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Relationship between cognitive appraisal and coping style following acute stress among male and female Turkish athletes

Mark H. Anshel^{a*}, Toto Sutarso^b and Didem Sozen^c

^a*Department of Health & Human Performance, Middle Tennessee State University, Murfreesboro, Tennessee, USA;* ^b*Information Technology Division, Middle Tennessee State University, Murfreesboro, Tennessee, USA;* ^c*Plato College of Higher Education, Istanbul, Turkey*

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The purpose of this study was to examine the relationships between factors of two constructs, cognitive appraisal and coping style among Turkish athletes. Turkish athletes ($N = 325$) completed a two-part inventory called the coping style in sport survey (CSSS), which consisted of the athletes' appraisal of a stressful event and how they coped with this stressor. Theory-driven categories of appraisal and coping style were generated from the CSSS. Appraisals were labeled rumination, self-blame, and confidence, while coping styles were aggressiveness, discounting, and distraction. Results of confirmatory factor analyses (CFA) and structural equation models (SEM) indicated that the correlations among factors of appraisal and coping style were significant, as were the use of different appraisals and coping styles between genders. The results of this study lend credence to the relationship between cognitive appraisal and coping style among adult male and female competitive athletes.

Keywords: coping; coping style; sport; cognitive appraisal; acute stress

The coping process in sport begins with identifying the athlete's cognitive appraisal of an event the athlete perceives as harmless/benign or stressful, as depicted in many coping models conceptualized in the coping literature (Anshel, 2001; Lazarus & Folkman, 1984). Lazarus and Folkman categorized appraisal as stressful or non-stressful (i.e. benign, harmless, or positive). In turn, they designated stress appraisals as threatening or challenging. Another appraisal framework consists of perceived control (Hoar, Kowalski, Gaudreau, & Crocker, 2006). To Hoar et al., "perception of control can change over time, which is reflected in structural developmental changes...and the extent to which well-learned coping responses are effectively executed in relation to environmental demands" (p. 63). Thus, process of coping occurs only after appraising an event or stimulus as stressful.

Coping is the conscious use of cognitive, affective, or behavioral efforts to effectively deal with externally imposed events and demands that the individual perceives as unpleasant or potentially harmful (Anshel & Sutarso, 2007; Crocker, Kowalski, & Graham, 1998; Nicholls, 2010). The outcome of coping efforts, particularly in competitive sport, is to reduce psychological distress, resolve the stressful situation, reduce physiological reactions (e.g. heart rate, muscle tension) that may impair motor performance, improve mental well-being, and to produce a desirable affective or performance outcome (Anshel & Anderson, 2002; Nicholls & Polman, 2007).

*Corresponding author. Email: Mark.Anshel@mtsu.edu

The athlete's selection of coping strategies is often reflected by the individual's disposition to use certain types, or categories, of coping strategies. These dispositional categories are referred as the athlete's *coping style*; coping style significantly predicts the athlete's use of coping strategies following selected types of stressful events. The link between the athlete's stress-related cognitive appraisals and coping styles following events perceived as stressful during the contest forms the conceptual framework of this study.

Selected sports studies have addressed the relationship between cognitive appraisals and coping. For example, Anshel and Delany (2001) examined "positive" and "negative" cognitive appraisals and concomitant approach and avoidance coping strategies among 52 youth sports competitors. They found that the use of avoidance coping was significantly related to positive appraisals, whereas the use of approach coping was more common with negative appraisals. In another sport study, Anshel, Jamieson, and Raviv (2001) examined the relationship between cognitive appraisal and using approach or avoidance coping styles. They found that approach coping was related to each of three appraisals (i.e. threat, harm, challenge), but as a function of the type of stressor (e.g. making an error, receiving a penalty, coach reprimand). Thus, appraisal is a mediator of the athlete's coping reaction to stressful events.

Validation of a proposed appraisal-coping conceptual model

The model linking the relationships among factors of the two constructs, appraisal and coping, is shown in Figure 1. The model posits three appraisals, rumination, self-blame, and confidence, that have received attention in general psychology but have been neglected in the extant sport coping literature. *Rumination* is defined as "self-focused attention toward one's thoughts and feelings" (Bushman, Pederson, Bonacci, Vasques, & Miller, 2005, p. 970). According to Bushman et al., rumination is also defined more narrowly as provocation-focused thinking, the purpose of which is to maintain negative feelings. A stressful event during the sports contest often triggers angry feelings, resulting in heightened energy and displaced aggression (Bushman et al., 2005). In a series of three studies, Bushman et al. found that participants who engaged in rumination for a long period of time after experiencing stress were more likely to feel and engage in *displaced*

