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Original Article

Construction of a Scale on Coping Repertoire during COVID-19 Pandemic

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Abstract

The purpose of the present study was to develop a scale for measuring coping strategies used in the novel COVID-19 pandemic among the adult residents of Kolkata in India. An exploratory cross-sectional study was conducted, that included - conceptualization and generation of 36 items for 16 coping strategies with five-point response categories; relevance judgment (based on item validity index) & item validation (based on item-domain total correlation) of these items; and identification & validation of the factor structure. An online survey was conducted using snowball sampling technique during three weeks of April 2020. Complete sets could be obtained from 388 participants (200 males and 188 females). The S-CVI results (relevance of overall questionnaire) indicated high content validity (0.88) for all items of coping and significant positive item-domain total correlations were found in the process of item analysis. Based on scores of sixteen coping strategies, principal component analysis resulted in five factors as indicated by eigenvalues (1.34 to 3.32) and scree plot. These five common components were identified as positive emotion focused, escape oriented, depression developing, solution generating and self-soothing coping and a unique component- catastrophizing. This factor structure was validated through confirmatory factor analysis and same factor structure of the scale was found. Satisfactory internal consistencies of all components were found (0.61-0.89). The tool would be useful for understanding adaptive and maladaptive coping strategies used by people during a pandemic situation and it will also help in planning therapeutic intervention for combating the posttraumatic stress of this pandemic situation.

Among the global challenges faced by the world collectively since the end of the World War II in 1945, combat with coronavirus disease (COVID-19) is one. As per current scenario, pandemic COVID-19 has spread all over the world; specifically, based on the number of total cases, India is one of the worse affected countries, just after the United States. India has already crossed ten and half million cases of COVID-19, of which one hundred fifty-three thousand people (approximate) have expired (Worldometer, 2020, 2021).

As a result, this pandemic lead to fear of own health and of loved ones among all across the world. Although fear is adaptive up to a certain level, two different pictures were found in Indian scenario: Some people faced excessive and uncontrollable apprehension and worry about present and future with heightened physiological arousal along with feeling of insecurity, loneliness, helplessness, hopelessness, and suicidal behaviour etc. (Kaparounaki et al., 2020; Liang et al., 2020; Varshney et al., 2020; Wang et al., 2020; Zandifar & Badrfam, 2020). On the other side, some people were extremely reluctant to obey social distancing or using protective measures. Due to their asocial or antisocial behaviour, they are more vulnerable to be affected by COVID-19 and spreading it to others. Overall, it is clear that this pandemic and associated lockdown is providing more economical and psychological distress to mass society and can lead to aggravate clinically diagnosed condition among a huge proportion of people (Dayal et al., 2020; Dong et al., 2020; Shah et al., 2020).

In this context, although everyone is somewhat distressed due to COVID-19, a proportion of people are more vulnerable to develop psychiatric problems and maladaptive behavior. To explore the reason, if we consider the Stress diathesis model (Meehl, 1962), it depends upon interaction between pre-dispositional vulnerability, the diathesis, and stressors. Perceptions of any stressors depend upon genetic, biological, psychological, social protective and stress aggravated factors. These make a range of differences among the relationship between individual vulnerability to the development of a disorder. One of these is coping processes, i.e., way of dealing with stressors due to COVID-19. Coping was conceptualized by Lazarus and Folkman (1984, p.141) as: "constantly changing cognitive and behavioral efforts to manage specific external and internal demands that are appraised as taxing or exceeding the resources of the person". In any situation, different people use different coping against same stressors; in the same manner, same individual responds to same type of stressor differently in different phases of life. So, coping strategies are dynamic constellation which varies with personality traits, nature of stressor and other contextual factors. In the pandemic situation also, different people use variety of strategies as per intra and interpersonal demands and it can be assumed that there are some COVID-19 pandemic specific coping which along with other bio-psychosocial resources differentiate psychologically fit people from any form of psychologically disturbed people even though all might be going through the same condition. A few empirical studies (Gerhold, 2020; Orgilés et al., 2020; Shechter et al,2020) have been conducted on coping strategies in pandemic context and have found some effective adaptive strategies to deal with the situation. From these studies, Gerhold (2020) pointed out some problem focused coping (like listening and following expert's advices, carefully considering what to do next) and emotion focused coping (accepting the situation, trying to distract oneself with different activities) in common people. However, Orgilés et al. (2020) identified some task-oriented coping (emphasizing positive attitudes by highlighting the pros of being at home), emotion oriented strategies (trying to find comfort from others) and avoidance oriented coping (not worrying about pandemic situation) in youth. On the other hand, Shechter et al. (2020) found that physical activities, spirituality and faith-based religion coping were most common coping behaviours among healthcare workers. Most of these studies used interview, thematic analysis, or adopted version of previously established coping scales in COVID pandemic condition, since there is a dearth of pandemic specific tool to measure coping strategies. So, it was intended to develop an objective and standardized measure of coping strategies in COVID-19 pandemic. The tool would be aimed to explore and identify adaptive and maladaptive coping strategies as used in pandemic situation.

For constructing pandemic specific coping scale, experts borrowed different relevant constructs from four tools, e.g., Ways of coping (Folkman & Lazarus, 1985), COPE Scale (Carver et al., 2005) & cognitive emotion regulation questionnaire (Garnefski & Kraaij, 2007), Five facet mindfulness questionnaire (Baer et al., 2006) and were theoretically conceptualized on the basis of the stress transactional model (Lazarus & Folkman, 1987) and model of behavioral self-regulation (Carver, 1998). Items were formulated on the basis of different problem focused or emotion focused coping strategies to deal with these pandemic stressors as per requirement. Under these two main copings, sixteen constructs were included in the present scale from constructs of above mentioned four scales and these were conceptualized based on experts' opinions and clinical judgment considering Indian context in COVID-19 pandemic. The constructs are explained further.

