychological distress-10; PSS= Perceived Stress Scale; SRI= Stress Response Inventory; PAS-S= Procrastination Assessment Scale-Student; PSWQ= Penn State

Worry Questionnaire; CD-RISC= Connor-Davidson Resilience Scale; LOT= Life Orientation Test.
*p<0.05

Discussion and Conclusion

The goal of the present study was to develop and initially validate a new culture-specific measure of coping styles in Iranian context. A step-by-step procedure (Comrey, 1988) was followed to reach a 45-item form with 9 subscales (turning to religion, procrastination, positivity, self-blame, avoidance, seeking social support, problem solving, wishful thinking, and passivity). The resultant 45-item scale proved to be a psychometrically robust measure of these nine styles of coping. Different indices of validity and reliability were evaluated in this study.

Principal components analysis and parallel analysis suggested a nine-factor structure. A subsequent confirmatory factor analysis confirmed the nine-component structure. All fit indices fell within acceptable range. The final version of the ICSS is comprised of nine moderately correlated components of coping styles. These styles were labeled as turning to religion, procrastination, positivity, self-blame, avoidance, seeking social support, problem solving, wishful thinking, and passivity. Assessment of inter-subscale correlations suggested that turning to religion, positivity, seeking social support, and problem solving were adaptive and positively associated. On the other hand, procrastination, self-blame, avoidance, wishful thinking, and passivity were inter-correlated and could be regarded as maladaptive styles of coping (Gutiérrez, Peri, Torres, Caseras, & Valdés, 2007).

Results suggested that the ICSS had adequate concurrent validity as its subscales were significantly correlated with theoretically related constructs. Openness and Conscientiousness were positively associated with adaptive styles while negatively correlated with maladaptive styles of coping; however, the effect sizes were small. Extraversion was significantly associated with seeking social support. Agreeableness was associated with procrastination and positivity. Emotional stability was positively associated with positivity while inversely associated with procrastination. Overall, most of associations between personality constructs and coping styles were in line with previous research (Penley,

& Tomaka, 2002; Lee-Baggley, Preece, & DeLongis, 2005; Connor-Smith & Flachsbart, 2007).

Anger control seems to be positively associated with most adaptive styles while anger expression was positively correlated with maladaptive coping styles. Resilience may be conceptualized as one's ability to reach biological and psychological stability in potentially dangerous situations (Conner & Davidson, 2003). Resilience was positively associated with adaptive coping styles (e.g., problem solving) and negatively associated with maladaptive styles (e.g., passivity). Social problem solving is conceptually close to coping (D'Zurilla & Chang, 1995). Consistently, adaptive styles of social problem solving (e.g., rational style) were significantly correlated with adaptive coping styles (e.g., problem solving). Procrastination in educational settings was associated with procrastination, passivity, and avoidance coping styles. Associations between the nine subscales and perceived stress, stress response, psychological distress, worry, and life orientations were in line with previous research (Andersson, 1996; Campbell & Ntobedzi, 2007; Hampel & Petermann, 2006; Hong, 2007) and confirmed the concurrent validity of the ICSS. Finally, the associations between mental health indices and coping styles were consistent with the existing literature (Aldwin & Revenson, 1987; Abramowitz, Deacon, Woods, & Tolin, 2004; Himle, Chatters, Taylor, & Nguyen, 2011).

The newly developed ICSS has several points of strength. First, it has 45 items and may be practically used in research settings. It is not too short to lack psychometric characteristics and not too long to hinder practicality. Second, the ICSS is culture-specific. The role of culture is crucial in psychological assessment and culture-specific tools are perceived to be more helpful within a specific culture such as Iran. Third, psychometric evaluation of the ICSS suggested that it has a robust structure as well as satisfactory indices of internal consistency and concurrent validity.

Some limitations of the present study are worth noting. First, the present sample was drawn from university settings. Therefore, generalizing these findings to other populations should be made with caution. Second, the development of the ICSS sought to measure coping

styles in a parsimonious and broad manner. Of course, there are some coping behaviors which are not included in the ICSS (e.g., smoking or alcohol consumption). Third, we did not examine the second-order structure of the ICSS. As we mentioned in this study, some subscales are adaptive and some others are maladaptive. It is recommended for future research to evaluate the fit indices of the second-order structure of the ICSS. Fourth, inter-group differences were not evaluated in this study. It is recommended for future research to assess inter-group differences (e.g., gender differences and between-university differences) in coping styles.

In sum, the present study developed and initially validated Iranian Coping Style Scale (ICSS). The newly developed scale is comprised of nine subscales (turning to religion, procrastination, positivity, self-blame, avoidance, seeking social support, problem solving, wishful thinking, and passivity). The ICSS showed adequate internal consistency and patterns of validity. The ICSS, therefore, may be used as a reliable and valid measure of coping styles in research settings.

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