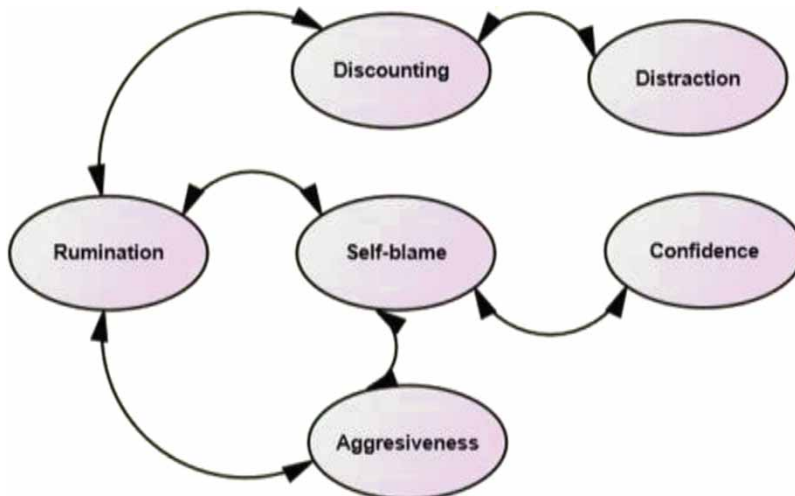


Figure 1. Hypothesized correlation model among factors.

aggression than persons who did not ruminate at all, or did so for a brief time. The researchers concluded that rumination precedes displaced aggression, a frequent emotional response in sport.

Rumination is a common mental process in competitive sport. Maxwell (2004), for instance, examined the relationship between anger rumination and aggression for male and female athletes and found that provocation and anger rumination were significantly correlated with athletes' reported aggressive behavior. It was concluded that provocation and anger rumination were significant predictors of subsequent aggression, a coping response. Rumination has not been previously studied in the sport appraisal and coping literature, and yet, accurately reflects common thoughts and cognitive processes associated with sport competition. Thoughts about losing the contest, low self-control against a superior opponent or in a given situation, and feelings of hopelessness, all associated with rumination (Maxwell, 2004), are common in competitive sport.

Self-blame allows the athlete to make sense of the stressful event, what Janoff-Bulman (2002) calls an "adaptive motivator to begin dealing with the situation" (p. 123). Athletes perceive the stressor as self-inflicted, in which the athlete takes responsibility for performance outcomes. In attribution theory (see Anshel, 2012, for a review of this literature), athletes often attribute poor performance as internal and stable (i.e. low ability, poor skill, lack of preparation, faulty performance). Janoff-Bulman contends that self-blame meets the athlete's "need to minimize the threatening, meaningless nature of the event" (p. 123), and to maintain or re-establish meaningfulness and self-control.

Self-blame precedes coping, in which the athlete concludes he or she could or could not have done something different to alter the outcome. In support of this contention, Krantz (1983), in a non-sport study, found that recognizing a relatively large number of feasible alternatives in response to a stressful event lead to increased goal-directed coping behavior. Along these lines, Wann (1997) contends that self-blame may occur due to the athletes' propensity to make self-directed attributions; the athlete takes responsibility for the event and, thus, feels greater self-control to remedy and improve situational outcomes. Conceptually, self-blame is related to approach coping.

The cognitive appraisal of *sport confidence* is associated with an approach-oriented coping style (Anshel et al., 2001), and are linked to positive affect (Gaudreau, Blondin, & Lapierre, 2002). *Confidence* appraisals are similar to other previously published appraisal constructs, specifically, high perceived control (Gan, Anshel, & Kim, 2009) and challenge (Lazarus & Folkman, 1984). For instance, Anshel et al. found that challenge appraisals (e.g. "My confidence to be successful actually increased") more likely elicited an approach coping style if the type of stressful event was accompanied by confidence and high perceived controllability. In addition, confidence appraisals are similar to a type of coping strategy called self-efficacy (CSE), that is, "the belief regarding one's ability to cope with diverse threats (e.g. stress, unwanted thoughts, difficult situations, or pain)" (Scorniaenchi & Feltz, 2010, p. 279). The association between confidence appraisals and coping styles, including CSE, requires additional study because of the implications for effective stress management programs. As Scorniaenchi and Feltz conclude, "it is critical for researchers to continue to expand their knowledge ...of CSE in the context of sport...to enable practitioners in their development of interventions strategies aimed at enhancing CSE in athletes and exercisers" (p. 290).

Several models and conceptual frameworks of the coping process in competitive sport have emerged over the years (see Anshel et al., 2001; Hoar et al., 2006; Nicholls, 2010; Richards, 2004, for reviews). However, none have adequately described the coping process in sport that captures the relationship between the athlete's cognitive appraisal and coping response. Additional research is needed that more closely resembles and applies real world appraisals and coping styles that are employed by competitive athletes. As Miller (1990) argues, "any adequate theoretical framework must be able to address the role of individual dispositions" (p. 97).

In providing future research directions in examining coping effectiveness, Nicholls (2010) suggests that “researchers need to consider the fit between both reality and appraisal, and appraisal and coping (and to) assess the impact of a coping intervention based on the goodness-of-fit approach among athletes...” (p. 272). Toward pursuing these goals, we posit three coping styles in the present study that are commonly used in response to stressful events in competitive sport: aggressiveness, distraction, and discounting/psychological distancing.

An *aggressiveness* coping style, commensurate with approach coping (Krohne, 1993) and categorized as instrumental, rather than goal/hostile, aggression (Husman & Silva, 1984), refers to the tendency to respond to acute stress with heightened arousal to improve one’s personal resources. In a series of three non-sport studies, Bushman et al. (2005) found that rumination appraisals triggered displaced aggression coping responses after provoking undergraduate students in a lab setting. Sample coping reactions include arguing and aggressive behavior (e.g. “I argued with the person responsible for the problem”).