Acting with Awareness was conceptualized as mindfully engrossed in activities in the present moment. In other words, it was considered as self-regulation strategies of attention due to which an individual can focus on different COVID-19 safety measures while ignoring different judgmental intrusive thoughts (Baer et al., 2006). Planning was defined as how an individual has identified and fixed a realistic goal, prepared strategies, evaluated them based on pro and cons and has finalized most suitable plan for successfully reaching ongoing goal during pandemic. (Lazarus & Folkman, 1984). Positive Reappraising was conceptualized as strategy due to which people reappraise pandemic situation from positive angle or reinterpret the situation based on hidden positivity of the situation (Garnefski & Kraaij, 2007). Positive refocusing was conceptualized as emotion focused coping strategy due to which people refocus on joyful or pleasurable activities instead of distancing actual covid19 situation (Garnefski & Kraaij, 2007). Altruistic Behavior was referred to as engaging oneself in activities which will help other people during lockdown and pandemic situation. Acceptance was conceptualized as strategy due to which people non-judgmentally observe what s/he has experienced and try to adjust and gracefully accommodate with the reality without providing effort to change the situation or attempting to change it or protest it during the pandemic (Baer et al., 2006). Social Support was conceptualized as seeking cognitive, emotional, and materialistic support from other people virtually or directly to cope with traumatic experiences in this present context of COVID-19 (Lazarus & Folkman, 1984). Both spiritual and religious coping were conceptualized as use some spiritual practices, yoga, meditation, and religious belief, faith practices to reduce emotional distress due to the pandemic situation (Baer et al., 2006; Lazarus & Folkman, 1984).

Denial was conceptualized as a strategy through which an individual protects himself/herself by refusing to accept the unpleasant emotion provoking truth about something that is happening or has a chance to happen in future. (Carver, 1998). Blaming self was considered as coping strategy due to which an individual attributes the self or holds himself/herself responsible for whatever negativity s/he has experienced during COVID-19. Blaming others was considered as coping strategy due to which an individual attributes to others or holds others responsible for whatever negativity s/he has experienced during COVID-19 (Lazarus & Folkman, 1984). Rumination was meant as repetitive and passive focus on the causes and consequences of one's symptoms of distress without engagement in active coping or problem solving to alleviate dysphoric mood. In the present context, some people might resort to this coping strategy which might include communicating stressful thoughts while have a conversation with someone (Daniels & Harris, 2005). Catastrophizing was referred to as exaggerating the difficulties that one faces. It is a form of repetitive negative thinking, like worry or rumination which in this case involves visualizing images of getting affected by COVID-19 or losing a loved one (Lazarus & Folkman, 1984). Self-distraction was conceptualized as a strategy in which people distract their own self from the ongoing emotional upheaval or distress towards something pleasurable which will help them alleviate or reduce that distress, but distraction have not any addiction properties (Carver et al., 1989). Engaging in addicted behavior was referred to as how an individual tries to adjust with the ongoing distresses of life by resorting to compulsive behavior (e.g., drug abuse, gambling, eating, sex, internet use, etc.) for temporary relief or an escape from the pandemic distress. For example, some people might get addicted to alcohol or drugs or even online games like PUBG. This might provide temporary relief from the stress of the pandemic.

So, the study aimed to explore and develop a psychometric tool based on these coping strategies which were used by people to combat the existing stress.

Method

The study included two phases: 1) tool construction, and 2) validation of the constructed tool.

Participants

Phase 1

Participants were selected based on the following criteria: A) Inclusion criteria were: (i) Adult participants (age more than 18 years); (ii) To be able to communicate in Bengali language (an Indian language spoken by the participants in Kolkata) or English language, along with an ability to comprehend the test materials adequately as per the demand of the test; and (iii) Having internet connection and using social media like 'WhatsApp' messenger or e-mail Id in phone or laptop. B) Exclusion criteria were: not willing to participate in

the study. In the first section of the study, estimated sample size was 383 participants based on a priori power of test calculation using the software G*Power (version 3.1.9.4). Initially, 578 participants were required to be approached virtually to reach target population. Finally, complete set were found from 388 adult participants residing in Indian urban society (Kolkata and adjacent areas, West Bengal). Participants were selected using snowball sampling techniques and contact through online method. Participants were requested to circulate the questionnaire to their friends and so on. Participants voluntarily participated and they were anonymous and unpaid for the study. Participants were given a brief knowledge about the nature of research and confidentiality was assured. Data of each participant were separately taken in order to avoid the influence of counterparts. Only the participants who completed the work were included in analysis.

Socio-demographic profile of the respondents (N=388) were as follows: i) Sex: 200 male and 188 female participants. ii) age : 35.20 (12.45) years (range 18-69 years) iii) Educational qualification : 24 participants with below 10th standard, 92 participants with 10th standard, 80 participants with 12th standard of school education, 156 and 36 participants with graduate and post graduate level of education respectively; iv) Religion: 350 participants were Hindu, 26 participants were Muslim, 12 participants were Christian, 2 were others; v) Nationality: 100% Indian nationality; 100% Bengalee by mother tongue; vi) Profession: service:159 (government : 38; corporate: 68; private: 53), own business: 101, homemaker:108 participants. Vii) Monthly income per capita: below 136$: 68; below 272$: 107; below 408$: 15, below 554$: 60, below 680$: 04 participants viii) Present history of psychiatric illness of self / family members: 28 participants viii) Direct exposure to COVID 19: 4 participants (from next door neighbors), 6 medical professionals who provided service in COVID 19 hospitals.)

Phase 2

Three groups of participants were recruited for validation of the present work. This phase included testing whether the tool had sufficient clinical validity. It can be hypothesized that those who were following WHO guidelines regarding COVID-19 safety behavior would have more adaptive coping strategies. To test this, comparative group 1 would be compared with control group. Also, those suffering from stress related to the pandemic can be hypothesized to have less adaptive coping strategies. To test this, comparative group 2 would be compared to control group. a) control group: 30 participants who regularly use any form of mask in local market (based on researchers' observation) and did not need any psychiatric consultation (participants' self-declaration); b) comparative group 1: 30 participants who did not use any form of mask in local market for minimum two consecutive days in a week (based on researchers' observation); and c) comparative group 2: 30 participants who visited clinical psychologist /psychiatrists for the first time due to the stress because of lockdown (based on researchers' observation in their own private set up). For comparative group 1, 91 participants had to be approached to reach the target size. But only 30 participants had to be approached for the rest two groups. Participants were selected using purposive techniques and initially contacted offline but the scale was administered online.

