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EXPLORING THE EFFECT OF ATHLETE LEADERSHIP ON THE COHESION-
PERFORMANCE RELATIONSHIP

by
Sonya M. Spalding

A Thesis
Submitted to the Faculty of Graduate Studies
through the Faculty of Human Kinetics
in Partial Fulfillment of the Requirements for
the Degree of Master of Human Kinetics at the
University of Windsor

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ABSTRACT

The purpose of the present study was to examine the effect of athlete leader behaviours (formal and informal) on cohesion and performance. The participants were 190 athletes competing at the varsity level. Each participant completed the Group Environment Questionnaire (Carron et al., 1985), the Leadership Scale for Sports (Chelladurai & Selah, 1980), and a performance measure. The results indicated that two informal athlete leader behaviours moderated the cohesion-performance relationship. It was also found that both formal and informal athlete leadership behaviours of Training and Instruction were related to performance. Finally, the formal athlete leader behaviours of Democratic Behaviour, Positive Feedback, Social Support, and Training and Instruction were related with cohesion. While the informal athlete leader behaviours of Social Support and Training and Instruction were associated with cohesion. Overall, coaches and sport psychology consultants should emphasize the development of athlete leader behaviours given their relation to cohesion and performance.

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RESEARCH ARTICLE

Introduction

Cohesion is defined as “the dynamic process that is reflected in the tendency for a group to stick together and remain united in pursuit of its instrumental objectives and/or for the satisfaction of member affective needs” (Carron, Brawley, & Widmeyer, 1998, p. 213). There is a general belief that greater team cohesiveness is related to better team performance (Hardy, Eys, & Carron, 2005). In fact, Carron, Colman, Wheeler, and Stevens (2002) found in their meta-analysis on 1,044 sport teams and 9,988 athletes that there was a moderate to large effect size ($ES = .66$) in the cohesion-performance relationship. Given the strength of the cohesion-performance relationship, it is not surprising that researchers have examined a variety of variables in an attempt to better understand the cohesion-performance relationship (Carron et al., 2002).

One conceptual model that highlights the variables hypothesized to influence the cohesion-performance relationship is Carron’s (1982) conceptual model for the study of cohesion (see Figure 1). The model is a linear framework comprised of inputs, throughputs, and consequences. The inputs are viewed as the antecedents of the cohesion-performance relationship and are comprised of four factors. The four factors that would presumably have an affect on the cohesion-performance relationship include environmental, team, personal, and leadership factors. Environmental factors are viewed as the most general category and represent the organizational system of the group such as contractual responsibilities or organizational orientation. The team factor includes but is not limited to team norms, team roles, and collective efficacy. Personal factors refer to the individual characteristics of the team members such as individual levels of anxiety,

gender, individual satisfaction, and effort. Lastly, the leadership factor includes leader behaviours, leadership style, the coach-athlete relationship, and the coach-team relationship (Carron, 1982). The throughputs are the dimensions of cohesion. Carron, Widmeyer, and Brawley (1985) argued that cohesion should be viewed as a multidimensional construct best represented by four dimensions: Individual attractions to the group-task (ATG-T), Individual attractions to the group-social (ATG-S), Group integration-task (GI-T), and Group integration-social (GI-S). Specifically, ATG-T represents individual team member's feelings of personal involvement with the team's goals, productivity, or objectives. ATG-S represents an individual's feelings of personal interaction with group members and the degree of acceptance felt within the group. GI-T represents an individual team member's feelings about the similarity, closeness, and bonding within the team as a whole around the group objectives. Lastly, GI-S represents an individual team member's feelings about the similarity, closeness, and bonding within the team as a whole around the group's social function. The final component of the conceptual model is the consequences of cohesion. Some of the consequences of cohesion include but are not limited to aspects such as performance, satisfaction, and collective efficacy.

