

An Investigation of Psychometric Properties of Coping Styles Scale Brief Form: A Study of Validity and Reliability*

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Abstract

The aim of the current study was to develop a short form of Coping Styles Scale based on COPE Inventory. A total of 275 undergraduate students (114 female, and 74 male) were administered in the first study. In order to test factors structure of Coping Styles Scale Brief Form, principal components factor analysis and direct oblique rotation was used. Factor analysis Results indicated that Coping Styles Scale Brief Form had 14 factors with two items. All factors explained 80.37% of the variance in the scale. In order to test concurrent validity of CSS-BF, the relationship between coping styles, social desirability, self-esteem, life satisfaction and A type personality were examined. Cronbach's alfa coefficient of subscales ranged from 0.39 (Restraint Coping) to 0.92 (Humor) and test re-tests (two weeks interval) coefficients were ranged from .44 (Restraint Coping) to .90 (Religion).

Key Words

Coping, Coping Styles, Validity, Reliability.

Though coping was defined in many different ways in terms of function and theory, the general trend is to define it as a dynamic process consisting of cognitive and behavioral responses given to reduce

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the premises/ sources leading to psychological restraint or stress. Besides, the variability of definition caused coping responses to be classified in different ways. The leading ones of those classifications are problem-focused coping versus emotion-focused coping and approach versus avoidance (Boekarts & Röder, 1999; Lazarus & Folkman, 1984; Roecker, Dubow, & Donaldson, 1996).

In literature, many of the studies on coping are based on the *coping model* of Lazarus and Folkman (1984). According to the model of Lazarus and Folkman, coping means assessing of the individual the possible results at the time of facing stressors and the effect of this assessment process on his/her emotional and behavioral responses. The coping model is discussed as a three-phase process consisting of primary cognitive assessment, secondary cognitive assessment and coping.

In studies on coping, the coping responses of individuals to a variety of stressors ranging from daily ones (Sean, Frances, & Deviney, 1998) to those which may change the person's life significantly such as chronic diseases (Felton & Revenson, 1984), death (Stroebe, 1993), divorce (Sandler, Tein, & West, 1994), natural disasters (Bokszczanin, 2008; Gilbar, & Hevroni, 2007; İskender & Ayas, 2003) or war were investigated. In the relevelant literature, the idea that major experiences affect the life quality and functionality of an individual more than daily experience was discussed for a long time. However, last studies pointed out that daily challenges are more a source of stress (Boekarts & Röder, 1999).

Various measurement tools were developed both in Turkey and abroad based on the theoretical structures on which the concept of coping depends. The leading ones used widely abroad are Ways of Coping (Folkman & Lazarus, 1985), Multidimensional Coping Inventory (Endler & Parker, 1990), Coping Strategies Inventory (Tobin, Holroyd, Reynolds, & Wigal, 1989), COPE Inventory (Carver, Scheier, & Weintraub, 1989). In Turkey, on the other hand, scale development studies are also being conducted together with adaptation studies (Ağargün, Beşiroğlu, Kıran, Özer, & Kara, 2005; Şahin & Durak, 1995). Inventory for Attitudes of Coping with Stress developed by Özbay and Şahin (1997), Scale for Strategies of Coping with Stress developed by Aydın (2008) and Coping with Stress Scale developed by Türküm (2002) can be given as examples.

It is realized that, though using the scales for measuring coping in studies contributes to understanding the relation of coping with the psychological structures, this causes some problems as well. The fact that many of the coping scales include a large number of items causes the participants to become impatient and distracted, in which case a healthy measurement gets difficult. It can be seen that in literature, brief scale instruments were developed and/or the existing scales were revised in a brief form (Carver, 1997; Finset, Steine, Haugli, Sten, & Laerum, 2002) in order to eliminate those drawbacks. Finset et al. (2002) formed a 12-item The Brief Approach/Avoidance Coping Questionnaire by omitting some items of the scale developed formerly by Laerum, Steine, Finset, and Lundevall (1998). Carver, revised the 60-item scale (COPE) developed by Carver et al., (1989) based on coping model of Lazarus (Lazarus, 1966; Lazarus & Folkman, 1984) and behavioral self-regulation model of Carver and Scheier (1981, 1990). Carver omitted the non-functional sub-scale and items of the previous scale and composed a brief form. The brief form consists of 14 subscales, each subscale has two items.