Socio-demographic details: Nationality: Indian, Bengali community; Sex ratio (M/F): control group (15/15); comparative group 1 (23/07); comparative group 2 (09/21); age (mean/SD): control group [34.2 (14.5)]; comparative group 1 [31.5 (12.3)]; comparative group 2 [36.5 (11.7)]. Participants were recruited by the researchers with the help of local market authorities of a particular place of Kolkata, India.

Research Instruments

Personal Information schedule: It was designed to get prior information like age, sex, religion, education, family income (annually), type of job, sector of job, number of family members, psychiatric or physical or any chronic illnesses, what types of stressors are being faced during pandemic, the degree of the stressors and the amount of present stress, any direct or indirect contact/experience with person suffering from COVID-19, safety measures taken for COVID-19.

COVID-19 pandemic coping scale: The details of the scale are presented in the following sections.

Steps of Conducting the Research (Scale Construction)

Defining what to measure-operational definition of construct: first intention of the

researcher was to define coping repertoire as per it was intended to measure. In the present work, empirical researches and theoretical conceptualization (Baer et al., 2006; Lazarus & Folkman, 1984; Carver et al., 2005; Garnefski & Kraaij; 2007) were taken into consideration for operationally defining the construct.

Generating items: In this process, test developer requested experts to generate items (considering operational definition) of coping strategies during pandemic. In these ways, thirty-six items were formulated and item wording was done by the test developers themselves with the help of three faculties of department of Psychology of the University of Calcutta. After generating items, items were edited based on 'rules of item construction of attitude scales' (Gable & Wolfe, 1993). Similarly, as response measures, five-point Likert-type scale (1-Never 2-Occasionally 3-Sometimes 4-Often 5-Always) was used as scaling of tool construction. The scale contained some reverse-keyed items, i.e. items that followed reverse scoring. These items were designed to assess whether the subjects were biased in directional response or not.

Relevance judgment of items: In this process, ten judges were requested to evaluate each item based on relevance with respect to operational definition of the construct in 4-point relevance scale. The scale was: 1-not relevant, 2-Somewhat relevant, 3- quite relevant, 4-very relevant. 3 or 4 indicated suitability of item with respect to content of domain. For including judges, personnel who completed PhD in the field of psychology/ law/ Psychiatric social work with minimum five years of experience in therapy or counseling under reputed organization were included. After relevance judgment, content validity index of the developed scale was computed using the Item-CVI (I-CVI) and the Scale-level-CVI (S-CVI). I-CVI was computed as the number of experts giving a rating of "3 or 4" for each item divided by the total number of experts. Values range from 0 to 1 where I-CVI > 0.79, the item was relevant, between 0.70 and 0.79, the item needed revision, and if the value was below 0.70, the item would be eliminated. Similarly, S-CVI was calculated using the number of items in the scale that have achieved a rating of "3 or 4", and was measured in terms of the Average CVI (S-CVI/Ave). S-CVI/Ave ≥ 0.9 was considered as excellent content validity.

Item analysis: Researchers circulated the tools to the participants online. The constructed coping repertoire scale along with personal information schedule was circulated through mail or WhatsApp in Google form. The Instruction for coping repertoire scale was given to participants as "Please mark how often each statement narrate you by checking yourself in appropriate box. Here, most of the statements indicate your coping strategies to overcome the fear or apprehension related to COVID-19, and you are requested to evaluate in following five-point rating scale by placing the tick on suitable responses, which you feel most appropriate from your perspective). The scale is: 1-Never, 2-Occasionally, 3-Sometimes,4-Often, 5-Always. There are no right or wrong answers. Answer each item carefully and please do not skip any item while filling in." Summation of responses on all items of a subscale (considering each coping) leads to the total score of that subscale. Then each item is analyzed with respect to total standard using item-domain total correlations. The significant association between individual item and domain total score of items of each scale indicated significant contribution of that particular item on the total score of all items of that domain of coping repertoire scale.

Exploratory Factor Structure: Based on scores of sixteen coping strategies, underlying factor structure was explored using principal component analysis. Principal components whose eigen values were more than one was considered as common components of pandemic coping strategies. Since these coping strategies were related, oblique rotation (direct oblimin) was used and items with factor loading more than 0.33 were considered as coping of that factors.

Confirmatory Factor Analysis: The factor structure obtained from exploratory factor analysis was validated by doing a maximum likelihood confirmatory factor analysis (CFA). For analyzing the fit of the model, cumulative fit index (CFI), root mean square residual (RMSEA), SRMR (Standardized Root Mean Square Residual, a measure of discrepancy between model implied covariance and observed covariance) were used. RMSEA is sensitive to the complexity of the model, and thus it is a suitable index. To get more efficient estimates, we tested sampling error of RMSEA using pCLOSE fit Index. We did not use chi square to assess fit because it is well known that for large samples (>200), chi square is almost always

significant (Kenny, 2015). The CFI should be above .90 ideally, while RMSEA and SRMR should be below .08 (Schermelleh-Engel et al., 2003; Hu & Bentler, 1999). The final model is depicted in figure 2.

Determination of reliability coefficient: After identifying factor structure, reliability of these extracted factor structure along with sub-constructs of coping repertoire scale were measured. Internal consistency reliability applying Cronbach's alpha (Cronbach, 1949) among these sixteen copings and common umbrella factors (n=388) were measured for each construct individually. It measured whether item to item consistency exists to estimate coping repertoire.

Clinical validation of the tool: Administering the constructed tool to three groups of participants (previously mentioned) along with demographical detailing (as mentioned in tool used) for clinical validation of the tool.

Statistical Analyses

Data were analyzed using IBM SPSS version 22. Probability values to be accepted for the tests of significance were equal to or beyond 0.05 levels.