Discounting/psychological distancing coping style reflects the athletes’ tendency to gain perspective of the situation in which the stressor occurred by maintaining a detached, objective, and psychologically distant view of the stress source (Anshel et al., 2001; Bramson, 1981). In using *distraction* (e.g. “I did something else to occupy time”) the athlete ignores and quickly acknowledges the stressor, but then immediately focuses “momentarily” on external stimuli and cognitive activities unrelated to the stressful situation (Hoar et al., 2006, p. 51). This tactic results in ignoring or quickly forgetting the stressor. This is especially important in open skill sports (e.g. soccer, basketball), in which play is often non-stop despite experiencing stressful events.

Discounting/psychological distancing (e.g. “I ignored or forgot about the problem”) coping has received increased attention in the sport coping literature (e.g. Gan et al., 2009), but has been neglected in association with the appraisal process. Anshel and Weinberg (1999), for instance, found that highly skilled basketball referees more likely used discounting and psychological distancing coping than their less-skilled counterparts. Richards (2004) concluded that an avoidance coping style, which is represented by discounting and psychological distancing, have been used repeatedly and effectively in the sport coping literature. It is highly plausible to speculate that the coping styles of discounting and distraction will correlate significantly.

The general psychology literature is replete with studies indicating gender differences in the coping process (e.g. Aldwin, 2007). Aldwin concluded from her review of this literature that “to the extent that social roles are still gender-based, it is not surprising that many studies find gender differences in both stress and coping” (pp. 239–240). In their review of the sport coping literature, Nicholls and Polman (2007) concluded that, in general, gender differences are usually found. Finally, perhaps the most recent and extensive review of the sport coping literature examining gender differences was conducted by Kaiseler and Polman (2010). The majority of studies reviewed indicated gender differences in the use of coping strategies during the sports contest. Not controlled in many of these studies, however, was the individual’s cognitive appraisal of the stressful event. The authors questioned, therefore, “whether gender differences in sport are actually due to dispositional reasons or to situational aspects” (p. 89).

The purposes of this study, then, were: (1) to reconceptualize the interaction between cognitive appraisal and coping style in the context of competitive sport, and (2) to measure the relationship between athlete’s cognitive appraisals and coping styles as a function of gender. It was hypothesized that the correlation model (see Figure 1) between factors of the ASEs and CSs sub-scales would provide a good fit for the full sample. It was also hypothesized that the correlations between each factor in the hypothesized model would be significant. Gender differences on these measures were also predicted.

Method

Participants

Participants in this study consisted of 163 males and 162 females ($N = 325$). Athletes ranged in age from 18 to 36 years ($M = 21.32$ years, $SD = 3.01$). One important criterion for participating in the study was that each individual had competed on his or her secondary school sports team. Finally, the sample size used in this study was commensurate with, and even larger, than previous similar research (e.g. Anshel & Sutarso, 2010; Srivastava, Locke, & Bartol, 2001).

Materials and measures

A two-part inventory, called the coping style in sport survey (CSSS), was developed for this study. The first part listed statements about athletes' appraisal of selected stressful events (ASE) adapted from previous studies in this area (Gan et al., 2009). Examples, taken from several previous studies (e.g. Anshel & Sutarso, 2007; Anshel, Sutarso, & Jubenville, 2009; Nicholls, Polman, Levy, Taylor, & Copley, 2007; Rawstorne, Anshel, & Caputi, 2000), included receiving a penalty from the umpire/referee, making a mental or physical mistake, experiencing pain or injury, and receiving unpleasant feedback from others (e.g. the coach, teammates, opponents, spectators). The second part of the inventory was designed to identify the athletes' coping styles (CS) following three different appraisals of stressful events. Respondents were asked to "indicate the level of intensity (i.e. unpleasantness) you felt after experiencing each of the following stressful events" on a Likert-type scale ranging from 1 (*not at all like me*) to 5 (*very much like me*). It was thought that these sources of stress were experienced by virtually all athletes in this study.

The ASE consisted of 10 items that were theoretically generated from the existing appraisal literature. This process reflects an attempt to reconceptualize the appraisal construct to make it more compatible with an athletes' subsequent use of coping style. Items were theoretically categorized as rumination (three items), self-blame (three items), and confidence (four items) based on a full (100%) consensus among two researchers familiar with this literature that each item was categorized accurately. The 10 ASE items, reflecting each of the three dimensions, are listed in Table 1.

Part 2 of the CSSS consisted of ascertaining the athletes' CS, listing approach and avoidance categories in response to the stressful events. Coping style items consisted of three dimensions and reflected the emerging sport psychology research literature in this area. They were labeled *aggressiveness* (Factor 1), *discounting/psychological distancing* (Factor 2), and *distraction* (Factor 3) based on the descriptive characteristics of the items. The dimensions of the three coping styles and their respective items are linked to the study's conceptual framework and are listed in Table 2.

