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9 Development and Validation of an Inventory to Assess Conflict in Sport Teams:

10 The Group Conflict Questionnaire

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1   **Abstract**

2   The purpose of the study was to develop and validate a conceptually and psychometrically sound

3   conflict questionnaire for sport. The development process involved three phases: (a) a qualitative

4   phase, (b) a content and factorial validity phase, and (c) a construct validity phase. A total of 50

5   items were generated and sent to six experts to determine content validity. Through this process,

6   25 items were retained and administered to a sample of athletes ($n = 437$) to determine factorial

7   validity. Based on these results, a second sample ($n = 305$) was administered the 14-item version

8   of the Group Conflict Questionnaire (GCQ) along with the Group Environment Questionnaire

9   (Carron et al., 1985), the Athlete Satisfaction Questionnaire (Riemer & Chelladurai, 1998), and

10   the Passion Scale (Vallerand et al., 2003) to test convergent, discriminant, and known-group

11   difference validity. Cross validation from both samples via Confirmatory Factor Analysis (CFA)

12   yielded moderate to acceptable model fit, thus supporting factorial validity for the 14-item

13   version. Additionally, initial support for convergent validity and known-group difference validity

14   and partial support for discriminant validity were found. A sport specific conflict questionnaire is

15   now available for researchers to utilise. Results and research implications are discussed.

16   *Keywords:* intra-group conflict, group dynamics, measurement, validity, psychometrics

1   Development and Validation of an Inventory to Assess Conflict in Sport Teams:

2   The Group Conflict Questionnaire

3   Conflict, defined as "a dynamic process that occurs between interdependent parties as

4   they experience negative emotional reactions to perceived disagreements and interference with

5   the attainment of their goals" (Barki & Hartwick, 2004, p. 234), has been widely reported in a

6   variety of settings (e.g., Barki & Hartwick, 2004; Deutsch, 1990; Jehn, 1995). In the sport

7   context, however—with a few recent exceptions (e.g., Holt, Knight, & Zukiwski, 2012;

8   Mellalieu, Shearer, & Shearer, 2013; Sullivan & Feltz, 2001)—the investigation of conflict has

9   been sparse and underdeveloped (Martin, Bruner, Eys, & Spink, 2014; Martin & Beauchamp,

10   2014). Specifically, Lavoi (2007) noted that searches of subject indexes in various sport

11   psychology texts failed to yield the term *conflict*.

12   Due to the limited research available in sport, literature from other domains (i.e.,

13   organizational psychology) can be utilized to grasp a better understanding of the construct.

14   A considerable portion of this literature can be attributed to (or has been influenced by) the work

15   of Karen Jehn and her colleagues (e.g., Jehn, 1995; 1997; Jehn & Mannix, 2001). Jehn (1995)

16   advanced a conceptual model of conflict that was formulated on the notion that three distinct but

17   related types of intra-group conflict exist*: task*, *relationship*, and *process* conflict. According to

18   Jehn (1997), task conflict exists when disagreements among group members occur in relation to

19   the content of tasks being performed including differences in viewpoints, ideas, and opinions.

20   Relationship conflict exists when interpersonal incompatibilities are present among group

21   members. Finally, process conflict is present when disagreements arise in regard to the manner in

22   which tasks should be delegated and performed. This conceptualization provided a foundation

1   for understanding the nature of conflict and served as a catalyst for further research (e.g.,

2   Bendersky et al., 2010).

3   In relation to subsequent work based on this conceptualization, two general issues have

4   immerged. First, insofar as the conceptual framework is concerned, researchers have identified a

5   lack of empirical distinction between process and task conflict (Behfar, Mannix, Peterson, &

6   Trochim, 2011). In recognizing this limitation, Bendersky et al. (2010) revisited the original

7   framework and combined the process and task conflict dimensions, thus resulting in two general

8   dimensions—*task* (e.g., divergent, convergent, and logistical coordination conflicts) and

9   *interpersonal* (e.g., status, compatibility, and commitment conflicts).

10   The second issue relates to the definition and nature of conflict. Specifically Jehn (1995;

11   1997) and other colleagues have adopted the term *disagreement* to describe conflict to the point

12   of perceiving (either intentionally or unintentionally) *disagreement* to be synonymous with

13   *conflict*. Although disagreement may certainly be at the root of conflict, it is possible to have

14   disagreement without necessarily having conflict. For example, individuals in a conversation

15   may disagree with regard to political or religious issues or beliefs but are not necessarily in

16   conflict with one another. In fact, recent research supports the tenet that conflict is too strong a

17   word to describe mere disagreements or differences of opinion (Hamm-Kerwin, Doherty, &

18   Harman, 2011). Consequently, perceiving conflict to be synonymous with disagreement severely

19   risks the underrepresentation of the construct.

20   In line with the previous issues, Barki and Hartwick (2004) identified a lack of clear

21   conceptualization and operationalization across the literature for intra-group conflict, which they

22   highlighted as a hindrance to the comparison of previous results as well as the advancement of

23   the field. Subsequently, they advanced a more recent conceptualization that incorporates the two

1   dimensions of task and social, but more importantly, enables the classification of conflict over

2   and above that of disagreements. Therefore, in order for a situation to be categorized as inter-

3   personal conflict, three components (cognitive, behavioural, and affective) must be present. In

4   this regard, disagreement is represented as the cognitive component, interference with goal

5   attainment as the behavioral component, and negative emotion as the affective component.

6   Accordingly, Barki and Hartwick (2004) consider conflict to exist when disagreements, negative

7   emotions, and interference behaviors are concurrently present in an inter-personal situation (i.e.,

8   between 2 or more people) based on either task or relationship (i.e., social) processes.

9   In considering that the Barki and Hartwick (2004) conceptualization allows for the proper

10   classification or identification of inter-personal conflict, it was adopted as a theoretical guide for

11   the present study. In terms of group conflict, this generally manifests itself in two ways: between

12   opposing groups (i.e., inter-group conflict) or between members within a group (i.e., intragroup

13   conflict) (Martin et al., 2014). Similarly, for the purposes of this manuscript, the terms inter-

14   personal and intra-group conflict are used interchangeably herein. Essentially, the extent

15   literature in the sport setting (e.g., Holt et al., 2012; Mellalieu et al., 2013; Sullivan & Feltz,

16   2001) has used these terms, in addition to the general use of 'conflict,' synonymously. Therefore,

17   our use of intra-group conflict throughout refers to inter-personal conflict situations between two

18   or more persons who are members of the same group/team (i.e., intra-group conflict).