Phase 1: For item validity, item-domain total correlations among all items of the scale were measured using Product-moment correlation coefficient (n=388). Items with not significant correlations at .05 levels were rejected. As the process of construct identification, Exploratory factor analyses (principal axis functioning) with direct Oblimin rotation were followed. Before applying PCA, Kaiser Meyer Olkin measure and Bartlett's test of Sphericity were calculated to assess sampling adequacy. The items with factor loading of .33 and higher were considered as items of specific construct of the extracted factor structure. Confirmatory factor analysis was done for validation. Cronbach's alpha was done to measure internal consistency among items of different principal components of the tool (n=388).

Phase2: for clinical validation, student t test was done to compare comparative group 1 and 2 with respect to control group 1, since Shapiro Wilk test indicated normality of distribution.

Data Collection

Phase 1: The item generation and relevance judgment were completed within 31st March, 2020; circulation and collection of survey questionnaire were done till 30th April, 2020 and statistical analyses and identification of factor structure were completed within 7th May, 2020. Phase 2: Data collection for validation work for identifying adaptive coping was done in the months of May and June, in the year 2020.

Ethical Practice

The research was approved by the internal research committee of the department of Psychology of University of Calcutta. The committee followed the guidelines proposed by the Declaration of Helsinki.

Results

Logical Review of Items Based on Item Content Validity Index (I-CVI)

In this section, consensus of ten expert's judgement in four point rating scale with respect to content of each item in relation to 'coping strategies' were taken into consideration. The items are presented in the appendix. I-CVI was found to be .8 in case of item nos. 4, 6, 7, 9, 10, 11, 12, 13, 16, 17, 18, 19, 20, 21,22, 24, 30, 32, 33, 34, 36 and 0.9 in case of item nos. 1, 3, 5, 8, 9, 15, 25, 26, 28, 29, 31 and 1.0 in case of item nos. 2, 14, 23, 27, 35. In case of 35 items of the tool, the I-CVI is higher than 79 percent. It indicates that these items would be relevant for the scale as per the content of items. Since the I-CVI of Item number 9 is between 70-79%, revision was done. The S-CVI results (relevancy of overall questionnaire), measured in term of averaging approach, showed (S-CVI/average) = (31.7/36) = .877 which indicated high content validity of overall items of Coping with covid-19 scale.

Item Analysis Based on Discrimination Index

In the same line of thought (like expert's relevance judgment), tool was empirically explored to the representative of target population to find the discrimination power of each item. Discrimination values, measured in terms of item-domain total correlation of each item are presented in Table 1.

Since Item-domain total correlation of all thirty-six items were significant at .0.01 level, all items were capable enough to discriminate the distribution of domain total score of all different types of coping used in COVID-19 pandemic condition. So, all items were included in the final set of items.

Table 1

Item Analysis Based on Item Total Correlation and Internal Consistency of Each Item of Coping Scale

Domain and number of items	Item no.	Cronbach's alpha value	Item-domain total correlation
Acting with Awareness (2)	1	.61	0.74**
	17		0.70**
Planning (2)	2	.73	0.81**
	18		0.72**
Positive Reinterpretation & Growth (2)	3	.76	0.81**
	19		0.82**
Positive Refocusing (2)	4	.80	0.86**
	20		0.80**
Self-distraction (2)	5	.67	0.71**
	21		0.69**
Altruistic behaviour (1)	6	Not applicable	1.00**
Acceptance (3)	7	.63	0.66**
	22		0.66**
	31		0.73**
Spiritual coping (2)	8	.70	0.76**
	23		0.70**
Social Support (3)	9	.69	0.78**
	24		0.78**
	32		0.74**
Denial (2)	10	.78	0.89**
	25		0.89**
Be addicted (3)	11	.68	0.78**
	26		0.75**
	33		0.76**
Involve supernatural religion activities (3)	12	.72	0.86**
	27		0.72**
	34		0.83**
Blaming self (3)	13	.76	0.83**
	28		0.88**
	35		0.86**
Blaming others (1)	14	NA	1.00**
Rumination (3)	15	.87	0.89**
	29		0.85**
	36		0.76**
Catastrophizing (2)	16	.89	0.86**
	30		0.85**

Note. ** Significant at 0.01 level & * significant at 0.05 level (2 tailed test)

Identification of Principal Components (Construct)

Using participants' responses (388 observations), a factor analysis was done to examine the factor structure of the 36 items of the scale. In process of identification of latent construct, PCA was done on sixteen coping strategies used in COVID-19 pandemic situations. Table 2 depicts the Eigen values (more than 1) of corresponding six principal components (derived from PCA) along with factor loadings of associated items under each component.

Table 2

The Factor Loadings of Items Under Following Five Principal Components and One Unique Component After Oblique Rotation (n=388)

Principal components & underlying components	1	2	3	4	5	Total variances	Unique component
Eigen value	3.14	2.92	1.81	1.52	1.35	67.05%	
% of Variance	19.59	18.23	11.32	9.48	8.41		
Acceptance	.79						
Altruistic behaviour	.70						
Positive reinterpretation & growth	.69						
Positive refocusing	.65						
Social support	.52						
Be addicted		.73					
Involve in supernatural religion activities		.64					
Denial		.62					
Blaming self			.81				
Blaming others			.65				
Rumination			.64				
Acting with awareness				.82			
Planning				.60			
Self-distraction					.80		
Spiritual coping					.68		
Catastrophizing							.73