Inventory translation process

Following the guidelines provided by Brislin, Lonner, and Thorndike (1973), two independent translators, bilingual in English and Turkish, translated the inventory into the Turkish language. Then four colleagues read and confirmed the translations of each item. Finally, two other university colleagues back-translated the inventory and compared the Turkish version to the original English version for accuracy. The academics were in full (100%) agreement on the use of proper terms in the final Turkish version.

Content validity of the inventory was obtained prior to the formal data collection to ensure the clarity and understanding of each item, participants' understanding of the instructions to complete the inventory, and any other potential problems in completing all survey items, as recommended by Bourque and Fielder (2003). All items were perused by 10 Turkish college students not in the

Table 1. Results of confirmatory factor analysis and multigroup invariance for gender.

Item	Factor loading		
	CFA	Male	Female
Appraisal on stressful events (ASE)			
Factor 1: rumination			
I thought I might lose the game.	.70	.73	.67
I felt that the situation was hopeless.	.59	.64	.55
I felt that I might lose control of the situation.	.50	.59	.40
Factor 2: self-blame			
I felt I was letting down others.	.45	.36	.54
I started to doubt my ability.	.65	.55	.74
I felt very foolish about the situation.	.59	.57	.60
Factor 3: confidence			
I became more enthusiastic.	.59	.53	.62
I became more confident that I could overcome the problem.	.61	.56	.66
I felt that I must gain more control of the situation.	.45	.41	.48
I felt challenged by the situation.	.49	.53	.46

Notes: Confirmatory factor analysis (CFA) was achieved ($\chi^2 = 37.43, df = 26, p = .07, \chi^2/df = 1.44, CFI = .97, TLI = .95, RMSEA = .04$).

Multigroup confirmatory factor analysis (MGCFAs) for males and females

Phase 1. configural invariance (factor structures across gender) was achieved: The male ($\chi^2 = 22.21, df = 26, p = .68, \chi^2/df = .85, CFI = .99, TLI = .99, RMSEA = .01$), female ($\chi^2 = 32.74, df = 26, p = .17, \chi^2/df = 1.26, CFI = .97, TLI = .95, RMSEA = .03$).

Phase 2. metric invariance (factor loadings) was achieved ($\Delta\chi^2 = 2.92, df = 7, p = .88; \Delta CFI = .00$) between unconstrained ($\chi^2 = 54.95, df = 52, p = .36, \chi^2/df = 1.06, CFI = .99, TLI = .99, RMSEA = .01$) and constrained MGCFAs ($\chi^2 = 57.87, df = 59, p = .52, \chi^2/df = .98, CFI = .99, TLI = .99, RMSEA = .01$).

Phase 3. theoretical structures invariance (factor covariances) was achieved ($\Delta\chi^2 = 7.34, df = 3, p = .06, \Delta CFI = .00$, with constrained all factor covariances to be group invariance MGCFAs ($\chi^2 = 65.21, df = 62, p = .37, \chi^2/df = 1.05, CFI = .99, TLI = .99, RMSEA = .01$).

Cronbach's alphas: rumination = .61; Self-blame = .57; sense of confidence = .64;

Composite reliability: rumination = .73; self-blame = .69; sense of confidence = .71

formal study, and confirmed by two sports coaches and two sport psychology researchers who were familiar with this literature. These procedures followed those used by Hoedaya and Anshel (2003) who examined cultural differences between Australian and Indonesian athletes, and by Gan et al. (2009) who translated a coping style inventory into Mandarin Chinese.

Inventory administration and procedures

A faculty member who taught at a university in Turkey administered the inventories. The faculty members obtained the data using identical procedures. Before the surveys were distributed, each participant completed a consent form indicating they had volunteered for the study and could refuse to engage in or withdraw from the study at any time. Participants were given a set of 16 stressful events that commonly occur during sport competition. The events, listed earlier, were adopted from Anshel and Sutarso (2007), and represented sources of acute stress that often occur during the competitive event and which the athletes perceived as highly stressful. Sample sources (abbreviated) were “received an unfair call by the referee,” “injured and played with pain,” “a cheating opponent was not caught,” and “treated unfairly by my coach.” The athletes were then to respond to questions about their appraisals and coping responses following these events. The

Table 2. Results of confirmatory factor analysis and multigroup invariance for gender.

Item	Factor loading		
	CFA	Male	Female
Coping style (CS)			
Factor 1: aggressiveness			
I argued with the person responsible for the problem.	.62	.66	.55
I showed aggressive actions of frustration or anger.	.67	.70	.62
I thought about revenge; striking back.	.68	.58	.80
I used profanity (cussing aloud).	.63	.64	.59
Factor 2: discounting			
I ignored or forgot about the problem.	.71	.60	.81
I thought something that took mind off the problem.	.60	.55	.58
I told myself that it's nothing serious.	.47	.57	.46
Factor 3: distraction			
I thought about something to distract me so I wouldn't think about it.	.78	.77	.87
I did something else to occupy time.	.51	.56	.63

Notes: Confirmatory factor analysis (CFA) was achieved ($\chi^2 = 40.85$, $df = 21$, $p = .01$, $\chi^2/df = 1.94$, CFI = .97, TLI = .94, RMSEA = .04).

