ORIGINAL ARTICLE

ADAPTATION AND VALIDATION OF COPE INVENTORY FOR EARTHQUAKE SURVIVORS IN PAKISTAN

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ABSTRACT

OBJECTIVE
To adapt Cope Inventory for cultural differences and specific coping strategies adopted by Kashmir earthquake survivors.

STUDY DESIGN
Exploratory Study

PLACE AND DURATION OF STUDY
The study was carried out in Azad Jammu and Kashmir, (Thouri camp in Muzafarabad) Pakistan in a duration of three months.

SUBJECTS AND METHODS
A sample of 221 survivors (men & women) including123 men and 98 women was taken. The age ranged between 18 years and 62 years. Participants were asked to fill out the demographic form, consent form, and Cope Inventory.

RESULTS
Exploratory Factor Analysis was performed on 81 items of the adapted version of COPE. Six factors were developed which were carefully labeled as religious, passive, active, use of instrumental social support, mental disengagement and focus on and venting of emotions subscales. The total variance of six factors was 57.55% .The Chronbach's alpha of the scale was .83.

CONCLUSION
COPE is a considerable inventory to examine coping strategies in Azad Kashmir.

KEY WORDS
Coping strategies, Azad Kashmir, Earth quake survivors.

INTRODUCTION

Natural disasters can be defined as an unexpected adverse or dangerous incident which causes unlimited damage to property, income, animals, plants, and particularly human beings[1]. Disasters can be natural like floods, earthquakes, land sliding and droughts; or these may also be man- made like suicide bombing, terrorist attacks, technological accidents and wars[2]. Among different types of natural disasters, earthquakes have become a major concern in Pakistan because it is located on a seismic belt. In 2005, a massive earthquake hit Azad Kashmir adversely because of a rapid invasion of seismic pressure near mountains of Himalaya which caused a jolt of 7.6 Mw[3]. This earthquake resulted in the casualties of almost 86,000 people while 138,000 were injured and it also caused great destruction of assets[4]. After the earthquake, survivors were in trauma because they felt like it was the end of their world. The distress of losing dear ones and deprivation of basic necessities had devastated the lives of the survivors[5]. A research conducted on 2005 earthquake victims after 18 months of disaster revealed that both men (33.4%) and women (55.2%) had suffered from Post-Traumatic Stress Disorder[6].

In 2008, China was confronted with a massive earthquake where a study was carried out on a sample of 2080 participants belonging to the age group of 16-65 years. Researchers found that men were more likely to get social support and active coping strategies were predictors of good mental health among survivors[7]. In another study on earthquake struck China in 2010, researchers found that survivors receiving social support were less likely to have depression, anxiety and post-traumatic stress disorder[8].

Different researches indicated that coping strategies among earthquake survivors vary from culture to culture but there are worldwide similarities as well. Researchers (2012) investigated the coping strategies of 2005 Pakistani earthquake survivors. They found that survivors were more likely to use religious coping and social support to combat the adverse effects of trauma and high levels of social support was related to positive emotions[9]. The results of this study coincided with another study in 2006 in which massive earthquake struck Indonesians' coping strategies were studied. Results of their study revealed that religion was one of the most important strategies to overcome the negative impact of disaster[10]. In another study in Indonesia after an earthquake in 2009, the evaluation of coping strategies of survivors pointed out positive reframing, acceptance, growth, and turning to religion as the most common and participants with poor religious practices were behaviorally and mentally disengaged[11].

The following research can serve as a milestone to understand the cultural differences in terms of coping strategies. In 1995, a 7.2 magnitude earthquake affected around 1.5 million people in Japan. An ethnographic research in 2000 was carried out to discover the indigenous coping strategies prevalent there. They found two religious beliefs among survivors such as Fatalism and Karma. Japanese reported that they considered Fatalism as fate while karma is a Buddhist term which means difficulties may occur due to the bad behaviors of one's ancestors. These terminologies vary from culture to culture. Results also suggested that 80%

of the survivors were using passive coping and were less likely to get social support because of inflexible family boundaries[12].