19   As indicated above, the literature with regard to intra-group conflict in sport is sparse.

20   This is surprising considering its inevitability in any group context (Robbins & Judge, 2010), as

21   indicated by the following quote, "I'm only certain of three things in life—death, taxes, and

22   conflict" (quoted in Lavoi, 2007, p. 34). Consistent with this suggestion, and due to its

23   interdependent and competitive nature, sport provides another platform for the investigation of

1 intra-group conflict. One potential explanation for the lack of sustained investigation is the

2 availability of a validated measurement tool. In their recent text, Tenenbaum, Eklund, and

3 Kamata (2012) highlighted the importance of questionnaire development by stating,

4 "measurement is essential to science, it must be trustworthy, and accurate" (p. 3). Similarly,

5 questionnaire development is fundamental to the advancement of knowledge (Carron, Eys, &

6 Martin, 2012). Therefore, the purpose of the present study was to develop and validate a sport

7 specific conflict questionnaire—The Group Conflict Questionnaire (GCQ). The GCQ was

8 developed using a common multi-phase approach to questionnaire development (e.g., Carron,

9 Widmeyer, & Brawley, 1985; Eys, Loughead, Bray, & Carron, 2009; Martin, Carron, Eys, &

10 Loughead, 2012).

11   Specifically, our approach encompassed three phases (a qualitative phase, a questionnaire

12 development and structural validity phase, and a construct validity phase), which are described in

13 greater detail in the methods section. Phase 1 involved an exploratory qualitative investigation in

14 which athletes served as active agents to help gain a better understanding of how they perceived

15 the nature of intra-group conflict in sport. This phase involved in the consideration of participant

16 responses in combination with a more thorough literature review, and definition and conceptual

17 model (e.g., Barki & Hartwick, 2004) for the formulation of an initial item pool in Phase 2.

18   With regard to Phase 2, two sequential stages were undertaken. First, potential items for

19 the GCQ were developed and six researchers with expertise in group dynamics in the context of

20 sport were recruited to assess their content validity. These experts were asked to determine the

21 extent to which the items represented (a) intra-group conflict in sport generally and (b) the

22 proposed conceptual model specifically. Second, factorial validity of the preliminary

23 questionnaire was assessed via Confirmatory Factor Analysis (CFA). This analysis yielded a 14-

1   item (7-task and 7-social) inventory that measures perceptions of intra-group conflict on a 9-

2   point Likert-type scale. Consistent with the conceptual model (i.e., Barki & Hartwick, 2004),

3   each item made reference to (a) disagreements (i.e., cognitive), (b) negative emotions (i.e.,

4   affective), and (c) interference behaviors (i.e., behavioral). Further, items were developed for

5   both task and social situations, which has been supported in the sport literature (e.g., Holt et al.,

6   2012; Paradis, Carron, & Martin, in press).

7   In recognition of the fact that validity testing is an ongoing process (e.g., Carron et al.,

8   1985), it was necessary to conduct further assessment to determine the construct validity of the

9   GCQ. Thus, Phase 3 involved the assessment of factorial, convergent, discriminant, and known-

10   group difference validity (e.g., Brawley, Carron, & Widmeyer, 1987; Martin, Carron, Eys, &

11   Loughead, 2013). Each assessment of validity is subsequently described in greater detail.

12   The first type of validity tested was factorial validity, demonstrated through the model fit

13   and factor loadings obtained from a CFA. A common practice in validity testing is to perform

14   cross validation studies with independent samples whenever possible (Tabachnick & Fidell,

15   2013). As such, this second factorial validity test would be used to complement the one

16   undertaken during Phase 2 with a different sport sample. Providing additional evidence of

17   factorial validity would further support the construct validity of the GCQ.

18   The demonstration of convergent validity occurs when constructs that are theoretically

19   related, are in fact shown to be related (e.g., Smith, Cumming, & Smoll, 2008). One construct in

20   organizational settings that has been consistently related (albeit negatively) to intra-group

21   conflict is satisfaction (e.g., De Dreu & Van Vianen, 2001; De Dreu & Weingart, 2003).

22   Therefore, for the present study, it was hypothesised that task and social conflict would be

23   negatively related to satisfaction in a sport setting.

1   Another construct used to assess convergent validity was cohesion, defined as "a

2   dynamic process that is reflected in the tendency for a group to stick together and remain united

3   in the pursuit of its instrumental objectives and/or for the satisfaction of member affective needs"

4   (Carron, Brawley, & Widmeyer, 1998, p. 213). Cohesion plays an important role in the

5   functioning and effectiveness of all groups (e.g., Carron et al., 1985). In fact, Sullivan and Feltz

6   (2001) suggested conflict may be the antithesis of cohesion, thus demonstrating a negative

7   relationship. In line with this suggestion, it was hypothesized that task and social conflict would

8   be negatively related to task and social cohesion.

9   Discriminant validity is demonstrated when theoretically plausible differences do in fact

10   emerge between constructs (e.g., Smith et al., 2008). The construct used to test this type of

11   validity in the present study was passion, defined as "a strong inclination toward an activity that

12   people like, that they find important, and in which they invest time and energy" (Vallerand et al.,

13   2003, p. 757). The Dualistic Model of Passion consists of harmonious passion which "results

14   from an autonomous internalization of the activity into the person's identity" and obsessive

15   passion which "results from a controlled internalization of the activity into one's identity"

16   (Vallerand et al., 2003, p. 757). Previous research has shown that negative emotions (also a

17   component of intra-group conflict) were positively related to obsessive passion and negatively

18   related to the quality of interpersonal relationships and interpersonal connectedness, whereas a

19   negative relationship was demonstrated between negative emotions and harmonious passion

20   (Phillipe, Vallerand, Houlfort, Lavigne, & Donohue, 2010). That is, more positive emotions were

21   experienced in inter-personal relationships by those who were harmoniously passionate

22   compared to those who were obsessively passionate. On the basis of these findings, it was

23   expected that task and social conflict would share different relationships with harmonious and

1   obsessive passion—namely, that intra-group conflict (task and social) would be inversely related

2   to harmonious passion but positively related to obsessive passion.

3   Finally, known-group difference is demonstrated when populations that are theoretically

4   hypothesized to differ are in fact shown to have mean differences pertaining to the target variable

5   (Rowe & Mahar, 2006). One common method of assessing known-group difference is with sport

6   type (i.e., individual vs. team sport; Brawley et al., 1987; Martin et al., 2013). Martin et al.

7   (2013) found that athletes participating in team sports perceived greater perceptions of cohesion

8   than those participating in individual sports. Based on these results, it was hypothesized that

9   team sport athletes would experience less social conflict than those in individual sports.

10   However, we felt the same hypothesis was not tenable for task conflict. That is, individual sport

11   athletes logically should experience little to no task conflict since their tasks are carried out

12   independently. Likewise, given the fact that team sport athletes must work together to carry out

13   their tasks, it would seem more logical that they would experience greater task conflict.

14   However, given the collective mindset of team sport vs. the individualistic mindset of individual

15   sport, greater social conflict might be expected in individual sport contexts. Thus, it was

16   hypothesized that team sport athletes would experience greater task and less social conflict than

17   their individual sport counterparts.