Multigroup confirmatory factor analysis (MGCFAs) for males and females

Phase 1. configural invariance (factor structures across gender) was achieved: the male ($\chi^2 = 22.71$, $df = 21$, $p = .36$, $\chi^2/df = 1.08$, CFI = .98, TLI = .98, RMSEA = .02); female ($\chi^2 = 33.79$, $df = 21$, $p = .04$, $\chi^2/df = 1.61$, CFI = .96, TLI = .95, RMSEA = .03).

Phase 2. metric invariance (factor loadings) was achieved ($\Delta\chi^2 = 9.56$, $df = 6$, $p = .14$; $\Delta CFI = .00$) between unconstrained ($\chi^2 = 65.77$, $df = 43$, $p = .01$, $\chi^2/df = 1.53$, CFI = .96, TLI = .93, RMSEA = .04) and constrained MGCFAs ($\chi^2 = 75.33$, $df = 49$, $p = .01$, $\chi^2/df = 1.54$, CFI = .96, TLI = .93, RMSEA = .04).

Phase 3. theoretical structures invariance (factor covariances) was achieved ($\Delta\chi^2 = 3.46$, $df = 3$, $p = .33$, and $\Delta CFI = .00$, with constrained all factor covariances to be group invariance MGCFAs ($\chi^2 = 78.79$, $df = 52$, $p = .01$, $\chi^2/df = 1.52$, CFI = .96, TLI = .93, RMSEA = .04).

Cronbach's alphas: aggressiveness = .75; discounting = .61; and distraction = .62

Composite reliability: aggressiveness = .83; discounting = .73; and distraction = .70

athletes completed the inventory in a quiet environment (i.e. away from the sport venue) prior to practice and then returned the inventory to the faculty member when completed.

Data analysis

It is important to examine configural (factor structures) and metric (factor loadings) invariance for all measures across different samples or contexts to make accurate and valid comparisons, and to achieve generalizability of a measurement (Vandenberg & Lance, 2000). Three statistical techniques were used to achieve both configural invariance and metric invariance. First, confirmatory factor analysis (CFA) was used to confirm the factor structures derived from the conceptual frameworks for appraisal of stressful events and CS (discussed earlier). Second, multigroup confirmatory factor analysis (MGCFAs) was used to test the generalizability of the two subscales, ASE and CS, across gender. Finally, structural equation models (SEMs) were used to determine the relationships among factors of the athlete's ASE and CS. On the final SEM (Figures in the correlation model) for simplicity and clarity, only major variables or factors derived from items resulted from the CFA and MGCFAs procedures were included on the model.

Chi-Square (χ^2) statistic, the Comparative Fit Index (CFI), Tucker-Lewis Index (TLI), and the Root Mean Square Error of Approximation (RMSEA) (Bentler, 1990; Schumacker

& Lomax, 1998) were used to assess model fit. Low values and insignificant Chi-Square would indicate a better fit. However, this statistic is very sensitive for larger sample sizes. Chi-Square may lead to rejection of a model with good fit in larger sample sizes (Schumacker & Lomax, 1998). Joreskog (1969) proposed the Normed Chi-Square, that is, Chi-Square adjusted by the degrees of freedom (χ^2/df) to assess model fit. The Normed Chi-Square values between 1.0 and 5.0 are considered to fall within the level of acceptance (Schumacker & Lomax, 1998).

The CFI and TLI are indicative of data that are a good fit to the model if the fit is equal to or greater than .90 (.90 = the lower bound of a good fit, .95 or higher = excellent fit). The RMSEA values below .08 are considered as indication of a good fit (i.e. .08 is the upper limit of a good fit, whereas .05 or less is an excellent fit; Browne & Cudeck, 1989).

Multigroup confirmatory factor analysis (MGCFAs) for gender

MGCFAs tested the generalizability of athletes' appraisal of stressful events scale and their coping style scale. First, a baseline model resulting from the conceptual framework and confirmed by the CFA for the total sample for each scale was established. Second, in order to obtain configural invariance for gender, the baseline model for each scale was tested separately for each gender. Third, the baseline model was tested simultaneously across the groups.

In this stage, three nested models were tested as part of each MGCFAs. Model 1 was the baseline model without constraint to be equal across the groups. Model 2 was the baseline model with factor loadings that were constrained to be equal across the groups. Model 3 maintained equality constraint on the factor loadings, and constrained all factor covariances to be invariant. A non-significant change in χ^2 among the three models would provide support for generalizability across groups (Anshel & Sutarso, 2010; Byrne, 1993; Tang et al., 2008). In summary, the MGCFAs were used to test the equivalency of the number of underlying factors and their items constructed each factor (configural invariance), item measurements or factor loadings (metric invariance), and theoretical structures, that is, factor covariances (Byrne, 1993; Vandenberg & Lance, 2000) across gender.

The statistics used to test invariance in MGCFAs were chi-square change ($\Delta\chi^2$), and fit indexes change (ΔCFI or ΔTLI). The differences between models do not exist if $\Delta\chi^2$ was not significant or if the fit index change is very small (i.e. ΔCFI or $\Delta TLI = .01$ or less: differences between models do not exist).