Keeping in mind the inevitability of coping, it was important to adapt the scale to examine coping strategies of the survivors of earth quack in the population of risky belt. Thus, the current research aimed to adapt the Cope Inventory developed by Carver, Scheier, and Weintraub in 1989. COPE is based on the Lazarus model of stress (1984). Lazarus and Folkman stated that coping refers to peoples' behavioral and psychological efforts to resolve their stressful circumstances, categorizing it into problem focused and emotion focused[13]. Under these two classes of coping Carver, Scheier, and Weintraub included 14 subscales in COPE which are substance use, active coping, venting, denial, use of emotional support, positive reframing, humor, planning, acceptance, self-blame, self- distraction, behavioral disengagement, use of instrumental support, and religion[14].

Although COPE is applicable under all kinds of stressful situation[15], the focus of this research was on coping mechanisms of earthquake survivors who differed in coping tactics because of the existing cultural differences[16]. Objectives of the study are as following;

- To translate and adapt items of the COPE Scale for earthquake survivors.
- To calculate the construct validity of COPE Scale.
- To estimate the reliability of the COPE Scale and its subscales.

SUBJECTS AND METHODS

PHASE ONE: ADAPTATION OF BRIEF COPE SCALE

In the current research the specific purpose of adapting COPE was to use it for indigenous population. For this, some new items and subscale were added to identify specific coping tactics used by Pakistani survivors who were trying to adjust in post-disaster situation. So, after getting permission from author, the researchers studied the scale in detail. First of all, scale was translated in Urdu the process is described below.

Translation of Cope Scale:
Forward and backward translation was made by the researcher to check equivalence with the original scale. While translating the feeling connotations of the items rather than literal meaning of the original words was kept in mind.

Bilingual Committee Approach:
Bilingual committee approach was employed to improve backward and forward translation. All of the experts evaluated the initial translation independently and suggested a few modifications. These translations were further evaluated and examined by the researchers and two bilingual translators from National Language Authority. Their judgments and consensus yielded a final Urdu version of the COPE Scale.

Literature Review:
Research literature was reviewed from available resources to comprehend the coping strategies implemented by people under stressful circumstances.

Semi Structured Interviews:
Semi-structured interviews were conducted with the survivors who were counseled and encouraged to elaborate the coping mechanisms which they were using to combat the trauma. In-depth interviews provided an abundance of knowledge regarding coping. On the basis of this information the adapted Cope scale was generated.

Preparation of Items Pool:
Based on the information acquired from literature review, semi structured interviews and COPE scale a pool of 105 items was prepared for endorsements. This preliminary set of items was presented to six subject matter experts for evaluating the clarity, fidelity to the construct of coping, and item redundancy. Experts rated 15 items relatively low on relevance to the construct. Hence, 90items were retained. This raw form questionnaire was taken for piloting.

Pilot Testing:
Piloting was done on 30 participants' survivors with the aim to check the relevance and comprehensibility of the scale. Participants were also asked to add any other coping strategies at the end of the questionnaire, which they were using. The survivors did not endorse some of the items, for example, items measuring denial, humor, and self-blame received low scores as compared with religious, active, and venting coping. Participants also described a different kind of coping strategy, which was not part of Cope Inventory. Researchers labeled this category as passive coping, which consisted of nine items. Piloting helped in the exclusion and inclusion of some items in the scale. Moreover, researchers rephrased few items, for example, item no. 2 "I go to movies or watch TV to think about it less "in mental disengagement subscale was transformed as "I started to watch films and television". After piloting, the questionnaire consisted of 81 items.

PHASE TWO: DETERMINING THE CONSTRUCT VALIDITY OF COPE THROUGH FACTOR ANALYSIS

Participants

A sample of 221 survivors (men & women) was selected from Azad Jammu and Kashmir, Pakistan. Survivors selected for final exploratory factor analysis included both men (n = 123) and women (n = 98) from Thouri camp in Muzafarabad. Thus our sample consisted of 44% men and 56% women. The age of the participants ranged between 18 to 62 years. The education of the participants varied from matriculation (72%), Intermediate (19%), Bachelors (6%) and Masters (3%). Thirty five percent of the participants were unmarried while the remaining 65% was married. The predominant socioeconomic class among the survivors was lower-middle class.

Procedure

Permission was obtained from all participants on the grounds of confidentiality, anonymity and informed consent. They were also given an explanation and a general idea of coping in order to elicit relevant information for this research. After data collection, principle component analysis was run on the remaining 81 items. After

completing data collection for phase II, construct validity of COPE scale was estimated by applying factor analysis.