18   The second known-group difference test involved team tenure (e.g., Brawley et al., 1987;

19   Martin et al., 2013) as the differentiating variable. Player turnover, from year to year requires

20   new team members to join the group and have an adjustment period in which they try to fit in,

21   adapt to the culture and norms, compete for positions, and demonstrate their worth at the start of

22   each new season. As suggested by Tuckman (1965), this *storming* phase in group development

23   often leads to conflict situations. Likewise, veteran athletes are typically comfortable in their

1   roles and positions on the team, abide by team norms, and are familiar with the team culture.

2   Thus, it was hyptohesized that athletes with less team tenure would report higher perceptions of

3   task and social intra-group conflict.

Method

5   **Procedure**

6   Ethical approval was obtained from the lead author's institution Research Ethics Board to

7   conduct the qualitative study (i.e., Phase 1) and the questionnaire development and validation

8   (i.e., Phases 2 and 3). The following provides an outline of these phases.

9   **Phase 1: Qualitative Assessment of Athlete Perceptions of Conflict in Sport**

10   A comprehensive discussion of the rationale and research associated with Phase 1 has

11   been provided elsewhere (Paradis et al., in press) and is not repeated here. As a brief summary

12   however, Phase 1 was an exploratory project used to gain an understanding of athlete perceptions

13   of intra-group conflict in sport. Specifically, it involved semi-structured interviews with 10

14   intercollegiate athletes (five males and five females) who participated in a number of different

15   sports (e.g., ice hockey, track and field, rugby, volleyball, lacrosse, rowing, golf, curling,

16   competitive team dance). Before any form of measurement development could be discussed, it

17   was necessary to obtain a better understanding of intra-group conflict in the context of sport, and

18   to determine the applicability of the Barki and Hartwick (2004) conceptualization. The results

19   from this project (specifically referred to as Phase 1) identified the presence of (1) intra-group

20   conflict in sport, generally, and (2) both task and social dimensions that contained cognitive (i.e.,

21   disagreement), behavioral (i.e., goal interference), and affective (i.e., negative emotions)

22   components, specifically. In addition to providing a greater understanding of what athletes

1   perceived intra-group conflict to be, this phase enabled the generation of items discussed in

2   subsequent sections.

3   **Phase 2: Item Generation, Content Validity, and Factorial Validity**

4   **Item generation.** The first objective of Phase 2 was to develop items for the

5   questionnaire. Care was taken to assess the information obtained by athletes in Phase 1, as

6   participant responses represent a rich source of content valid perceptions for the nature of any

7   construct (Carron et al., 1985). As indicated, results from the qualitative portion coupled with our

8   knowledge of the literature were taken into consideration to generate 50 items reflecting task

9   ($n = 25$) and social ($n = 25$) intra-group conflict. Each of those items contained a reference to a

10   disagreement, affect, and behavioral interference.

11   Generally, in test development, it is important that items do not contain more than one

12   response option (e.g., "I feel happy and energetic"). In such cases, respondents may agree with

13   one option but not with the second, making it difficult for them to provide a valid response.

14   However, it is equally important that each item fully represent the construct as it is defined

15   conceptually. Thus, consistent with our constitutive definition, which was derived from Barki

16   and Hartwick, (2004), each of our items contained reference to a cognitive, behavioral, and

17   affective component (e.g., "Members of our team have intense [affective] disagreements

18   [cognitive] to the point of dysfunction [behavioural]" … "Arguments [behavioural] get very

19   heated [affective] between teammates who have differing viewpoints [cognitive] about what

20   should be done during competition"). Therefore, it is possible for a respondent to agree with one

21   component within the item (e.g., a disagreement was present) but not another (e.g., there was no

22   accompanying emotion or behaviour). In this case, the interaction would not be classified as

23   intra-group conflict (i.e., all three components must be present). Note that, while all three

1   components must be present, they can certainly have varying levels of intensity. Should

2   respondents find that they are unable to agree with all three components within the item, the

3   experiences they are reflecting would not represent our understanding of intra-group conflict and

4   would thus respond accordingly.

5   **Content validity.** The second objective of Phase 2 was to determine the content validity

6   (i.e., item content relevance; see Dunn, Bouffard, & Rogers, 1999) of the proposed items. Ten

7   experts in the field of sport psychology with research interests that lie in group dynamics

8   principles were contacted and invited to take part in the item assessment. A total of six (all at the

9   Associate Professor or Professor level with their respective institutions who ranged from 10-35

10   years of experience in the field, agreed to participate, which satisfied the suggested minimum (*n*

11   = 5) number of expert reviewers necessary for controlling against chance agreement (Lynn,

12   1986). In order to avoid biased assessment of the items (Crocker & Algina, 1986), the experts

13   had not been involved in any portion of the test construction nor had previously seen the items

14   and were not told of the proposed dimension (i.e., task or social). In addition, the experts were

15   given the Barki and Hartwick (2004) definition and conceptual framework.

16   The experts reviewed all items independently and were specifically asked to identify

17   whether an item represented task or social intra-group conflict as well as the degree to which it

18   incorporated disagreement, negative emotions, and interference behavior. The experts were also

19   asked to provide qualitative feedback with regard to each item. The purpose of the qualitative

20   feedback was to determine the basis for low ratings (e.g., "not clear if this is a task or social

21   conflict item") and potential ways in which the item could be improved or whether it should be

22   deleted.

1   Responses were provided on a 5-point Likert-type scale: 1 = poor match, 2 = fair match,

2   3 = good match, 4 = very good match, 5 = excellent match (e.g., Dunn et al., 1999). Thus, for

3   example, a task intra-group conflict item viewed as an excellent match would obtain a rating of 5

4   for task (and 1 for social). Conversely, an item considered to be a poor match would obtain a

5   rating of 1 for task (and 5 for social). Additionally, experts were asked to rate the degree to

6   which the items represented disagreement, negative emotions, and interference behaviors on the

7   same scale providing an overall score for each item in these categories. The combined means

8   from all expert raters were tallied and on the basis of these ratings, 25 items were removed and

9   25 items were retained. Specifically, 15 items (M = 3.17- 4.83) pertaining to task and 10 items

10   (M = 3.00 - 4.50) pertaining to social intra-group conflict were maintained for further analyses.

11   Any items scoring poorly in all areas were deleted, likewise, items had to obtain a minimum

12   score of 3 to be obtained for further analyses.

13   **Factorial Validity.** The third objective of Phase 2 was to utilise the content valid items in

14   an assessment of factorial validity via CFA.