As mentioned previously, the fact that participants cannot keep their attention fully awake during fulfilling a long list prepared to measure several distinct features affects the reliability of the measure negatively. This fact directed the researchers to using scales consisting of fewer items and supplying the required psychometric hypotheses. This study aims to develop a short form of Coping Styles Scale based on COPE Inventory (Carver, 1997; Carver et al., 1989, 1993).

Method

Participants

During the development of Coping Styles Scale Brief Form (CSS-BF), in the first sample 181 (110 female, 62 male and 9 gender not-stated) and in the second sample 275 (199 female, 68 male and 8 gender not-stated) university students participated in the study. In the first sample, the age range is 17-24 (X = 19.49, S = 1.32) and in the second, the range is 17-27 (X = 20; S = 2.04). The participant students were from Gazi University Faculty of Education and Faculty of Dentistry.

Composing of Item Pool

In this study, which aims to present a brief and practical instrument to be used in coping studies, 73 items from the COPE scale developed by Carver et al. (1989) and Carver (1997) and the brief form of the same scale were specified. The scale items were translated from English to Turkish and the scale was settled after being examined by experts studying on psychological counseling and fluent in both languages. The scale items were prepared as 4-point Likert type ranging from 1 (I usually don't do this at all) to 4 (I usually do this a lot) as in the original scale. In the first study, 30 items which have the highest factor loading and represent the dimensions best were determined. However, since Seeking Instrumental Social Support and Seeking Emotional Social Support were not differentiated, two items for Seeking Instrumental Social Support and Seeking Emotional Social Support were added alternatively and a brief form of 34 items was composed. The second study was done regarding the 34 items and the items with a higher factor loading of those items written alternatively were picked and a brief form consisting of 28 items, that is, 14 scales and two items representing each scale. The results regarding the validity and reliability of the scale are explained in Findings.

Measurements

Personal Behavior Inventory (Social Desirability Scale): The scale developed by Kozan (1983) consists of 20 items pointed as "true-false." The person giving points for the scale gets one point for each answer he/she gives for social desirability. The points vary between 0-20 and the higher the point is, a higher tendency for social desirability it indicates.

Self-Esteem Scale: The self-esteem scale developed by Arıcak (1999) measures the self-esteem formed as a result of assessing oneself and whether the person is content with himself/herself. This scale is prepared in 4-answer-options Likert type and consists of 32 items expressing the self-respect attitude of the person both negatively and positively. The scale items are range from 1 (*strongly disagree*) to 5 (*strongly agree*) The Cronbach's alpha reliability coefficient of the scale was .90.

Life Satisfaction Scale: The life satisfaction scale was developed by Diener, Emmons, Larsen, and Griffin (1985) and was adapted to Turkish by Köker (1991). The scale which consists of five items is in Likert type ranging from 1 (*strongly disagree*) to 5 (*strongly agree*) Test-retest reliability correlation of the scale performed twice with an interval of three weeks was calculated .85. Cronbach-Alpha reliability correlation was obtained as .76 in the reliability study of the scale with the teachers.

Type A Personality: Type A Personality Scale was developed by Batigün and Şahin (2006) with the inspiration of a question list prepared by Rathus and Nevid (1989) with help from three different sources in order to determine whether the individuals bear type A or type B personality characteristics. It is a Likert type scale ranged from 1 to 5 and consists of 25 items.

Results

Construct Validity

In order to test the Construct validity of CSS-BF, Direct Oblique rotation based on Principal Components Factor Analysis was used. Starting from the estimations of Scree Plot graph and the relevant literature, the instrument was forced to 15 factors but a result of 14 factors was obtained. Active Coping scale' items and planning subscale' items loaded in the same factor. Because of this Active Coping scale' items were omitted. Results of the analysis revealed that the 14 factors accounted for 80.37% of the variance of CSS-BF. The eigenvalues of all

scales excluding four (restraint coping, positive reinterpretation, using emotional social support and planning) were greater than 1.0.