RESULTS

Exploratory Factor Analysis was performed on 81 items of the adapted version of COPE to ensure the dimensionality and validity of the scale. Factors were extracted through using varimax rotation. Varimax rotation was done to obtain maximum interpretable factors[17]. Initial findings of correlation matrix justified appropriateness of data to run factor analysis.

The data was further tested for assumption of sphericity. Bartlett's test of sphericity was used for this purpose[18]. Findings showed that Bartlett's test of sphericity was significant (p<.000). It demonstrated that the data was fit for further evaluation of potential factor structure of items of Brief Cope Scale. The Kaiser-Mayer-Olkin (KMO) measure of sampling adequacy was estimated also. KMO's resulting value was .755 which indicated that the sample size was adequate to apply factor analysis on data[19].

Based on the criteria of Field (2005), those factors were retained in the scale which had: (a) an un-rotated eigen value > 1 with a factor loading of 0.40; (b) a simple factor structure showing each factor distinct from one another; (c) an interpretability, that the factor represents a meaningful underlined dimension[20]. The Kaiser criterion was used to determine number of 'meaningful' components or factors[21]. Kaiser-Guttmann's retention criterion of eigen values greater than 1 yielded nine factors. Based on the preliminary findings, principal component analyses were conducted using nine, eight, seven, and six factor solutions by employing varimax rotation. The six factors solution provided the best estimate of simple structure with the few cross-loadings and it yielded the most interpretable solutions. The factor loadings and communalities based on rotated factor solutions are presented in Table 1.

The six factor solution was preferred over other factor solutions due to the following reasons: (a) it resulted in the most robust factor structure; i.e., it yielded items with stronger factor loadings (> .40) and fewer cross-loadings than other solutions; (b) there were no clear conceptual differences between the items representing seven and eight factors; and (c) the communalities of all items were also greater than .40. 22 The six factors accounted for: 16.839%, 11.817%, 10.581%, 7.279%, 6.320% & 4.716% variance respectively. The overall variance explained by all these factors accounted for 57.55%.

Finally, 40 items were excluded. The remaining 41 items were labeled as a) religious b) passive, c) active, d) use of instrumental social support e) focus on and venting of emotions, and f) mental disengagement. Three doctoral students and two subject matter experts cautiously read all items and labeled them accordingly. All experts drew almost similar conclusions regarding each factor. Hence, the adapted version of COPE is a valid scale with a 5 point likert response format.

PHASE 3: ESTIMATING CHRONBACH'S ALPHA RELIABILITY

The total 41 items of the adapted Cope Inventory and subscales (six factors) were subjected to reliability analysis using Chronbach's Alpha coefficient method. Results are presented in the following tables:

Table1
EFA Factor Loadings and Communalities of the 41 item adapted COPE scale (N=221).

Item	Item Description	1	2	3	4	5	6	h
1	I seek Allah's help	.87						.76
2	I ask people who have had similar experiences what they did				.58			.45
3	I started keeping to myself & stopped meeting people		.66					.57
4	I take additional action to try to get rid of the problem			.79				.64
5	I turn to work or other substitute activities to take my mind off things.						.65	.48
6	I concentrate my efforts on doing something about it.			.74				.67
7	I put my trust in Allah	.89						.86
8	I try to get advice from someone who about what to do				.67			.47
9	After the earthquake, I started to keep thoughts to myself		.46					.56
10	I do what has to be done one step at a time			.73				.62
11	I sleep more than usual						.72	.56
12	I take direct action to get around the problem			.61				.49
13	I try to find comfort in my religion	.84						.74
14	I found the fellow effectees a source of help				.46			.52
15	I find myself helpless and feeble		.67					.64
16	I've started to think about changing my circumstances			.69				.58
17	I started to watch films and television						.69	.61
18	I know that my circumstances have changed and will not be the same as they were before the earthquake.			.78				.67
19	I pray more than usual	.84						.74

Note: Religious Coping: 1, 7, 13, 19, 24, 29, 34, 36, 37 & 39. Passive Coping: 3, 9, 15, 21, 26, 31, 33, 38 & 40. Active Coping: 4, 6, 10, 12, 16, 18, 27, 35. Use of Instrumental Social Support: 2, 8, 14, 20, 22, 25, 30 & 32. Focus on and Venting of Emotions: 23, 28 & 41. Mental Disengagement: 5, 11 & 17