15   **Participants**

16   Demographic information was collected from 437 (n = 230 females, n = 207 males)

17   participants with a mean age of 18.61 (SD = 1.51) years who had an average experience of 7.86

18   (SD = 4.32) years in their respective sport and an average tenure of 3.11 (SD = 2.35) years on

19   their respective team. Participants self-identified their competition level (n = 305 competitive, n

20   = 132 recreational), starting status (n = 362 starters, n = 75 non-starters), and sport type. A total

21   of thirty different sports were identified by participants, with the most common being soccer (n =

22   91), ice hockey (n = 61), basketball (n = 49), American football (n = 34), volleyball (n = 27),

23   baseball/softball (n = 19), rugby (n = 17), swimming (n = 14), and track and field (n = 13).

1   **Measures**

2   **Conflict.** As indicated above, two dimensions of conflict were assessed: task (e.g., "The

3   team's ability to be successful is jeopardized [behavioural] because of heated [affective]

4   disagreements [cognitive] during competition") and social (e.g., "Emotions [affective] run high

5   in social situations over personal disagreements [cognitive] brought [behavioural] to light"), all

6   of which had references to a cognition (such as disagreement), a negative affective emotion

7   (such as anger), and behavioral action (such as sabotage). Reponses were provided on a 9-point

8   Likert-type scale anchored at 1 (strongly disagree) and 9 (strongly agree). Thus higher scores

9   reflected stronger perceptions of intra-group conflict.

10   **Analysis**

11   A CFA using maximum likelihood estimation was conducted via Amos 20.0 (Arbuckle,

12   2011) based on a two-factor model of task and social intra-group conflict. The rationale for the

13   utilisation of a CFA as opposed to an EFA stemmed from the combination of several indicators

14   suggesting that there was both a theoretical and empirical basis to do so. First, A CFA is a

15   confirmatory technique that is theory driven (Schreiber, Stage, King, Nora, & Barlow, 2006) and

16   in which the researcher has an a priori specified theoretical model (Schumacher & Lomax, 2010)

17   whereas for an EFA the researcher does not have such a model. Likewise, as Kline (2005)

18   highlights "It is not entirely appropriate to specify a CFA model based on the results of an

19   Exploratory Factor Analysis (EFA) and to estimate the former using the same data" (p. 204). As

20   indicated previously, the Barki and Hartwick (2004) conceptualization served as the underlying

21   theoretical model for our work and therefore contributed to our decision to use CFA.

22   Assessing model fit was done through the examination of various fit indices including the

23   Comparative Fit Index (CFI; Bentler, 1990), the Root Mean Square Error of Approximation

1   (RMSEA; Browne & Cudeck, 1993), and the Standardized Root Mean Square Residual (SRMR;

2   Bentler, 1995). Tabachnick and Fidell (2013) noted that the most commonly reported fit indices

3   have been the CFI and the RMSEA. Also, Hu and Bentler (1999) have suggested the CFI and the

4   SRMR are the most important indices for reporting model fit. For the CFI, values greater than

5   .90 represent good fit (e.g., Bentler, 1990) whereas values greater than .95 represent excellent fit

6   (e.g., Hu & Bentler, 1999). For the RMSEA, values less than .08 indicate excellent fit whereas

7   values less than .10 indicate moderate fit (e.g., Browne & Cudeck, 1993; MacCallum, Browne,

8   & Sugawara, 1996). For the SRMR, values less than .06 represent excellent fit and values less

9   than .08 represent moderate fit (Bentler, 1995; Browne & Cudeck, 1993; Hu & Bentler, 1999).

10   **Phase 2 Results**

11   **Descriptive Statistics**

12   Descriptive statistics including means, standard deviations, Cronbach's alphas, bivariate

13   Pearson correlations (between the task and social dimensions), and skewness and kurtosis data

14   (for both the 25-item and the 14-item versions) are reported in Table 1.

15   **Confirmatory Factor Analysis**

16   Results from the CFA on the 25-item version of the questionnaire yielded statistically

17   significant fit indices but did not meet the desired cut-off values (χ^2 (274) = 1502.11, p = .00;

18   CFI = .837, RMSEA = .101, SRMR = .065). All item factor loadings (see Table 2) were

19   significant (p = .00) and ranged from .582-.845 for task and from .646-.830 for social intra-group

20   conflict. The task and social dimensions were significantly related and co-varied at .81 (r = .76).

21   Post-hoc modifications were performed to find a more parsimonious and better fitting

22   model. The initial step involved eliminating items with the lowest factor loadings. Historically,

23   factor loadings above .70 are considered excellent while loadings above .60 are considered very-

1   good (Comrey & Lee, 1992). In this regard, considering our analysis indicated that most factor

2   loadings were very-good, the decision was made to retain 14 items with factor loadings greater

3   than .70 which resulted in 11 items being removed: eight task items (.582-.641) and three social

4   items (.646-.677). A second CFA was then conducted with the 14 remaining items.

5   The second CFA produced a statistically significant model with improved fit indices (χ^2 =

6   (76), 323.07, p = .00; CFI = .946, RMSEA = .086, SRMR = .042). The factor loadings of all

7   items (see Table 3) were significant (p = .00) and ranged from .641-.893 for task and from .711-

8   .842 for social intra-group conflict. The task and social dimensions were also significantly

9   related and co-varied at .79 (r = .74). A chi-square difference test ($\Delta\chi^2$ (198) = 147.01, p = .00)

10   showed that the second parsimonious (nested) model was indeed significantly superior. All

11   factor loadings for the 25-item and the 14-item CFA's are found in Tables 2 and 3, respectively.

12   Finally, the inter-item correlations for the final 14-items are found in Table 4 and the

13   questionnaire items are found in Table 5 (deleted items are crossed out).

14   **Phase 3: Cross Validation and Further Tests of Validity**

15   The objective for Phase 3 was to cross-validate the results of the CFA from Phase 2 with

16   a different sample for factorial validity, while also performing additional tests of validity

17   (convergent, discriminant, and known-group difference).

18   **Participants**

19   The sample included 305 (n = 183 females, n = 122 males) participants with a mean age

20   of 20.79 (SD = 1.56) years, an average of 9.45 (SD = 4.82) years of experience in their respective

21   sport, and an average of 2.85 (SD = 2.45) years on their respective team. In addition, participants

22   self-identified their competition level (n = 223 competitive, n = 82 recreational) and starting

23   status (n = 260 starters, n = 45 non-starters). A total of thirty-three different sports were

1   identified, with the most common being soccer ($n = 52$), ice hockey ($n = 48$), basketball ($n = 36$),

2   volleyball ($n = 30$), American Football ($n = 18$), baseball/softball ($n = 17$), track and field ($n =$

3   17), rugby ($n = 11$), and swimming ($n = 10$).

4   **Measures**

5   **Conflict.** The GCQ was administered to assess perceptions of intra-group

6   conflict. The 14-item version included seven items that assessed *task* ($\alpha = .90$; e.g., "The

7   team's ability to be successful is jeopardized because of heated disagreements during

8   competition") and seven items that assessed *social* ($\alpha = .92$; e.g., "Emotions run high in

9   social situations over personal disagreements brought to light") intra-group conflict.