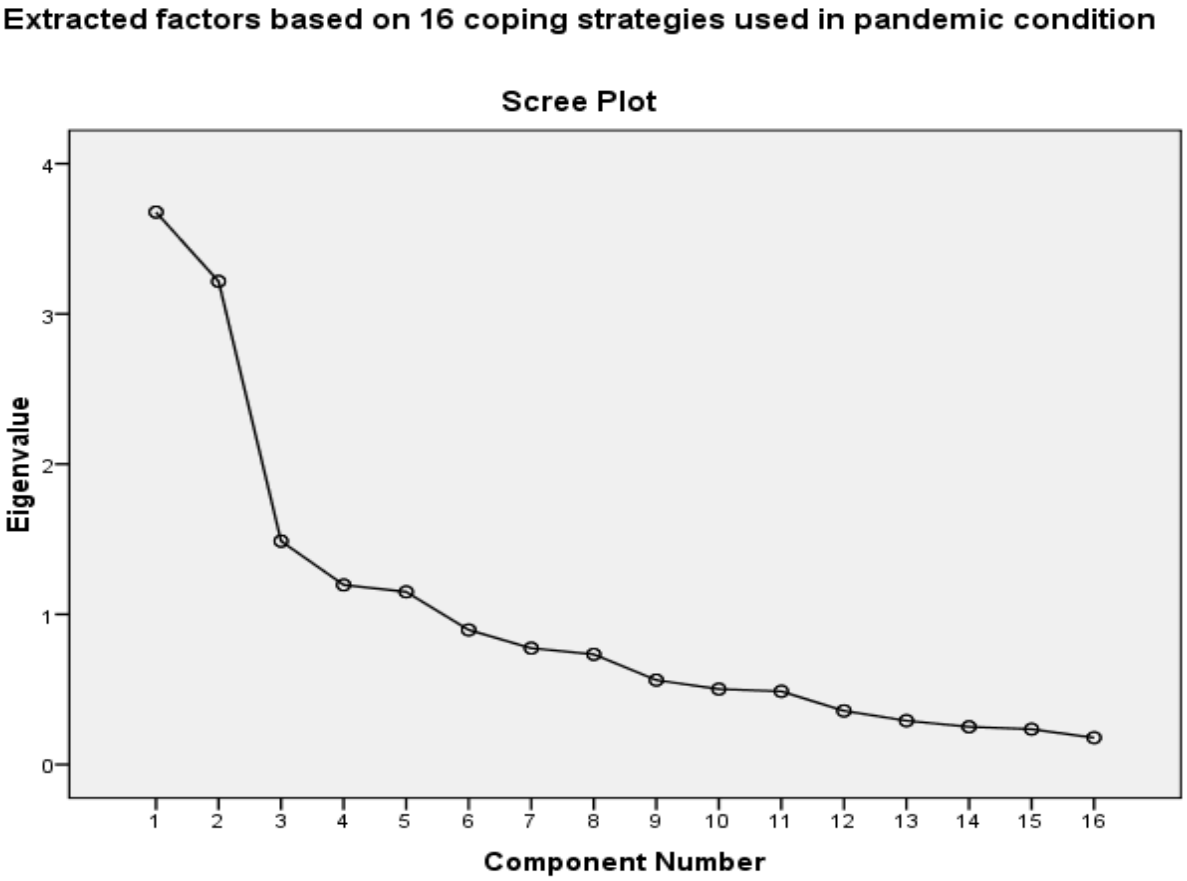
From the table 2 and figure 1, it can be concluded that five factors (components) have Eigen Value over 1. They account for 67.05% of the observed variation among participants in urban area in terms of their coping strategies used in COVID-19 pandemic condition. These 5 components were named based on corresponding items (factor loading >.33) under these components after oblique rotation of PCA. Last one dimension (catastrophizing) was revealed as unique component and considered as separate identity itself. The factors were named as positive emotion focused coping (1st component items were- acceptance, altruistic behavior, positive reinterpretation & growth , positive refocusing, and social support), escape oriented coping (2nd component consists of- be addicted, supernatural religion activities, and denial), depression developing coping (3rd component- blaming self, blaming others, and rumination), solution generating coping (4th component items were- acting with awareness & planning) and self-soothing coping (5th component items were- self-distraction and spiritual coping). Catastrophizing acts as a unique coping to manage the pandemic stress due to COVID-19.

Confirmatory Factor Analysis

Figure 2 shows the factor structure of the final model with factor loadings. Along with the structure, the figure shows the variance of the latent variables, i.e., the factors (ovals), the standardized factor loadings (arrows), and the intercepts for each items (rectangles). The factors were specified as obtained from principal component analysis. The final model had a reasonable fit with CFI=0.91, RMSEA= 0.05 and SRMR= 0.06. PCLOSE=0.25, p>0.05 which indicates a close fit of the model and validates the factor structure obtained by exploratory analysis.

Figure 1

Scree Plot



Comparison Among Three Groups in Six Clusters of Coping Strategies for Validation of the Tool

The table 3 reveals that participants who regularly used mask and did not seek any psychiatric professional assistance due to covid-19 pandemic (control group) were less prone to use escape-oriented coping in comparison to participants who did not use mask in a regular basis. On the other hand, participants who seek psychiatric consultation used more depression developing coping and Catastrophizing and less amount of positive emotion focused coping in comparison to control group. It indicates that the tool is suitable enough to differentiate different groups.

Discussion

As it is known that there are wide varieties of coping mechanisms, this scale delves to study the unique strategy (or strategies) adapted for fighting the current pandemic situation. The study focused on the development of a new scale on coping strategies in COVID-19 and consisted of 16 domains based on 36 items. Exploratory Factor analysis revealed five common components, and one unique component of these coping strategies and the factor structure was validated through confirmatory factor analysis and same factor structure of the scale was found.

Escape Oriented Coping

Based on 'denial', 'to be addicted', 'religion based supernatural activities' items, this component emerged. It was characterized by avoiding or escaping the stressor, which often resulted negatively. One such coping was denial which is refusal to acknowledge the crises generated due to COVID-19 and its suffering. In any case, when denial is used to defend or cope with what we feel, we repudiate the truth of a circumstance or endeavor to change in accordance with a situation by dismissing its effect (Lazarus & Brenitz, 1998). Second one which was revealed as a part of this component was addicted behavior. In this pandemic situation, people are addicted to different pleasurable activities to escape the negativity and apprehension due to covid19. Distressed persons may take refuge in addictive substances, whichever is cheap and