Results

Appraisal of stressful events (ASE)

Appraisals of stressful events were generated and categorized based on a plethora of previous related studies in which coping styles followed stressors in sport experienced during the contest (e.g. Anshel et al., 2001; Rawstorne et al., 2000). As indicated earlier, the ASE factors were categorized as rumination, self-blame, and sense of confidence.

CFA confirmed the factor structures resulting from the earlier conceptual framework of the ASE. The CFA achieved all the statistical criteria discussed earlier ($\chi^2 = 37.43$, $df = 26$, $p = .07$, $\chi^2/df = 1.44$, CFI = .97, TLI = .95, RMSEA = .04). Factor loadings ranged from .45 to .70 which passed the criteria .32 or more for factor loadings (Tabachnick, & Fidell, 2007). The items, factor loadings, statistical measurements for appraisal of stressful event scale, and Cronbach alphas are listed in Table 1.

Generalizability of appraisal of stressful event scale for gender

The MGCFA was computed to test the generalizability across gender concerning the athlete's appraisal of stressful event (ASE) scale. These include: (1) the number of underlying factors and their respective items constructed each factor (configural invariance), (2) item measurements, or factor loadings (metric invariance), and (3) theoretical structures, that is, factor covariances.

The student athlete's ASE scale achieved gender configural invariance. The three-phase of MGCFA for males and females conducted in Table 1 showed that the factor structure of ASE (configural, metric, and theoretical structures) for men and women is the same, suggesting that the scale is appropriate for both men and women. The student athlete's ASE scale also achieved competition-level configural invariance.

The results of MGCFA's showed that the ASE scale was generalizable across gender. All items from the MGCFA statistics and factor loadings for males and females are listed in Table 1.

Coping style (CS)

The coping stress style three-factor model showed a good fit. The items, factor loadings, and the statistical measurements for coping stress style scale are listed in Table 2. The CFA was achieved with all statistics criteria discussed in method section ($\chi^2 = 40.85$, $df = 21$, $p = .01$, $\chi^2/df = 1.94$, CFI = .97, TLI = .94, RMSEA = .04). The factor loadings ranged from .47 to .78 (see Table 2 under CFA factor loadings). Means and standard deviations for coping styles were aggressiveness ($M = 2.01$, $SD = .96$), discounting ($M = 2.67$, $SD = .99$), and distraction ($M = 2.90$, $SD = 1.16$).

Generalizability of coping style scale for gender

The student athlete's coping-stress style (CS) scale achieved gender configural invariance. The three-phase of MGCFA for males and females conducted in Table 2 showed that the factor structure of CS (configural, metric, and theoretical structures) for men and women is identical, suggesting that the CS scale is appropriate for use with both men and women.

The results of MGCFA's showed that the CS scale was generalizable across gender. All coping style items, results of MGCFA's statistics, factor loadings for males and females, and Cronbach alphas can be seen in Table 2.

Relationships model among factors of appraisal on stressful event (ASE) and coping style (CS)

As discussed earlier, based on a theoretical framework and supported by CFA, ASE consisted of three factors: rumination, self-blame, and sense of confidence. CS also has three factors, aggressiveness, discounting (psychological distancing), and distraction. SEM was used to test the correlation model among these six factors. For simplicity and clarity, only major variables (measured from factors) or factors derived from items resulted from the CFA and MGCFA procedures were included on the model (see Figure 2). Figure 2 also illustrates the results of SEM in examining the relationships among the six factors for the whole sample.

Step one: full sample analyses

The results of SEM (see Figure 2) revealed two major findings: (1) that the model achieved a good fit, and (2) that the correlations among the six factors were significant. The χ^2 of the model was 12.83 ($df = 109$, $p = .17$, Normed χ^2 [χ^2/df] = 1.43). The other fit indices were also

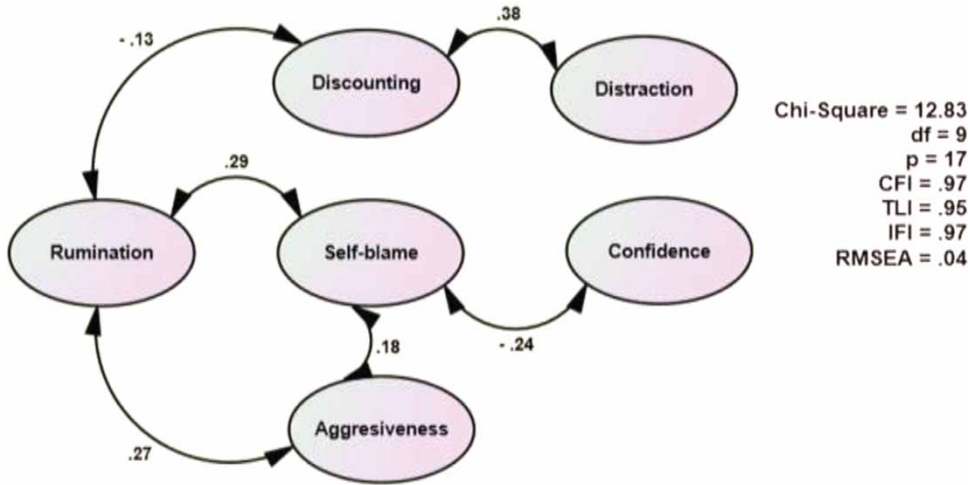


Figure 2. Results of correlation model among factors for the full sample.

supporting goodness of fit model with the data ($CFI = .97$, $TLI = .95$, $RMSEA = .04$). Figure 2 includes the χ^2 and other fit indices.