10   Responses were provided on a 9-point Likert-type scale anchored at 1 (Strongly

11   Disagree) and 9 (Strongly Agree). Thus, higher scores reflected greater perceptions of

12   intra-group conflict.

13   **Cohesion.** Cohesion was measured using the Group Environment Questionnaire

14   (GEQ; Carron et al., 1985). The GEQ consists of 18-items measuring four dimensions of

15   cohesion: *Individual Attractions to Group-Task* (ATG-T; four items, $\alpha = .76$; e.g., "I am

16   happy with the amount of playing time I get"), *Individual Attractions to Group-Social*

17   (ATG-S; five items, $\alpha = .85$; e.g., "Some of my best friends are on this team"), *Group*

18   *Integration-Task* (GI-T; five items, $\alpha = .81$; e.g., "Our team is united in trying to reach its

19   performance goals"), and *Group Integration-Social* (GI-S; four items, $\alpha = .83$; e.g., "Our

20   team would like to spend time together in the off-season"). Responses are provided on a

21   9-point Likert-type scale anchored at 1 (Strongly Disagree) and 9 (Strongly Agree).

22   Thus, higher scores represented stronger perceptions of cohesion.

1   **Satisfaction.** Satisfaction was measured using two subscales from the Athlete

2   Satisfaction Questionnaire (ASQ; Riemer & Chelladurai, 1998). Specifically from the

3   ASQ, three items (α = .90) were used to measure *team integration* (satisfaction by the

4   members with the contributions and coordination of their efforts towards the teams' task;

5   e.g., "How satisfied are you with team members' dedication to work together towards

6   team goals") and three items (α = .83) were used to measure *team performance*

7   (satisfaction by team members with the teams overall level of performance; e.g., "How

8   satisfied are you with the extent to which the team has met its goals for the season").

9   Responses were provided on a 7-point Likert-type scale anchored at 1 (Not at all

10 Satisfied) and 7 (Completely Satisfied). Thus, higher scores reflected greater satisfaction.

11   **Passion.** Passion was measured using the Passion Scale (PS; Vallerand et al.,

12 2003). The Passion Scale consists of 14-items that measure two dimensions of passion:

13 *harmonious* (seven items, α = .83; e.g., "This activity is in harmony with other activities

14 in my life") and *obsessive* (seven items, α = .94; e.g., "I am emotionally dependent on

15 this activity"). Responses are provided on a 7-point Likert-type scale anchored at 1 (Do

16 not Agree at all) and 7 (Completely Agree). Thus, higher scores reflected greater passion.

17 **Analysis**

18   Factorial validity was assessed by conducting a CFA using the maximum

19 likelihood estimation via AMOS 20.0 (Arbuckle, 2011). Convergent and discriminant

20 validity were assessed using Pearson product moment correlations (two-tailed) to

21 determine the relationships between intra-group conflict, cohesion, satisfaction, and

22 passion. Known-group difference validity was assessed using discriminant function

23 analysis to determine whether intra-group conflict (task and social) could differentiate

1   group differences and membership between sport type (individual and team), and team

2   tenure ($\geq$ 1 year and $\leq$ 2 years).

3   **Phase 3 Results**

4   **Descriptive Statistics**

5   Descriptive statistics are found in Table 6, bi-variate Pearson correlations are

6   found in Table 7, inter-item correlations for the GCQ are found in Table 8, and item

7   factor loadings for the GCQ are found in Table 9.

8   **Factorial Validity**

9   A CFA was conducted with AMOS 20.0 (Arbuckle, 2011) to further assess the

10   factorial validity of the GCQ. The CFA yielded a statistically significant model fit (χ^2

11   $(76) = 348.72$, $p = .00$; CFI $= .903$, RMSEA $= .109$, SRMR $= .060$). The inter-factor

12   correlation between the task and social dimensions was also moderate ($\varphi = .65$) and the

13   internal consistency values were $\alpha = .90$ for task and $\alpha = .92$ for social. The factor

14   loadings ranged from .637-.855 for task and .671-.842 for social intra-group conflict,

15   with the majority of factor loadings above .70 (with the exception of two items; one task

16   item at .637 and one social item at .671). Thus, results from the CFA support the factorial

17   validity of the GCQ.

18   **Convergent Validity**

19   The first test of convergent validity involved the examination of the relationship

20   between intra-group conflict (task and social) and cohesion (task and social). It was

21   hypothesized that both dimensions of intra-group conflict would be significantly (but

22   inversely) related to task and social cohesion (in both manifestations of attractions to

23   group and group integration). The results supported the hypotheses. Task conflict was

1   significantly and negatively related to all four dimensions of cohesion: *ATG-T* ($r = -.314$,

2    $p < .01$), GI-T ($r = -.342$, $p < .01$), *ATG-S* ($r = -.267$, $p < .01$), and *GI-S* ($r = -.254$, $p <$

3   .01). Likewise, social conflict was also significantly and inversely related to all four

4   dimensions of cohesion: *ATG-T* ($r = -.201$, $p < .01$), *GI-T* ($r = -.282$, $p < .01$), *ATG-S* ($r =$

5    $-.180$, $p < .01$), and *GI-S* ($r = -.181$, $p < .01$). Thus, higher perceptions of task and social

6   intra-group conflict were associated with lower levels of task and social cohesion.

7   The second test of convergent validity involved an examination of the

8   relationships between conflict (task and social) and satisfaction (team integration and

9   team performance). It was hypothesized that both types of intra-group conflict would be

10   significantly and negatively related to both measures of satisfaction. Results supported

11   the hypothesis; the task dimension was significantly and negatively related to satisfaction

12   with *team integration* ($r = -.373$, $p < .01$) and *team performance* ($r = -.355$, $p < .01$).

13   Likewise, the social dimension was significantly and negatively related to satisfaction

14   with *team integration* ($r = -.266$, $p < .01$) and *team performance* ($r = -.276$, $p < .01$).

15   Thus, higher perceptions of task and social intra-group conflict were associated with

16   lower levels of satisfaction with team integration and team performance.

17   **Discriminant Validity**

18   The assessment of the differences between relationships for both dimensions of

19   intra-group conflict (task and social) and passion (harmonious and obsessive) served as

20   support for discriminant validity. It was hypothesized that intra-group conflict would

21   have a significant negative relationship with harmonious passion, and a significant

22   positive relationship with obsessive passion. Likewise it was hypothesized that social

23   conflict would have a stronger relationship to obsessive passion compared to task

1   conflict. Results provided only partial support for these hypotheses. Specifically, task ($r =$

2   -.219, $p < .01$) and social ($r = -.210$, $p < .01$) intra-group conflict were both significantly

3   and inversely related with harmonious passion; however no significant relationships were

4   demonstrated with obsessive passion (task: $r = .042$, $p > .05$; social: $r = .070$, $p > .05$).