Reliability and Concurrent Validity of Coping Styles Scale Brief Form

Internal consistency coefficients of the CSS-BF were calculated on data obtained from 275 participants and CSS-BF was applied to 67 participants in two weeks interval. The internal consistency coefficients of scales of CSS-BF varies between 0.39 and 0.92. The highest internal consistency coefficient is that of Humor (0.92) and the lowest internal consistency coefficient is that of Restraint Coping (0.39). On the other hand, when the results on the test-retest of the scale are examined, the strongest correlated one is Turning to Religion (r =. 90**, p <. 001), while the lowest correlated scales are Restraint Coping and Planning. As a result, the fact that the internal consistency coefficients of Using Instrumental Social Support, Humor, Focus on and Venting of Emotions, Substance Use, Turning to Religion, Positive Reinterpretation, Using Emotional Social Support and Planning exceed the accepted value of 0.70 is regarded as a proof of the reliability of CSS-BF. Also, that the internal consistency coefficients of the scales like Acceptance, Suppression of Competing Activities, Denial, Behavioral Disengagement and Mental Disengagement exceed the lowest acceptable value of 0.50 may serve as a verification of the reliability of CSS-BF. The fact that the internal consistency coefficient of Restraint Coping scale is below the lowest value of 0.50 shows that the Restraint Coping scale is below the expected reliability.

Using Instrumental Social Support consists of two items with factor loadings changing between .90 to .88 and accounts for 13.37% of the variance of CSS-BF. Using Instrumental Social Support was not correlated with Social Desirability ($\mathbf{r}=.04, p>.05$), Self-Esteem ($\mathbf{r}=.03, p>.05$), Life Satisfaction ($\mathbf{r}=.01, p>.05$) and Type A Personality ($\mathbf{r}=.10, p>.05$) The test-retest correlation of the subscale was found as .68, and the reliability coefficient as 0.78.

Humor consists of two items with factor loadings changing between .96 to .95 and accounts for 9.78% of the variance of CSS-BF. Humor did not have any significant correlation with Social Desirability (r=-.01, p > .05), Self-Esteem (r=-.02, p > .05), Life Satisfaction (r=.01, p > .05) and Type A Personality (r=.10, p > .05) The test-retest correlation of Humor was found as .66 and the reliability coefficient as 0.92.

Focus on and Venting of Emotions consists of two items with factor loadings changing between .85 to .84 and accounts for 8.75% of the variance of CSS-BF. Focus on and Venting of Emotions had a unique correlation with Self-Esteem ($\mathbf{r} = -.14^*$, p < .05) On the other hand, Focus on and Venting of Emotions did not have any significant correlation with Social Desirability ($\mathbf{r} = -.01$, p > .05), Life Satisfaction ($\mathbf{r} = -.11$, p > .05) and Type A Personality Scale ($\mathbf{r} = .03$, p > .05). The test-retest correlation of Focus on and Venting of Emotions was found as .52, and the reliability coefficient as 0.70.

Substance Use consists of two items with factor loadings changing between .94 to .90 and accounts for 7.49% of the variance of CSS-BF. Substance Use significantly correlated with and Social Desirability ($r = -1.14^*$, p < .05) and Self-Esteem ($r = -1.15^*$, p < .05) On the other hand, there was no significant correlation between Substance Use and Life Satisfaction (r = -0.09, p > .05) and Type A Personality (r = .12, p > .05). The test-retest correlation of Substance Use was found as .82 and the reliability coefficient as $\alpha = 0.84$.

Acceptance consists of two items with factor loadings changing between .83 to .76 and accounts for 5.95% of the variance of CSS-BF. Acceptance did not have any significant correlation with Social Desirability ($\mathbf{r}=.04, p>.05$), Self-Esteem ($\mathbf{r}=.05, p>.05$), Life Satisfaction ($\mathbf{r}=.09, p>.05$) and Type A Personality ($\mathbf{r}=-.03, p>.05$) was found. The test-retest correlation of Acceptance was found as .62 and the reliability coefficient as $\alpha=0.56$.

Suppression of Competing Activities consists of two items with factor loadings changing between .85 to .76 and accounts for 5.48% of the variance of CSS-BF. Suppression of Competing Activities did not have any significant correlation with Social Desirability ($\mathbf{r} = -.02, p > .05$), Self-Esteem ($\mathbf{r} = .01, p > .05$), Life Satisfaction ($\mathbf{r} = -.08, p > .05$) and Type A Personality ($\mathbf{r} = .07, p > .05$). The test-retest correlation of Suppression of Competing Activities was found as .51 and the reliability coefficient as 0.50.