In addition to examining the strength of the cohesion-performance relationship, Carron et al.'s (2002) meta-analysis also examined several of the factors from Carron's (1982) model in order to determine whether these factors moderated the cohesion-performance relationship. In general, a moderator is a variable that alters the direction or strength of the relation between a predictor and an outcome variable (Baron & Kenny, 1986). Specifically, for the environmental factor, Carron et al. examined the moderating

effect of sport type (i.e., interactive versus coactive sport teams) on the cohesion-performance relationship. The results indicated that coactive sport teams ($ES = .77$) experienced a stronger cohesion-performance relationship than interactive sport teams ($ES = .66$), but the differences between them were not statistically significant. Therefore, sport type was not a moderator of the cohesion-performance relationship. For the team factor, Carron et al. examined the influence of self-report versus actual performance behaviour (e.g., winning percentage) and found that there were no differences between self-reports of performance ($ES = .58$) and actual performance behaviours ($ES = .69$). Finally for the personal factor, they examined level of competition and gender on the cohesion-performance relationship. As for level of competition, they found no significant difference amongst professional ($ES = .20$), club ($ES = .23$), varsity ($ES = .55$), high school ($ES = .83$), and laboratory groups ($ES = .74$). However, there was a significant difference between female ($ES = .95$) and male ($ES = .56$) athletes; indicating that gender moderated the cohesion-performance relationship.

In summary, the Carron et al. (2002) meta-analysis tested three of the four factors from Carron's (1982) conceptual framework. The one factor that was not examined was leadership. Although all of the factors in Carron's (1982) conceptual framework are important, it has been suggested that the leadership factor may be the most important factor since it is the factor most closely related to group effectiveness (Carron, Hausenblas, & Eys, 2005). Thus, the proposed study will attempt to fill this gap in the knowledge base by examining the leadership factor of athlete leadership.

Athlete leadership is defined as "an athlete occupying a formal or informal role within a team who influences a group of team members to achieve a common goal"

(Loughead, Hardy, & Eys, 2006, p. 144). As mentioned in the definition, an athlete leader occupies either a formal or informal leadership role within the team. On the one hand, a formal leader can be viewed as an individual who has been prescribed that position by the organization, the coach, or by fellow team members such as the team captain (Loughead & Hardy, 2005). On the other hand, an informal leader can be viewed as a leader who emerges through the interactions that occur amongst team members such as a veteran player or the team clown (Mabry & Barnes, 1980).

To date, research examining athlete leader behaviours have operationalized this construct using the Leadership Scale for Sports (LSS; Chelladurai & Saleh, 1980). This is a 40 item inventory that measures five dimensions of leadership behaviour: Autocratic Behaviour, Democratic Behaviour, Positive Feedback, Social Support, and Training and Instruction. Autocratic Behaviour reflects the extent to which the leader makes independent decisions and expresses his/her authority. Democratic Behaviour represents how often the leader involves team members in making decisions. Positive Feedback indicates the tendency of the leader to offer rewards and recognition to team members. Social Support refers to the degree to which the leader is involved in satisfying the interpersonal needs of group members. Finally, Training and Instruction represents the leader's behaviour of attempting to improve performance (Chelladurai, 1994).

Athlete leadership research using the LSS has compared the leadership behaviours exhibited by coaches and athlete leaders, and the athlete leadership-cohesion relationship. With regards to the different leader behaviours exhibited by coaches and athlete leaders, Loughead and Hardy (2005) surveyed 238 athletes from both independent and interdependent sport teams. They found that coaches tended to exhibit the behaviour of

Autocratic Behaviour and Training and Instruction more than athlete leaders. While, athlete leaders displayed more Democratic Behaviour, Positive Feedback, and Social Support than coaches did. Therefore, in conclusion it was suggested that coaches and athlete leaders fulfill different leadership functions within sport teams.

In terms of the athlete leadership-cohesion relationship, Vincer and Loughhead (2009) examined whether athlete leader behaviours influenced perceptions of team cohesion. Using 310 athletes (129 females and 178 males) from a variety of interdependent sport teams (e.g., ice hockey, soccer, volleyball, basketball), it was found that the athlete leadership behaviours of Social Support and Training and Instruction positively influenced all four dimensions of cohesion (ATG-T, ATG-S, GI-T, GI-S). In addition, it was found that the athlete leadership dimension of Democratic Behaviour was positively related to the cohesion dimension of ATG-T. In contrast, the athlete leadership dimension of Autocratic Behaviour was negatively related all four dimensions of cohesion. Finally, the athlete leadership behaviour of Positive Feedback was not related to any of the cohesion dimensions.