Figure 2

CFA Model

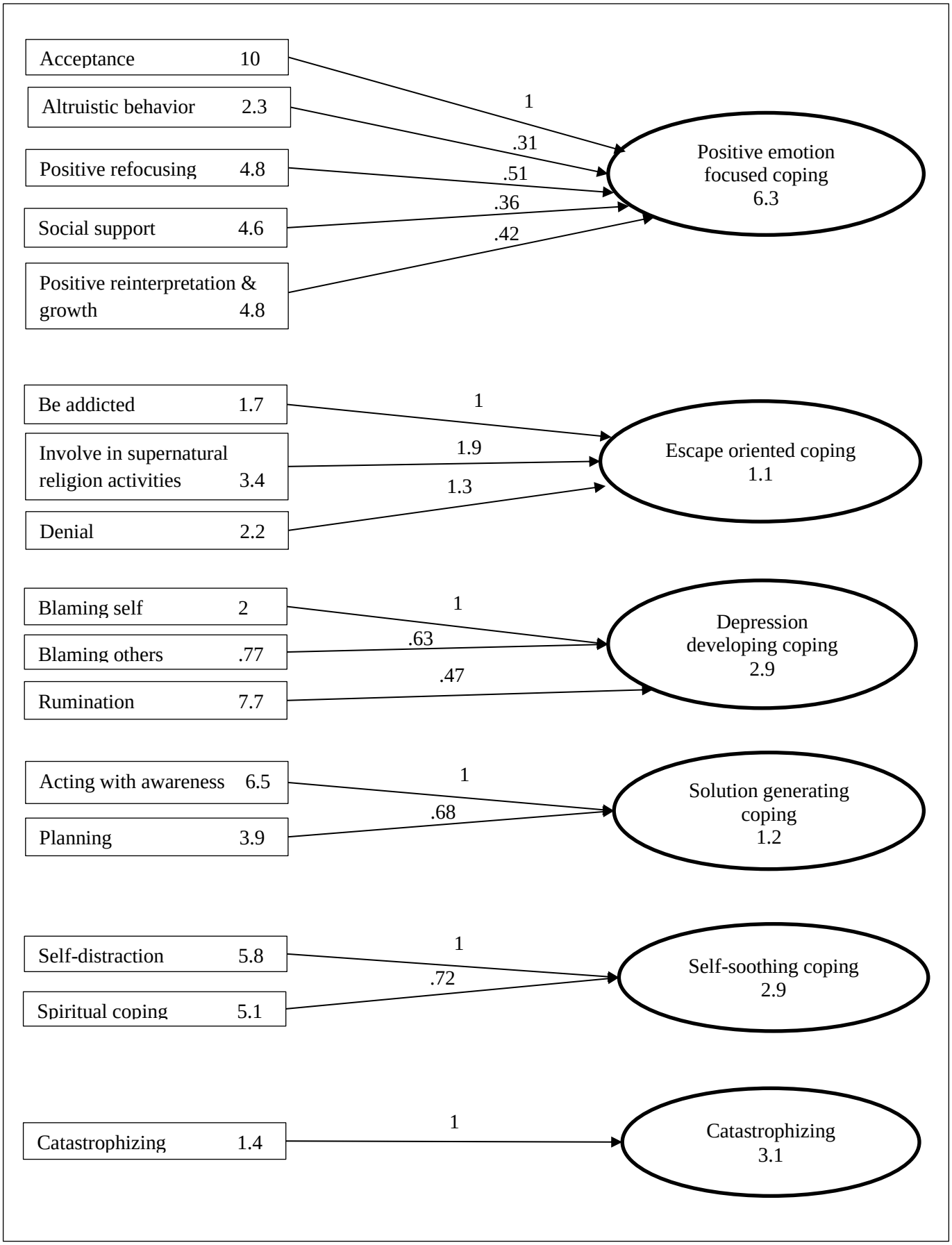


Table 3

The Comparisons Among Three Groups Based on Coping Strategies.

Coping Strategies	Control group (Uses masks)	Comparative group 1 (does not use masks repeatedly)	Comparative group 2 (Seeks psychiatric help for COVID-19 related stress)	Comparison between control group & comparative group 1	Comparison between control group & comparative group 2
	Mean (SD)	Mean (SD)	Mean (SD)	t-test	t-test
Positive emotion focused coping	3.91(.78)	3.72(.46)	3.40(.27)	.87	3.38**
Escape oriented coping	3.04(1.09)	4.1(.23)	3.23(.86)	7.31**	.74
Depression developing coping	3.89(.76)	3.97(.44)	4.5(.31)	.49	4.07**
Solution generating coping	3.51(.71)	3.24(.31)	3.40(.27)	1.72	.79
Self-soothing coping	3.46(.60)	3.31(.46)	3.44(1.07)	1.91	.08
Catastrophizing	3.89(.16)	3.92(.29)	4.3(.75)	.49	2.92**

Note. ** .01 level of significance

readily available to allay their negative feelings, often triggering substance use disorder (Arya & Gupta, 2020). People are often seen to be resorting to religious based supernatural activities during suffering by using religious beliefs and/or behaviors that facilitate the resolution of problems and prevent or relieve negative emotional consequences from stressful life situations (Shahabizadeh & Bahrainian, 2013). Indulgence in religious activities may be a path to find meaning, which relates to the phenomena involving support and hope (Borges et al., 2017). However, it becomes complicated when such activities become indication of escaping the agony and discomfort associated with the pandemic. Liu et al. (2011) found in their study that religion based supernatural beliefs, as well as engaging in super-natural activities like fortune telling were associated with more distress. Thus, these three strategies helped to avoid or escape from pandemic situation. So, it is conceptualized as escape oriented coping.

Depression Developing Coping

Rumination, blaming self, blaming others constituted a common factor. Depression is typically and consistently characterized by rumination, blaming self, blaming others. Repeatedly going over thought, with essential theme regarding inadequacy is what rumination is all about and it is a well-established risk factor for the onset of major depression and anxiety symptomatology. As per Kaiser Family Foundation poll (2020), an American federal emergency hotline for people in emotional distress registered a more than 1000 percent in April compared with the same time last year, and India is not an exception. As per Monroe (2008), the stress process in rumination involves a dynamic interaction between the organism and environment that changes the perceptions of those challenges, and the coping resources that are activated following social and environmental challenges. Thus, the repeated thought regarding uncertainty of the COVID-19 situation, precautionary measures, increased death rate, anxiety about closed ones' health and future endeavors is a passive way of combating the situation, without engagement in active coping to alleviate the depressive mood.