Table 2
Reliability Analysis of adapted COPE scale (N=221)

K	*M*	*SD*	Variance	*α*
41	143.25	11.90	141.72	.83

Table 3
Reliability Analysis of the six factors of 41 item adapted COPE scale (N=221)

Factors	*k*	M	SD	V	a
Religious Coping	9	43.14	6.28	39.56	.92
Passive Coping	9	20.99	4.45	19.82	.86
Active Coping	8	34.20	4.36	19.09	.84
Use of Instrumental Social Support	8	27.55	4.17	17.40	.73
Focus on and Venting of Emotions	3	6.74	2.06	4.25	.92
Mental Disengament	3	8.36	1.53	2.35	.57

DISCUSSION

This study aimed to translate and adapt COPE scale that quantitatively measures the coping strategies of the earthquake survivors. Another objective of this study was to obtain a psychometrically sound adaptation of COPE, and to achieve this objective, factorial validity of the adapted COPE was estimated in addition to examining its reliability. This adapted COPE scale represents advancement in the measurement of coping strategies of the earthquake survivors. The adapted scale was developed by reviewing relevant literature, conducting in-depth interviews, undertaking qualitative data analyses and piloting to identify indigenous Pakistani coping mechanisms which are distinct to the earthquake survivors. Six indigenous items were included in the religious subscale. For example, I recite the Holy Quran. Similarly, few items were also included in other subscales. The adaptation procedure resulted in 81 item self-report measure.

Exploratory factor analysis was conducted to examine factor structure of adapted COPE Scale [22]. It resulted in six factors (41 items) that were meaningful and were falling in their relevant categories. Six inter-related but independent dimensions underlying the indigenous coping styles were: a) religious b) passive, c) active, d) use of instrumental social support e) focus on and venting of emotions, and f) mental disengagement. This best fitted model accounted for 57.55% of total variance. The adapted scale varied from Cope Inventory in many ways. First of all, a new category of "passive coping" was merged. It is obvious that traumatic incidents provoke a feeling of helplessness or lack of control over what is happening around [23]. Previously in a study in 2004, Mexican disaster survivors also used passive coping to deal with the unfavorable circumstances [24]. An interesting comparative research was conducted on Pakistani earthquake survivors in 2011.

The results revealed that Azad Kashmir survivors were two times more likely to use passive coping than NWFP survivors because Azad Kashmir was one of the most affected areas than any other city of Pakistan [25].

The adapted scale eliminated the categories of denial and restraint coping because the data was collected after one year of disaster and the victims were well aware about what had taken place. During the study substance abuse was not found.

The impact of religiosity was at the peak which can be one reason why the category of substance abuse received low factor loadings. The results of various studies on earth quake victims also showed that religion is one of the most important coping strategies among survivors [9,10,12]. Moreover, survivors were busy in rebuilding houses, getting food, water, shelter, health services, education and going back to work because earthquake seized the basic necessities of life which needed to be restored. So, adverse circumstances also positively motivated the survivors to combat with the trauma. This can be another reason why the results showed no restraint coping among survivors rather they were actively working on solving their problems [26]. Other factors like use of instrumental social support, mental disengagement, and focus on and venting of emotions coping skills coincided with Cope Inventory because earthquake caused a lot of damage which could not be re-established without the help of local bodies, organizations and resource persons. Hence, survivors were focusing on instrumental social support.

They were also expressing emotions and feelings regarding negative impact of disaster which was a source of catharsis [27]. A research on Chile earthquake victims also revealed that victims often engage in social activities and vent to over-come the negative effects [28]. Further, victims using positive coping strategies also mentally engaged themselves in constructive activities such as offering prayers, participating in welfare work, watching television and films.

They were making attempts to return back to normal routine instead of dwelling over the adverse incident. In this way, the adapted scale captured the true coping mechanisms of earth quake survivors with adequate internal validity.

Further, Chronbach's alpha of the scale was .83. Hence, the adapted version of Cope Inventory has significant psychometric properties and well prepared to be applied under traumatic situations.

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