Correlations among factors in the ASE and CS. All correlations were displayed by the symbol (\leftrightarrow) representing the magnitude of the correlation (see Figure 2). The correlation between the first factor of ASE (rumination) and the second factor (self-blame) was significant and positive, $r = .29$, $p < .001$. Thus, the significant relationship between rumination and self-blame was in the same direction, the more they appraised stress as rumination the more they reflect self-blame. The correlation between the second factor of ASE (self-blame) and the third factor (sense of confidence) was significant and negative, $r = -.24$, $p < .001$. This correlation indicated that heightened confidence appraisals were related to less self-blame. However, there was no correlation between rumination and confidence. For coping style, discounting correlated significantly with distraction, $r = .38$ ($p < .001$). There was no significant correlation, however, between aggressiveness and two other coping styles, discounting and distraction. The finding that no high correlations between factors were detected was desirable, because a high correlation reflects redundancy between dimensions within a scale (Kline, 1998). Kline recommends a minimal correlation of .85 for between factor correlations as the cut-off point to reveal factor redundancy.

Among the three coping styles, aggressiveness had the highest correlation with the appraisal of stress rumination ($r = .27$, $p < .001$), followed by self-blame ($r = .18$, $p = .001$). An inverse relationship was found between a discounting coping style and the appraisal of rumination ($r = -.13$, $p = .005$). These results indicate that an athlete who appraised stressful events as rumination and self-blame was more likely to use an aggressiveness coping style. The inverse relationship between a discounting coping style with a rumination appraisal indicated that greater use of rumination corresponded with less use of a discounting coping style.

Gender analyses

The model from *Step One* to determine the correlations among factors from the ASE and CS were used based on gender (males and females), and competitions level (elites and non-elites) simultaneously are combined and illustrated in Table 3. The model across gender showed a good fit ($\chi^2 = 20.87$, $df = 18$, $\chi^2/df = 1.16$, $CFI = .98$, $TLI = .97$, $RMSEA = .02$).

Table 3. Relationship among factors for gender.

Correlation path			Gender	
			Males	Females
Rumination	↔	discounting	-.16*	-.13*
Rumination	↔	self-blame	.40***	.18*
Rumination	↔	aggressiveness	.24**	.32***
Self-blame	↔	sense of Confidence	-.11	-.36***
Self-blame	↔	aggressiveness	.19*	.17*
Discounting	↔	distraction	.25***	.49***

Notes: Model of relationship among factors across:
 Gender: $\chi^2 = 20.87$; $df = 18$; $p = .29$; CFI = .98, TLI = .97, IFI = .98; RMSEA = .02.
 * $p < .05$, ** $p < .01$, *** $p < .001$

Male sample. The highest significant correlation was indicated between rumination and self-blame, $r = .40$ ($p < .001$). The second highest significant correlation was between discounting and distraction, $r = .25$ ($p < .001$), correlations between rumination and aggressiveness, $r = .24$ ($p = .003$), and an inverse correlation between self-blame and aggressiveness, $r = .19$ ($p = .015$), inverse correlation between rumination and discounting, $r = -.16$ ($p = .022$). However, there was a non-significant correlation between self-blame and sense of confidence for males, $r = -.11$ ($p = .13$).

Female sample. Unlike the male sample, the highest significant correlation for females was between discounting and distraction, $r = .49$ ($p < .001$). The next most significant (inverse) correlation for females was between self-blame and sense of confidence, $r = -.36$ ($p < .001$). The next most significant correlations were between rumination and aggressiveness, $r = .32$ ($p < .001$), between rumination and self-blame, $r = .18$ ($p = .014$), between self-blame and aggressiveness, $r = .17$ ($p = .024$), and an inverse correlation between rumination and discounting, $r = -.13$ ($p = .045$).

In summary, the analyses resulted in the following conclusions: (1) the CFA and MGCFAs showed that the competitive athletes' appraisal of stressful events and the scale of their respective coping style scales were valid and could be generalized as a function of gender to examine the relationships between factors of two constructs, cognitive appraisal and coping style, among Turkish athletes; (2) SEM techniques showed that the correlation model between ASC and CS factors possessed good fit properties for the full sample; (3) the correlation model showed a similar direction of relationships between all pairs of correlations based on the two gender groups (i.e. inverse relationships between self-blame and confidence, and between rumination and discounting, but a positive relationship between the other pair of factors); (4) the highest correlation between two factors was different for each sample; and (5) athletes who used rumination and self-blame appraisals following stressful events tended to cope with heightened aggressiveness.