5   **Known-Group Difference Validity**

6   The first known-group difference validity test involved team tenure as the

7   grouping variable and task and social intra-group conflict as the independent variables. It

8   was hypothesized that athletes with less tenure would have greater perceptions of both

9   forms of intra-group conflict. Results supported this hypothesis (Wilks' $\lambda = .96$, $\chi^2 (2) =$

10   12.55, $p = .004$). The canonical correlation was .33 and the standardized canonical

11   discriminant function coefficients were .51 (task) and 1.12 (social). The functions at

12   group centroids were .20 for $\leq$ 1-year tenure and -.25 for $\geq$ 2-year tenure. A total of

13   57.7% of original grouped cases were classified correctly. As indicated above, those

14   athletes with less tenure experienced more task and social conflict ($M = 3.60$ and 3.19

15   respectively) than athletes with longer tenure ($M = 3.18$ and 2.37 respectively).

16   The second known-group difference test used sport type (individual vs. team) as

17   the grouping variable and task and social intra-group conflict as the independent

18   variables. It was hypothesized that athletes participating in team sports would experience

19   more task conflict but less social conflict than athletes participating in individual sports.

20   Results provided support for the hypothesis (Wilks' $\lambda = .96$, $\chi^2 (2) = 11.19$, $p = .004$). The

21   canonical correlation was .20, the standardized canonical discriminant function

22   coefficients were 1.19 (task) and -1.10 (social), and the functions at group centroids were

23   .10 for team sport and -.36 for individual sport. A total of 54.4% of original grouped

1   cases were classified correctly. As hypothesized, those athletes in team sports

2   experienced more task conflict ($M = 3.43$) than those athletes in individual sports ($M =$

3   3.05), whereas those in individual sports experienced more social conflict ($M = 3.11$) than

4   those in team sports ($M = 2.83$).

5   **Discussion**

6   The purpose of the present study was to develop and validate a conceptually and

7   psychometrically sound intra-group conflict questionnaire for sport. The overall process

8   followed previous protocols of questionnaire development in group dynamics research (e.g.,

9   Carron et al., 1985; Eys et al., 2009; Martin et al., 2012). That is, three phases were undertaken

10 including a qualitative phase, an item generation/content and factorial validity phase, and a

11 construct validity phase. The resulting product is the GCQ—a questionnaire that contains 14-

12 items measuring two dimensions of intra-group conflict: task and social. The first point of

13 discussion relates to the research protocol and specifically pertains to the vigor of the

14 questionnaire development process.

15   As mentioned, the process we used followed other similar protocols (e.g., Carron et al.,

16 1985; Martin et al., 2012) as well as the recommendations from measurement experts (e.g., Dunn

17 et al., 1999; Tenenbaum et al., 2012). A conceptual model and definition initially advanced by

18 Barki and Hartwick (2004) were established as the starting point—"theory provides a framework

19 for starting a process" (Tenenbaum et al., 2012, p. 4). Another common step when developing

20 measures is to define the construct being measured (Tenenbaum et al., 2012). The definition

21 gave meaning to the construct in which we were interested and our qualitative investigation

22 further supported the theory and definition of intra-group conflict that was adopted. A content

23 validity stage—one that is often overlooked in the questionnaire development process (Dunn et

al., 1999)—followed. The importance of the proper execution of this phase cannot be overstated;

"a typical psychological measure involves extensive literature review and expert judgment"

(Tenenbaum et al., 2012, p. 4). As the development of the GCQ adhered to these

recommendations, the content validity of the established items was supported.

With regard to the factorial validity of the GCQ, results from the initial tests were

promising. A proposed model is deemed to be valid when: (a) items targeting a specific factor

have high factor loadings and (b) the correlations between the factors are not excessively high

(Kline, 2011). Psychometric properties of the GCQ demonstrated initial support for the final 14-

item version and Cronbach's alpha (Cronbach, 1951) internal consistency scores of both

subscales were excellent (i.e., $\alpha \geq .90$). In addition, the CFA conducted in Phase 2 produced a

moderate to strong inter-factor correlation ($\varphi = .74$) between the task and social dimensions. That

is, the two types of intra-group conflict are moderately related—a finding that is consistent with

previous research (e.g., De Dreu & Weingart, 2003). The strength of this relationship was also

not surprising considering it is consistent with a number of previous studies (e.g., $r = .81$; Jehn,

& Mannix, 2001). Furthermore, although the relationship was moderate to strong, the dimensions

are considered unique as it was below .90 (Kline, 2011). As for model fit, the fit indices for the

CFI, RMSEA, and SRMR yielded acceptable values. In terms of factor loadings, items loaded

strongly on the appropriate dimension exceeding .70 with the exception of one item (which was

above .60). Taken as a whole, our results suggest that the GCQ is an excellent representation of

the construct (e.g., Comrey & Lee, 1992).

With regard to the CFA in Phase 3, all factor loadings with the exception of two

items were above .70 (rated as excellent by Comrey & Lee, 1992) with the remaining two

items above .60 (rated as very good by Comrey & Lee, 1992). The inter-factor correlation

1   ($\varphi = .65$) was below the .90 suggested threshold, which indicated that the two dimensions

2   were related but distinct (Kline, 2011). Likewise, the fit indices for the CFI, RMSEA, and

3   SRMR indicated reasonable to adequate model fit. In this regard, these results also

4   contributed to the suggestion that the GCQ could be used with confidence to accurately

5   assess intra-group conflict in a sport context. Validity testing is however an ongoing

6   process and future research should strive to further test its validity in similar and

7   dissimilar populations.

8   In terms of convergent validity, two relationships were tested: intra-group

9   conflict-cohesion and intra-group conflict-satisfaction. Significant inverse relationships

10 were found in both analyses, providing support for convergent validity. Our results are

11 consistent with previous research (e.g., satisfaction, De Dreu & Weingart, 2003;

12 cohesion, Sullivan & Feltz, 2001) and were therefore not surprising. They are however

13 promising in terms of the utility of the GCQ in sport.

14   Another point of discussion pertains to the partial support of discriminant validity.

15 Given the significant inverse relationships between intra-group conflict (task and social)

16 and harmonious passion, it was somewhat surprising to find no significant relationships

17 with obsessive passion. Previous research has offered support for the inverse relationship

18 between harmonious passion and conflict. For example, Phillipe et al. (2010) found that

19 harmonious passion positively predicted higher quality interpersonal relationships

20 whereas obsessive passion predicted more negative emotions in these relationships. As

21 such, it would make sense that those who are harmoniously passionate within a specific

22 context experience less intra-group conflict. On the other hand, one would also surmise

23 that those who are obsessively passionate would experience greater intra-group conflict.