Turning to Religion consists of two items with factor loadings changing between .93 to .92 and accounts for 5.16% of the variance of CSS-BF. Turning to Religion had a unique significant correlation with Life Satisfaction (r = .13*, p < .05). On the other hand, no significant correlation between Turning to Religion, Social Desirability (r = .04, p > .05), Self-Esteem (r = .01, p > .05) and Type A Personality Scale (r = .02, p > .05) was found. The test-retest correlation of Turning to Religion was found as .90, and the reliability coefficient as 0.90.

Denial consists of two items with factor loadings changing between .85 to .79 and accounts for 4.48% of the variance of CSS-BF. Denial significantly correlated with Self-Esteem ($\mathbf{r} = -.14^*, p < .05$) and Life Satisfaction ($\mathbf{r} = -.09^*, p < .05$). Denial did not have significant correlation with Social Desirability ($\mathbf{r} = -.05, p > .05$) and Type A Personality ($\mathbf{r} = -.02, p > .05$). The test-retest correlation of Denial was found as .56 and the reliability coefficient as 0.69.

Behavioral Disengagement consists of two items with factor loadings changing between .85 to .79 and accounts for 4.16% of the variance of CSS-BF. Behavioral Disengagement significantly correlated with Self-Esteem ($\mathbf{r}=.36^{**}, p<.01$), Life Satisfaction ($\mathbf{r}=.18^{**}, p<.01$) and Social Desirability ($\mathbf{r}=-.14^*, p>.05$) but, the correlation between Behavioral Disengagement and Type A Personality ($\mathbf{r}=.08, p>.05$) was not significant. The test-retest correlation of Behavioral Disengagement was found as .48, and the reliability coefficient as 0.59.

Mental Disengagement consists of two items with factor loadings changing between .86 to .82 and accounts for 3.83% of the variance of CSS-BF. Humor had no significant correlation with Social Desirability (r= -.07, p > .05), Self-Esteem (r = -.01, p > .05), Life Satisfaction (r = -.06, p > .05) and Type A Personality (r = -.04, p > .05) The test-retest correlation of Mental Disengagement was found as .63, and the reliability coefficient as 0.62.

Restraint Coping consists of two items with factor loadings changing between .79 to .73 and accounts for 3.40% of the variance of CSS-BF. Restraint Coping did not have any significant correlation with Social Desirability ($\mathbf{r}=.07, p>.05$), Self-Esteem ($\mathbf{r}=-.07, p>.05$), Life Satisfaction ($\mathbf{r}=-.03, p>.05$) and Type A Personality Scale ($\mathbf{r}=-.07, p>.05$) The testretest correlation of Restraint Coping was found as .44 and the reliability coefficient as 0.39.

Positive Reinterpretation consists of two items with factor loadings changing between .89 to .88 and accounts for 3.07% of the variance of CSS-BF. Positive Reinterpretation Significantly correlated with Social Desirability ($\mathbf{r}=20^{**},\ p<.01$), Self-Esteem ($\mathbf{r}=.16^{**},\ p<.01$) and Life Satisfaction ($\mathbf{r}=.16^{*},\ p<.05$), but the correlation between Positive Reinterpretation and Type A Personality ($\mathbf{r}=-.02,\ p>.05$) was not significant. The test-retest correlation of Positive Reinterpretation was found as .61 and the reliability coefficient as 0.76.

Using Emotional Social Support consists of two items with factor loadings changing between .93 to .63 and accounts for 2.85% of the variance of

CSS-BF. Using Emotional Social Support had no significant correlation with Social Desirability (r = -.03, p > .05), Self-Esteem (r = -.03, p > .05), Life Satisfaction (r = .09, p > .05) and Type A Personality (r = -.02, p > .05) The test-retest correlation of Using Emotional Social Support was found as .59, and the reliability coefficient as 0.85.

Planning consists of two items with factor loadings changing between .88 to .76 and accounts for 2.59% of the variance of CSS-BF. The confirmatory factor analysis results showed the factor loadings of the items of scales are above the accepted limits. . Planning had Significant correlations with Social Desirability ($\mathbf{r} = .20^{**}, p < .01$), Self-Esteem ($\mathbf{r} = .31^{**}, p < .01$), Life Satisfaction ($\mathbf{r} = .25^{*}, p < .05$), but the correlation Planning and Type A Personality ($\mathbf{r} = .12, p > .05$) was not significant. The test-retest correlation of Planning was found as .44, and the reliability coefficient as 0.70.