Discussion

The purposes of this study were to examine the relationship between the cognitive appraisals and coping styles of competitive athletes in response to stressful events experienced during the contest among Turkish athletes. The sport appraisal process examined in this study, labeled rumination, self-blame, and confidence, and sport coping styles, categorized as aggressiveness, discounting,

and distraction, were reconceptualized and theoretically driven based on the need to examine the relationship between sport-related appraisal and coping style in applied settings.

The current results indicated that the athletes' cognitive appraisals of stressful events were significantly related to their coping style, and could be generalized across gender for these Turkish athletes. In addition, the correlation model among appraisal and coping style factors indicated a good fit for the full sample. Negative relationships were found between self-blame and confidence, and between rumination and discounting, while positive relationships were obtained between the other factors. Finally, athletes who used rumination and self-blame appraisals applied an aggressiveness coping style.

The inverse relationship between the appraisals of self-blame and confidence is, perhaps, not surprising. Self-blame serves to maintain or re-establish meaningfulness of a stressful event (Janoff-Bulman, 2002), while the individual agonizes over having done something different to improve the outcome. Confidence, on the other hand, reflects the athlete's relative optimism and anticipation of a successful outcome from the event perceived as stressful. Self-blame and confidence have contradictory roles and purposes in the coping process (Janoff-Bulman, 2002).

The results included an inverse relationship between rumination and discounting. An appraisal of rumination, in which athletes are self-focused on their own provocative thoughts and feelings, maintains negative feelings (Bushman et al., 2005), which is contrary to the coping style of discounting. In a sport context, discounting is intended to remove obstructive thoughts and to allow athletes to attend to the task at hand (Krohne, 1993). Rumination, which might be more effective under conditions of continued monitoring of a situation perceived as stressful (Miller, 1990), would lead to attending to and resolving the situation.

Results also showed that distraction was not directly and significantly related to rumination, or any other variables except discounting; the relationship between distraction and discounting was positive and significant. This result may be at least partially explained by the intended purpose and the sequence in which both types of coping occur. For example, while both distraction and discounting are categorized under an avoidance coping style (Krohne, 1993; Roth & Cohen, 1986), they differ with respect to their timing and sequence following a stressful event. Bramson (1981) suggests that the stressed individual attempt to "gain some perspective on the (other) person's behavior by seeing their patterns of behavior and understanding the source of those patterns" (p. 168). The stressed person's goal is to remain emotionally detached and psychologically distant from the other person's actions – and the source of those actions. Elite athletes often perform this function by focusing externally on the next task at hand after experiencing a stressful event (Anshel, 2012).

The non-significant relationship between confidence appraisal (e.g. "I became more enthusiastic") and aggressive coping style (e.g. "I thought about revenge; striking back") in the appraisal stage might be explained by the basis under which each are applied in response to acute sport stress. Confidence appraisals are more likely to occur under conditions of high self-control and low to moderate stress intensity (Scorniaenchi & Feltz, 2010), whereas a person is more likely to aggress to overcome low perceived control, low confidence, higher perceived threat, and under various personal and situational conditions (e.g. stress intensity, type of stressor, early or late in the contest). Due to these mitigating factors, the relationship between aggressive coping and confidence appraisal would be relatively low.

The finding that aggressiveness was not significantly related to discounting or distraction could be explained by their respective purposes. A coping style of aggressiveness is a form of approach coping, that is, it reflects the athlete's direct cognitive or behavioral involvement in trying to resolve the stressful situation (Krohne, 1993). Discounting and distraction, on the other hand, reflect avoidance coping styles, in which the athlete reduces the importance of or ignores the stressful event, and maintains vigilance toward the next (or some future) task.

Avoidance coping is preferred when athletes are engaged in continuous tasks, inherent in some sports such as basketball, European football (US soccer), and rugby (Anshel, 2001; Roth & Cohen, 1986). Taken together, the results of this study, specifically the relationships among CSSS factors, may be explained by examining their intended function and usefulness in the context of sport.

There is an apparent need to study both personal (i.e. coping style) and situational (i.e. appraisal) factors simultaneously to improve our understanding of the coping process, an issue that warrants consideration in future coping in sport research, particularly as a function of gender. As Crocker and Graham (1995) have correctly concluded, however, “assessing the nature of the relationship among emotional experiences, coping, and appraisal processes in athletic settings is difficult” (p. 334).

The present study was not without limitations that should be addressed in future research. For example, while the current sample size of 325 was adequate, a much larger sample is preferred if researchers are to examine one or more moderator variables such as race, ethnicity, or sport type. In addition, athletes differed on the time interval between when they actively competed in sport and their participation in the current study, what Beehr and McGrath (1996) call “temporal context” (p. 67). Clearly, it is preferred that this timeframe between experiencing stressful events in sport and self-reported use of coping strategies be as short as possible, thereby controlling for history and maturation effects, and reducing a source of threat to internal validity (Beehr & McGrath). The best strategy to help reduce – not likely eliminate – the inherent limitation of time in a self-report, recall coping study is to prompt respondents not only to recall their coping strategy, but to recall the context in which the stressful situation occurred. Clearly, more research is needed to determine the underlying factors that relate and explain the appraisal and coping interaction in sport following specific stressful events.

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