Moreover, the ruminative thoughts often contain themes of self-blame and blaming others, and may exacerbate the negative mood. As per Green et al. (2013), over generalized self-blame is associated with excessive self-blaming moral emotions e.g. guilt, shame, disgust/contempt towards oneself). Self-blame is indirectly related to perceived control, where individuals who self-blame are often more likely to believe they have greater control over their lives. As because the increase in perceived

control is adaptive to psychological well-being, one may assume that self-blame may also be adaptive, but that is not the case (Hooker, 2013). Thus, people keep on blaming themselves for the circumstances, which eventually enhances negative emotionality, thereby increasing depression. Similarly, people often blame others to mitigate their distress. And such blaming others is true in global scenario as well. So collectively, these copings were conceptualized as depression generating coping.

Solution Generating Coping

Acting with awareness and planning are two cognitive strategies of executive functioning which help in self-regulation during crisis. Since COVID-19 is such an unforeseen and unprecedented malady, abiding by the rules and regulations is of cardinal importance. WHO as well as governments are publishing several rules and regulations on how to combat the COVID-19 situation, some of which are containment zones, phased opening, following quarantine rules, using sanitizer and masks. Acting with awareness, traditionally speaking, is focusing attention on one's current activities compatible with the pandemic situation, demands human race to focus on the on-going endeavors by adapting necessary precautionary measures. And acting with awareness complements the planning strategies which need to be undertaken decisively as well as effectively. Budgeting, planning and forecasting are the most critical management tasks and are required for survival during this extraordinary time. Thus, action planning, perceived self-efficacy, and self-regulatory strategies (action control) often mediate between intentions and behavior (Sniehotta et al., 2005). So, these two coping strategies to solve the problem during pandemic situation and were collectively conceptualized as solution focused coping.

COVID-19 Catastrophizing Coping

The COVID-19 situation is indeed stress evoking, owing to its uncertain nature, often leading to over thinking and catastrophizing. The anxiety related to the safety and security of close ones, fear of contracting the disease and its repercussion are triggering irrationally negative forecast of future events. The fact is well supported by the study by Mihalca and Tarnavska (2013) which inferred that catastrophizing and acceptance significantly predicted social functioning problems, while catastrophizing, planning and self-blame predicted associated distress among adolescents.

Self-Soothing Coping During COVID-19 Pandemic

Two types of coping strategies, namely, self-distraction and spiritual religious coping collectively constituted a common factor. Self-distraction is one of the effective techniques for mood upliftment, and the activities or thought we engage in, in order to distract ourselves need to be both absorbing and interesting, for instance, watching a movie or TV show, surfing the net, reading a book, listening to (energizing) music, calling a friend etc. As social collaboration got constrained during this pandemic, individuals are guiding themselves to the promptly accessible methods of amusement in their home settings. It has been accounted for in ongoing day electronic and printed media that there is an increase in viewership of TV and web over the past few months (Dixit et al., 2020). So, this factor was named as self-soothing which refers to behaviors that are used to restore emotional equilibrium when a setback is experienced or feeling stressed out (Degges-White, 2020) and during this COVID 19 situation, the distress is common. Spiritual religious coping helps to maintain physiological and psychological equilibrium during distress condition. So overall, these two relaxing factors constitute self-soothing coping strategy.

Positive Emotion Focused Coping

Five coping strategies, like, acceptance, positive reinterpreting, positive refocusing, altruism, seeking support formulated this component. Acceptance is one of the pivotal determiners of positive emotion. Lindsay et al (2018) found in their study that developing an orientation of acceptance toward present-moment experiences plays an integral role in boosting positive emotions in daily life. Thus, acceptance is often conceptualized as emotional regulation strategy (Wojnarowska et al., 2020), which include acceptance, reappraising the causes of experienced emotions, positive refocusing and refocusing on planning of alternative behaviour (Navas et al, 2016). During crisis like COVID -19, the adverse external conditions could hardly be changed because of insufficient support and knowledge. However, individual cognitions and behaviors are controllable, offering possibilities to attenuate the threats in crisis. Positive reinterpretation is one positive emotion focused

strategy, which is best described by Gunzerath et al. (2001) as the "optimal subjective outlook", that "acknowledges the realities of the illness, while focusing on the positive aspects to one's situation". As per Esia-Donkoh et al. (2011), positive reinterpretation and growth is an emotion focused coping style. Furthermore, Carver et al. (1989) stated that positive reinterpretation and growth was associated with problem solving, positive emotional coping and also optimism. The reinterpretation is related with positive refocusing, which is essentially changing the emphasis or direction. The study by Predescu and Şipoş (2017) inferred that negative relationship between emotional distress and positive refocusing, positive refocusing and refocusing on planning. Thus, one of the ways to mitigate the distress is to re-emphasize other significant aspects. Altruistic emotions and behaviors are related with wellbeing and health. It is important as it decreases stress by virtue of the outward focus. Thus, Klimecki et al. (2016) had rightly stated empathic feeling to be the key motivator for altruistic behavior. Altruism can prompt emotional well-being, a progressively positive point of view, a constructive outcome on others, and better social standing, it surely carries out the responsibility as a solid method for easing pressure and expanding life fulfillment. Thus, connectedness is of utmost importance currently. As physical isolation is advocated vehemently, social support needs to be supplemented extensively. Social support has a direct effect on health and well-being as it provides the feeling of belongingness, security, predictability and purpose, thus promoting the quality of life. In the emerging pandemic situation, people may generate the purpose of life through accepting the presence condition, reappraising the situation and through helping behavior towards others. These purposes of life generate pathway and agencies of hope (Dogra et al., 2011). So, collectively this domain was conceptualized as positive emotion focused coping.