While previous research has found that athlete leaders provide different leadership behaviours than coaches (Loughhead & Hardy, 2005), and that athlete leaders influence perceptions of cohesion (Vincer & Loughhead, 2009), the literature on athlete leadership has some limitations. First, by determining whether athlete leadership moderates the cohesion-performance relationship, coaches and sport psychology consultants will have new information on the impact these individuals have on the cohesiveness and performance of their teams. Specifically, the information gained from the current study can direct coaches and sport psychologists to the specific leader behaviour to target for

intervention aimed at enhancing the cohesiveness or performance of groups. Second, despite Carron's (1982) conceptual framework proposing leadership as a factor that is hypothesized to influence the cohesion-performance relationship, no research to date has examined whether leadership (in the present study athlete leadership) moderates the cohesion-performance relationship. To date the majority of previous sport leadership research has focused on coaching behaviours (see Chelladurai, 1994; Chelladurai & Riemer, 1998 for reviews); therefore, athlete leadership is relatively understudied. Thus, one intention of the study was to expand the athlete leadership knowledge base.

Using a cross-sectional design, the first purpose of the current study was to examine athlete leadership in relation to both performance and cohesion. The second purpose of the present study was to examine whether athlete leadership served as a moderator in the cohesion-performance relationship. Although, no research has yet to examine the athlete leadership-performance relationship, it was hypothesized that both formal and informal athlete leadership behaviours of Training and Instruction, Social Support, Democratic Behaviour, and Positive Feedback would be positively related to performance, while Autocratic Behaviour would be negatively related to performance. Consistent with recent theorizing (Chelladurai, 2007) and results from Alfermann, Lee, and Wurth, (2005) and Vincer and Loughhead (2009), it was hypothesized that both formal and informal athlete leadership behaviours of Democratic Behaviour, Positive Feedback, Social Support, and Training and Instruction would be positively related to all four dimensions of cohesion. In contrast, the athlete leadership behaviour of Autocratic Behaviour would be negatively related to all four dimensions of cohesion.

Method

Participants

The current study included 190 athletes ($n = 105$ male, $n = 85$ female) from fifteen teams playing at the university ($n = 109$ athletes) and college ($n = 81$ athletes) levels of competition. The athletes competed in the sports of basketball ($n = 68$), volleyball ($n = 61$), and ice hockey ($n = 61$). The mean age of the participants was 20.82 years ($SD = 2.24$). The athletes had been, on average, playing with their current team for 1.65 seasons ($SD = 1.40$) and had 11.63 years ($SD = 4.93$) playing in their respective sports. It should be noted that fifteen athletes declined to complete the questionnaires, thus leaving a response rate of 86.4%.

Measures

Cohesion. Perceptions of cohesion were measured using the Group Environment Questionnaire (GEQ; Carron et al., 1985) (Appendix A). The GEQ is an 18-item inventory that assesses four dimensions of cohesion: ATG-T, ATG-S, GI-T, and GI-S. ATG-T is represented by four items, which assess an individual's feelings towards his/her personal involvement with the group's tasks, goals, and productivity. An example item is "This team gives me enough opportunities to improve my personal performance". ATG-S consists of five items and assesses an individual's feelings toward the acceptance and social interactions experienced within the group. An example item is "Some of my best friends are on this team". GI-T reflects an individual's perception of the group's closeness, similarity, and bonding around group tasks and is represented by five items. An example item is "Our team is united in trying to reach its goals for performance". Finally, GI-S is comprised of four items that reflects an individual's perception of the group's closeness, bonding, and similarity around the group as a social unit. An example

item is “Members of our team stick together outside of practices and games”. Previous research utilizing the GEQ has displayed acceptable internal consistencies (Patterson, Carron, & Loughead, 2005). These authors found the following internal consistency values: ATG-T, $\alpha = .75$; ATG-S, $\alpha = .70$; GI-T, $\alpha = .72$; and GI-S, $\alpha = .76$. In addition, the GEQ has demonstrated face (Carron et al.), predictive (Paskevich, Estabrooks, Brawley, & Carron, 2001), concurrent (Paskevich, et al.), and factorial validity (Carron et al.; Paskevich et al.). All items are rated on a 9 point Likert-type scale with the extremes of 1 (strongly disagree) and 9 (strongly agree). Thus, higher scores represent stronger perceptions of cohesion.