1   A more in depth look at previous passion research may offer support for this

2   result (i.e., no relationship with obsessive passion). For example, Lafrenière, Jowett,

3   Vallerand, Donahue, and Lorimer (2008) found harmonious passion to be positively

4   related to high quality coach-athlete relationships whereas obsessive passion was

5   generally unrelated to the quality of the relationship. Similarly, Lafrenière, Jowett,

6   Vallerand, and Carbonneau (2011) found that harmonious passion indirectly predicted

7   high quality coach-athlete relationships through autonomy supportive behaviors, whereas

8   obsessive passion predicted controlling coaching behaviors, but did not predict the

9   quality of the coach-athlete relationship. Based on these results, obsessive passion is

10   often unrelated to certain group relationship variables. Interestingly however, Phillipe et

11   al. (2010) found that negative emotions (a component of intra-group conflict)

12   significantly mediated the link between obsessive passion and the quality of interpersonal

13   relationships. Perhaps then, intra-group conflict may serve as a mediator to obsessive

14   passion with factors such as relationship quality—a worthwhile endeavour for future

15   research to investigate.

16   Pertaining to the known-group difference validity tests, both tests involving team

17   tenure and sport type as the grouping variables supported the proposed hypotheses. In

18   terms of team tenure, athletes with less tenure perceived more intra-group conflict than

19   those with greater tenure. Results are also supported in the group development literature

20   that suggests newcomers to a team may go through a *storming* stage (e.g., Tuckman,

21   1965), which involves adjusting to the team norms, competing for position, and

22   establishing themselves within the team. From a practical perspective, team building

23   interventions in early season could help manage potential intra-group conflict situations

1   experienced during group development. Likewise coaches acknowledging the initial

2   challenges of group development process may look to ensure athlete roles are clarified

3   and team norms are outlined from the group's inception.

4   With regard to sport type, an interesting discrepancy was supported. Specifically,

5   team sport athletes perceived greater amounts of task intra-group conflict whereas

6   individual sport athletes perceived more social intra-group conflict. In team sports,

7   athletes are consistently required to strategize, plan, and work together to achieve

8   common goals. It is not surprising then, that in comparison to individual sports—where

9   athletes do not experience the same amount of interdependence—greater task conflict

10   emerges. On the other hand, individual sport athletes may not have the same

11   opportunities to form strong relationships as do team sport athletes, simply by virtue of

12   the limited amount of time spent together. As such, social conflict may be more likely to

13   arise in an individual sport if athletes aren't as familiar with teammates and are not as

14   used to interacting with each other.

15   Previous work supported the importance of understanding teammate preferences

16   in individual sport and how these can reduce intra-group conflict (Beauchamp, Lothian,

17   & Timson, 2008). In fact, after a team building intervention focusing on cohesion, track

18   and field athletes reported that intra-group conflict was reduced (Beauchamp et al.,

19   2008). It would seem important then for individual athletes to make efforts to get to know

20   their teammates. Building on this, the potential practical implications emanating from the

21   current research might be useful in group assessment and formation. Similar team

22   building protocols (e.g., Carron & Spink, 1993) that are theory driven and directly target

23   intra-group conflict could be implemented, with the use of the new measure as one way

to assess its effectiveness. Likewise through use of the new measure, the prevalence and

magnitude of conflict can be assessed, with problem areas identified and targeted for

intervention. Likewise, further empirical work could aim to assess conflict longitudinally,

test for mediational relationships, and compare and contrast the intra-group conflict

experiences of individual and team sport athletes.

Overall, in terms of known-group difference, results have provided some initial

support for this type of validity for the GCQ, finding significant differences in the two

tests conducted. With that, we can suggest some initial support of known-group

difference validity for the two grouping variables examined (team tenure and sport type).

However, these are just two of many potential grouping variables in sport and further

assessments of this type of validity with other group variables are warranted.

The development and advancement of research protocols yields new findings that

warrant the refinement and evolution of scientific methodological practices. The

development and initial validation of the GCQ has provided an opportunity to advance

knowledge pertaining to intra-group conflict by further examining the complex

relationships between conflict and other group constructs. The initial support for the

validity of the GCQ is promising, and as such, researchers should utilise the instrument

for further investigations and can be confident in the results obtained from its use.

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Table 1

Descriptive Statistics

Variable	Mean	SD	α	R	Skewness	Kurtosis
Task Conflict (25 items)	3.68	1.62	.94	.76	.39	-.61
Task Conflict (7 items)	3.20	1.86	.92	.74	.81	-.23
Social Conflict (10 items)	2.96	1.64	.93	.76	.75	-.36
Social Conflict (7 items)	2.90	1.74	.92	.74	.81	-.34

Note. N = 437; Conflict measured on 1-9 Scale; r significant at *p* = .01

Table 2

Factor Loading, Means, and Standard Deviations for 25 item CFA

Item #	Task Conflict	Social Conflict	Mean	Standard Deviation
~~1~~	~~.582~~		~~4.17~~	~~2.20~~
~~2~~	~~.591~~		~~4.16~~	~~2.14~~
~~3~~	~~.585~~		~~4.80~~	~~2.26~~
4	.641		5.18	2.29
~~5~~	~~.641~~		~~4.37~~	~~2.41~~
~~6~~	~~.630~~		~~2.07~~	~~1.79~~
7	.800		3.25	2.37
8	.802		3.85	2.47
9	.752		2.38	1.98
10	.834		3.01	2.26
11	.845		3.33	2.45
~~12~~	~~.559~~		~~3.91~~	~~2.38~~
13	.741		2.53	1.98
~~14~~	~~.608~~		~~4.06~~	~~2.36~~
15	.715		4.05	2.25
16		.732	2.72	2.02
17		.783	3.22	2.29
18		.797	2.98	2.25
19		.830	3.32	2.26
20		.828	3.23	2.29
~~21~~		~~.646~~	~~3.83~~	~~2.53~~
~~22~~		~~.677~~	~~3.40~~	~~2.23~~
23		.804	2.88	2.03
~~24~~		~~.674~~	~~2.05~~	~~1.58~~
25		.726	1.94	1.60

Note. N = 437; Conflict measured on 1-9 Scale; All factor loadings significant at *p* = .00.

Table 3

Factor loadings, Means, and Standard Deviations for 14 item CFA

Item #	Task Conflict	Social Conflict	Mean	Standard Deviation
7	.790		3.25	2.37
8	.805		3.85	2.47
9	.804		2.38	1.98
10	.893		3.01	2.26
11	.889		3.33	2.45
13	.737		2.53	1.98
15	.641		4.05	2.25
16		.747	2.72	2.02
17		.813	3.22	2.29
18		.809	2.98	2.25
19		.842	3.32	2.26
20		.813	3.23	2.29
23		.783	2.88	2.03
25		.711	1.94	1.60

Note. N = 437; Conflict measured on 1-9 Scale; All factor loadings significant at *p* = .00.