The present scale was administered on participants who sought psychiatric help due to COVID-19 related stress to assess whether the scale could distinguish among the different coping strategies that may be used by normal controls (who also followed WHO safety guidelines) as opposed to people with significant psychiatric distress. The present study found (using the present scale) that people with psychiatric distress were less likely to use positive emotion focused coping (hope generating), and more likely to use catastrophizing and depression developing coping. This finding is in line with previous studies (e.g., Dogra et al., 2011; Lew et al., 2020), which suggested that meaning in life and hopeful thought act as a protective factor against suicide and depression. On a similar line, it has been reported that self-blaming is positively correlated to fear of COVID-19, perceived stress, and depressive symptoms. Catastrophizing enhances hyper-vigilance about being contaminated and lost mental energy to focus on different activities in daily life (Belen, 2020). These findings that align with the findings of the present study which supports that the present scale is valid to measure pandemic specific coping strategies.

The present scale was also administered on participants who did not follow safety guidelines to assess whether the scale could distinguish among the coping strategies that may be used by normal controls (who also followed WHO safety guidelines) as opposed to people who do not follow safety guidelines and do not take necessary precautions in the pandemic condition. The study found that the scale could differentiate between the coping strategies used by these two groups. The group that did not follow safety guidelines was more likely to use escape-oriented coping, as compared to normal control participants who followed safety guidelines. This reflects that people who do not follow safety guidelines are unable to accept reality; rather they attempt to deal with bitter reality by denying it altogether. As reflected by their engagement in coping based on addiction, religiosity, and denial, they seek an altered state so that they can be relieved from the demands of the present situation. Since the scale could differentiate between the two groups based on the coping strategies used, it can be said that the scale may be valid to assess pandemic specific coping.

In summary, the extracted components of the scale could differentiate participants who used better safety measures from participants who did not. These components could also differentiate participants with significant psychological distress from participants who are psychologically capable to fight with the COVID-19 pandemic. Since sample size was small and was recruited from single locality, more extensive work is going on for further validation, testing and confirmation of the extracted factors.

Conclusion and Behavioral Science Implications

The long-standing effects of COVID-19 need to be taken under consideration. The coping styles,

both positive and negative, differ significantly among individuals. It is to be remembered that irrespective of its adaptive benefit, the coping styles cater to our survival. This scale gives a wider picture of the different coping styles used in the current pandemic situation, and it can be of further use for developing suitable therapeutic design and module to treat psychological problems related to the stress from this pandemic situation. Thus, the scale would help both to identify the coping strategies used by a particular person, and to develop individualized therapy for that person.

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Appendix -1

Pandemic Coping Strategies Scale

Acting with Awareness:

1. While you are going outside, are you taking the necessary precautions, unlike previously?
2. Are you getting familiar with the mass media generated instructions regarding COVID-19 prevention?

Planning:

1.Have you been preparing new strategies regarding what to do in pandemic situation (for example, preparing a chart for storing commodities, preparing

balance chart for expenditure, distribution of household work, knowing and planning of local laboratory, doctors and health care centre if required for COVID-19, develop a routine to balance between own task and household tasks)?
2. Have you decided how can you make best use of the time during this pandemic?

Positive Reinterpretation & Growth:

1. Have you been trying to see the lockdown in a different angle, to make it seem more positive (like, cleaner river water, better air quality or better interpersonal relationship, better cost-benefit analysis,)?
2. Are you becoming mentally more mature with this pandemic?

Positive Refocusing:

1. Do you think about some positive incident in your life rather than thinking about pandemic?
2. Do you talk with your friends regarding pleasurable experience of your life rather than taking about distress due to pandemic?

Self-distraction:

1. Have you been doing something to think about this pandemic less, watching web series, funny video, reading, sleeping, video chatting etc?
2. Have you engaged in other works or activities to keep your mind off?

Altruistic Behaviour:

1. Have you been uplifting your mood by helping others during pandemic phase?

Acceptance:

1. After the onset of pandemic, are you getting sad and irritable/cranky?
2. Have you been learning to adjust with the changes due to pandemic and economic crisis?
3. Have you been accepting that there are some uncertainty which cannot be controlled?

Spiritual:

1. Do you practise yoga or meditation during pandemic lockdown?
2. Do you like to read/watch spiritual book/videos during pandemic phase?

Social Support:

1. Have you been taking emotional support from 'something' to enhance your strength during pandemic?
2. Have you been trying to get advice or help from other people about your planning during pandemic?
3. Have you been getting or having a chance to get economical support, if required, from your community during pandemic?

Denial:

1. Do you feel that your world will not be affected by COVID-19 since you have strong immunity?
2. Do you feel that taking precautions are not helpful to prevent the disease, as the doctors are also getting affected in COVID-19 in spite of taking all precautions?

Being Addicted for Uplifting Yourself:

1. Have you been using alcohol or other drugs to make yourself feel better?
2. Have your family reported that you started overeating to feel better during pandemic?
3. Have you spent more time in internet gaming like PUB G etc during lockdown period?

Turning to Religion:

1. Do you believe that corona virus is spreading due to widespread immorality across the world?
2. Do you pray to God or meditate to protect yourself from this pandemic?
3. Do you believe that you will be protected from the sin of COVID-19 if you praise God by animal sacrifice or religious rituals?

Blaming self During Negative Incidents:

1. Does this pandemic turn you to be more judgemental rather than earlier?
2. Have you been criticizing yourself for family turmoil during pandemic?
3. Do you blame yourself for not saving adequate resources (money, house etc) to combat with this pandemic?

Blaming others During Negative Incidents:

1. Do you criticize / are eager to criticise/ are more reactive to your family members more than before during pandemic phase?

Rumination:

1. Do you feel that it is hard for you to shut off the thought about getting contaminated?
2. Are negative thought or images regarding this pandemic that keep on appearing, make you feel worried?
3. When you have been talking with others, do you observe that you mostly communicate stress regarding this pandemic?

Catastrophizing:

1. Have you been experiencing images like you are already affect by covid19?
2. Have you been experiencing images like you lost some near and dear one due to this pandemic?

Note: This is only a representation of the items of the test. While administering the test, one must present the items in the serial order mentioned in the paper under 'Results' section