Athlete leadership behaviours. The behaviours of athlete leaders (both formal and informal) were examined using a modified version of the 40-item Leadership Scale for Sports (LLS; Chelladurai & Saleh, 1980) (Appendix B). The modified version assesses the same five dimensions as the original version: Autocratic Behaviour, Democratic Behaviour, Positive Feedback, Social Support, and Training and Instruction. However, the modified version assesses both formal and informal athlete leader behaviours and contains a different stem than the original version. In the original the stem read “My coach” whereas the athlete leader version reads “The athlete leaders on the team”. Specifically, Autocratic Behaviour consists of five items that represents the tendency of the leader to make decisions independently. An example item is “Refuse to compromise a point”. Democratic Behaviour represents the extent a leader allows participation in decision making and is comprised of nine items. An example item for Democratic Behaviour is “Ask for the opinion of team members on strategies for specific competitions”. Positive Feedback consists of five items and reflects the tendency of a

leader to reinforce behaviour by recognizing and rewarding good performance. A Positive Feedback item includes “Complements a team member for his/her performance in front of others”. Social Support is comprised of eight items and reflects the degree to which a leader shows concern for his/her teammates’ welfare. An example item is “Encourage close and informal relationships with team members”. Training and Instruction is represented by 13 items that reflect the leader’s behaviour aimed at improving athlete performances by emphasizing hard work. An example Training and Instruction item is “Pay special attention to correcting team members’ mistakes”. Each item is rated on a five point Likert-type scale, with the anchors of 1 (never) and 5 (always). Thus, higher scores represent stronger perceptions of that leader behaviour. Each dimension of the revised athlete leadership version has displayed adequate internal consistencies in previous research (Loughead & Hardy, 2005; Paradis & Loughead, 2009; Vincer & Loughead, 2009). For instance, the internal consistency values from Loughead and Hardy were: Autocratic Behavior, $\alpha = .75$; Democratic Behavior, $\alpha = .81$; Positive Feedback, $\alpha = .85$; Social Support, $\alpha = .86$; and Training and Instruction, $\alpha = .87$. In addition, confirmatory factor analysis were conducted by both Paradis and Loughead (2009) and Vincer and Loughead (2009) to determine the factorial validity of the athlete leadership version of the LSS. Results showed that the five-factor model provided a reasonably good fit (CFI= .99, RMSEA= .05, TLI= .98; Vincer & Loughead, 2009).

Performance. Performance was operationalized using two items from Chang and Bordia (2001) and 13 items from Alper, Tjosvold, and Law (1998) that have been previously used in organizational psychology (Appendix C). The resulting 15 items were adapted from their original version to be sport specific where an example item is “Team

members are committed to producing quality performances”. All items were assessed on a 10 cm visual analog scale ranging from 0 (strongly disagree) to 100 (strongly agree). In short, a visual analog scale was chosen for the current study as it has been found to be sensitive and reproducible for subjective perspectives (Grant et al., 1999) such as performance. Previous research has found that these two inventories had acceptable internal consistencies values of greater than .70 based on recommendations from Nunnally and Bernstein (1994). Specifically the internal consistency scores were .73 from Chang and Bordia, and .97 from Alper et al.

Given that the two measures were adopted from different disciplines and slightly modified from the original version, a panel of eight experts reviewed the measure and provided feedback to ensure content relevance and appropriateness of the items, thus providing evidence of face validity. In addition, an Exploratory Factor Analysis (EFA) using principal components as the extraction method was conducted based on the recommendations of Stevens (2009). Stevens noted that an EFA is appropriate when establishing the number of underlying components by allowing the items to freely associate with all components. In addition, the current study implemented a number of strategies based on the criteria and considerations communicated by Stevens with regards to the appropriateness of the items. Specifically, the current study used the combination of (a) retaining components whose eigenvalues are greater than a critical value of 1 (Kaiser, 1960), and (b) examining the graphical representation of the eigenvalues using scree plots (Cattell, 1966). The use of these two strategies was favoured when deciding how many components to retain, as Stevens stated that using the Kaiser criterion alone can “lead to retaining factors that may have no practical significance” (Stevens, 2009, p.

328). In addition, EFA often yields components that are difficult to interpret; thus, an orthogonal rotation (varimax; Kaiser, 1960) was applied to assist in the interpretation of the components.