Discussion

In this study, the aim was to create a brief form of Coping Styles Scale based on the studies of Carver et al. (1989; 1993) and Carver (1997). First of all, a pool of items was established based on the scales of previous studies of Carver et al. and direct oblique rotation built on basic components analysis was used in order to test the structural validity. The items belonging to the self-blame scale in Carver's short form were not loaded on any factors. This is considered to be resulting from the choice of samples. Because, since Carver applied his study that he developed the brief form of COPE Inventory on people who experienced the hurricane disaster, the self-blaming response of people who were exposed to that trauma was demonstrated more clearly. However, this study was performed on undergraduates. That's why; it may have prevented the displaying of self-blame strategy, which is often present in traumatic events, in the factor analysis.

On the other hand, most of the items were loaded on the same factors as in previous studies, but one item belonging to active coping scale was loaded into the planning factor. And the other item stood like a scale by itself. That's why, the items of active coping scale were excluded from the set of data and a result of 14 factors was reached when the analysis was repeated. Active coping and planning scales were loaded into same factor in the second level analysis realized in the study of Carver et al. (1989; 1993). This finding demonstrates that ac-

tive coping and planning scales measure a similar structure. Moreover, the total variance expressed at the end of the performed factor analysis bears a greater percentage than the variance expressed in the coping scale brief form (COPE) developed by Carver (1997). The eigenvalues of all 14 scales of the inventory except four (restraint coping, positive reinterpretation, using emotional social support and planning) were greater than 1.0. In Carver's study, however, the eigenvalues of nine factors exceeded 1.0 and the other five were below 1.0. In short, self-blame and active coping scales in Carver's scale were not studied in this research; but on the other hand, suppression of competing activities and restraint coping, which were excluded from Carver's scale but were present in the long form of Coping Inventory developed by Carver et al. took place among the factor structures reached during this study.

Carver and colleagues' (1989) approach was followed to test the concurrent validity of CSS-BF. Personality features like social desirability, Type A personality, self-esteem and life satisfaction were used for concurrent validity. When the correlations between social desirability and the scales of coping were analyzed, it was seen that there were no significant correlations except four scales. The results are consistent with findings of the validity study of Carver et al. Also in the mentioned study, social desirability correlated with only two of the scales. In this study, it was noted that positive/compliant coping strategies correlated with social desirability positively and the negative/ non-compliant coping strategies correlated with social desirability negatively. Within those scales, only substance use and behavioral disengagement among negative coping strategies and positive reinterpretation and planning scales among positive strategies are affected from social desirability. Those findings are consistent with the findings in the study of Carver et al.

In the above mentioned study, the social desirability correlated positively with positive reinterpretation scale and negatively with behavioral disengagement, substance use and focus on and venting of emotions. In both studies, the coping strategies were seen not to be affected by social desirability in general. And those which are correlated with social desirability are weakly correlated. On the other hand, self-esteem and life satisfaction are correlated positively with positive coping strategies and negatively with negative ones. No significant correlations between type A personality and any of

the coping strategies were marked. There are moderate meaningful correlations; however they are at low levels. Considering those results, it could be claimed that personality variables and coping strategies are not same structures and that's why, they are weakly correlated.

Internal consistency coefficients calculated for the reliability of CSS-BF and test-retest results proved that the instrument meets the psychometric criteria. It could be said that all the scales except restraint coping are above the limit determined as a criterion for reliability. The results of the re-tests applied in two weeks' intervals show that the scale is reliable. The fact that some of the scales have low eigenvalues, internal consistency coefficients and correlation coefficients is thought to be caused by that the study includes many scales and each scale is measured by two items.

When this instrument is used by researchers, it is recommended that one should be careful at comparing the scales with low eigenvalues and internal consistency coefficients to other variables and at interpretation. During the adaptation of the scale, the sample was chosen among undergraduates. It may be proposed to make studies on adults other than undergraduates or traumatic people in order to test the external reliability of the scale and to form the norm.

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