Table 4

Correlation Matrix of the final 14-item GCQ

Item	7	8	9	10	11	13	15	16	17	18	19	20	23	25
7	-													
8	.694	-												
9	.656	.652	-											
10	.671	.704	.729	-										
11	.683	.710	.709	.826	-									
13	.579	.526	.590	.664	.654	-								
15	.561	.561	.471	.525	.548	.522	-							
16	.416	.468	.421	.466	.470	.462	.407	-						
17	.491	.574	.491	.556	.547	.509	.452	.687	-					
18	.430	.460	.484	.559	.524	.521	.456	.601	.668	-				
19	.488	.510	.484	.523	.534	.496	.471	.661	.698	.737	-			
20	.597	.565	.531	.640	.595	.496	.528	.563	.608	.652	.693	-		
23	.551	.546	.546	.613	.568	.572	.452	.565	.590	.590	.617	.695	-	
25	.506	.448	.478	.535	.499	.461	.313	.496	.599	.562	.560	.557	.636	-

Note. N = 437; All inter-item correlations significant at *p* < .01.

Table 5

Items in the Group Conflict Questionnaire

Task Conflict Items

1. ~~Members of our team have heated disagreements about each other's personal commitment~~

2. ~~Members of our team have emotional arguments about how to go about achieving team goals~~

3. ~~Members of our team have emotional arguments in competitive situations over what's best for the team~~

4. ~~Members of our team have emotional disagreements when things don't go the way they'd like~~

5. ~~Arguments get very heated between teammates who have differing viewpoints about what should be done during competition~~

6. ~~Members of our team sabotage each other's performance over emotional disagreements~~

7. The team's ability to be successful is jeopardized because of heated disagreements during competition

8. Strong disagreements during practice between members of our team disrupt our progress towards achieving team goals

9. It is nearly impossible to function effectively because of the intensity of the disagreements between members of our team during practices

10. The extreme animosity associated with the disagreements among members of our team affects our performance

11. The anger associated with the disagreements among members of our team affects our performance

12. ~~Members of our team who are competing for the same position are often resentful of each other~~

13. Members of our team have intense disagreements to the point of dysfunction

14. ~~Member of our team have emotional disagreements about their respective playing time~~

15. There is tension among members of our team over disagreements about performance expectations

Social Conflict Items

16. Personal friction among members of our team leads to angry confrontations at social gatherings

17. The heated disagreements among members of our team in social situations become personal

18. Members of our team stop speaking to each other over personal disagreements in social situations

19. Emotions run high in social situations about personal differences brought to light

20. The negativity from personal disagreements makes it difficult for members of our team to be friends

21. ~~The presence of cliques on our team leads teammates to purposely avoid each other~~

22. ~~As a result of the tension surrounding disagreements, members of our team don't make an effort to get together outside of practices and competitions~~

23. Members of our team have negative emotional confrontations that hinder the enjoyment of social events

24. ~~Members of our team often get into heated disruptive arguments at team parties~~

25. Disagreements at social gatherings escalate quickly that damages and tears our team apart

Table 6

Descriptive Statistics for Conflict, Cohesion, Passion, and Satisfaction

	Mean	SD	Skewness	Kurtosis	α
Task Conflict	3.35	1.64	.47	-.64	.90
Social Conflict	2.90	1.67	.69	-.54	.92
Attraction to Group-Task	7.14	1.37	-1.25	2.02	.76
Attraction to Group-Social	7.01	1.46	-.79	.30	.85
Group Integration-Task	6.46	1.31	-.40	-.17	.81
Group Integration-Social	6.15	1.53	-.09	-.74	.83
Harmonious Passion	5.76	.88	-.98	1.31	.83
Obsessive Passion	3.89	1.56	.03	-.88	.94
Team Integration	5.28	1.09	-1.06	1.20	.90
Team Performance	5.33	1.12	-1.03	1.07	.83

Note. N = 305; Conflict measured on 1-9 Scale; Cohesion Measured on 1-9 scale; Passion measured on 1-7 scale; Satisfaction measured on 1-7 scale.

Table 7

Bivariate Correlations for Conflict, Cohesion, Passion, and Satisfaction

	1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*
1. Task Conflict	-								
2. Social Conflict	*.610***	-							
3.Attraction to Group Task	*-.314***	*-.201***	-						
4. Attraction to Group Social	*-.267***	*-.180***	*.600***	-					
5. Group Integration Task	*-.342***	*-.282***	*.653***	*.511***	-				
6. Group Integration Social	*-.254***	*-.181***	*.458***	*.755***	*.608***	-			
7.Harmonious Passion	*-.219***	*-.210***	*.508***	*.527***	*.421***	*.401***	-		
8. Obsessive Passion	*.042*	*.070*	*.148***	*.215***	*.130**	*.262***	*.439***	-	
9. Team Integration	*-.373***	*-.266***	*.671***	*.520***	*.734***	*.481***	*.370***	*.072*	-
10. Team Performance	*-.355***	*-.276***	*.619***	*.455***	*.600***	*.393***	*.336***	*.005*	*.727***

Note. N = 305; **p < .01; *p < .05

Table 8

Inter-item correlation matrix for the GCQ

Item	7	8	9	10	11	13	15	16	17	18	19	20	23	25
7	-													
8	.532	-												
9	.540	.651	-											
10	.608	.643	.716	-										
11	.595	.581	.555	.741	-									
13	.556	.447	.541	.541	.602	-								
15	.544	.426	.410	.507	.543	.545	-							
16	.320	.324	.486	.343	.323	.461	.381	-						
17	.366	.433	.551	.411	.416	.468	.390	.707	-					
18	.319	.338	.371	.309	.307	.417	.300	.583	.649	-				
19	.313	.437	.438	.384	.402	.437	.364	.596	.710	.752	-			
20	.404	.448	.463	.498	.358	.422	.365	.583	.610	.657	.691	-		
23	.471	.439	.493	.467	.401	.501	.436	.579	.584	.608	.627	.711	-	
25	.364	.358	.404	.318	.398	.511	.358	.511	.548	.451	.512	.539	.663	-

Note. N = 305; All inter-item correlations significant at *p* < .01.

Table 9

Item Factor loadings, Item Means, and Standard Deviations for the GCQ

Item #	*Task Conflict*	*Social Conflict*	*Mean*	*Standard Deviation*
7	.731		3.52	2.21
8	.740		3.77	2.30
9	.782		2.39	1.81
10	.855		3.17	2.11
11	.808		3.62	2.22
13	.706		2.59	1.74
15	.637		4.37	2.10
16		.750	2.68	1.83
17		.815	3.28	2.22
18		.795	3.03	2.27
19		.842	3.15	2.12
20		.813	3.06	2.11
23		.797	3.00	2.04
25		.671	2.08	1.68

Note. N = 305; Conflict measured on 1-9 Scale; All factor loadings significant at *p* = .00.