Lastly, the issues of sample size and coefficient criterion were taken into consideration when addressing component interpretation. Although there is no agreed upon standard, Stevens (2009) recommended that the traditional use of the .30 cut-off for the coefficient criterion should be discarded, and a more conservative cut-off that takes sample size into account be utilized. Stevens provided a table (p. 332) of the critical values for a correlation coefficient ($\alpha = .01$; two-tailed) based on sample size and recommends that these values be doubled. Therefore, given the sample size of the current analysis (i.e., 190 participants), the doubled criterion value for assessing component coefficients was equal to .364.

The results of the EFA demonstrated that two principal components were produced which accounted for 74.70% of the total variance. The first component contained five items that were related to aspects of Performance Achievement in that all items reflected perceived team members feelings towards the team's productivity. The second component contained 10 items that were related to Performance Commitment. These items reflected the degree to which team members were persistent and motivated to performing optimally. Finally, internal consistency values were acceptable for both Performance Achievement ($\alpha = .91$) and Performance Commitment ($\alpha = .96$). Therefore, performance was operationalized as Performance Achievement and Performance Commitment in subsequent analyses.

Procedure

Ethical approval was obtained from the University of Windsor's Research Ethic Board. Once obtained, an internet search was conducted to find eligible teams and contact information (i.e. phone number) for the coaches. The coaches were then contacted via telephone to outline the nature of the study and request permission to administer the questionnaire package to their players. Once approval was obtained from the coaches the athletes were given a full description of the nature of the study and invited to participate in the study. Informed consent was implied by completion and return of the questionnaire package. Each team member completed a questionnaire package containing the GEQ (Carron et al., 1985), the athlete leadership version of the LSS (Chelladurai & Saleh, 1980), and the subjective performance measure (Alper et al., 1998; Chang & Bordia, 2001) after a practice session. In addition, all participants were given the opportunity to win an MP3 player as an added incentive for the athletes to participate.

Results

Descriptive Statistics

Means, standard deviations, and internal consistency scores for the four dimensions of cohesion, the five athlete leadership behaviours (formal and informal athlete leadership), and the two dimensions of performance are presented in Table 1. In general, the four dimensions of cohesion had high values with the lowest score being ATG-T ($M = 6.85$) out of a 9-point scale. Similarly, athlete leadership behaviours were also high with most of the dimensions being scored over three on a 5-point scale. Finally, the performance ratings were moderate with values of 58.50 and 68.17 for Performance Achievement and Performance Commitment respectively.

The results for the internal consistency values indicated that most of the variables had a Cronbach alpha greater than .70 (Nunnally & Bernstein, 1994). It should be noted that the cohesion dimension of ATG-T had an original internal consistency value of .60. However with the removal of one item (i.e., I am happy with the amount of playing time I get), the internal consistency score increased to a value of .71. Therefore, the decision was made to delete this item.

The bivariate correlations showed a general pattern of positive relationships amongst cohesion, athlete leadership behaviours, and performance as displayed in Table 2 except for the leadership dimension of Autocratic Behaviour which was negatively related for the most part to cohesion and performance (Tabachnick & Fidell, 2007). In addition, multicollinearity was examined using the variance inflation factor (VIF). All VIF values fell below the recommended value of 10; thus there was no evidence of multicollinearity (Myers, 1990).

Preliminary Analyses

Prior to conducting tests for moderation, the assumptions regarding multiple regression were examined (Tabachnick & Fidell, 2007). First, the data were analyzed to identify any patterns of missing data, and the results revealed that missing values were scattered at random. Potential outliers were examined using box plots and Mahalanobis distance. These tests resulted in three variables being transformed (i.e., the formal athlete leadership dimension of Autocratic Behaviour, and the informal athlete leadership dimensions of Autocratic Behaviour and Democratic Behaviour) in order to bring outliers closer to the center of distributions of that particular variable. In addition, normality was assessed by plotting the residuals against a normal distribution line, homoscedasticity was

assessed by creating simple scatter plots of the residual against the predicted value, and linearity was assessed by plotting the residuals against each independent variable. All plots observed appeared to be normal and subsequently all assumptions of multiple regressions were met.

Relationship Between Athlete Leadership and Performance

One of the first purposes of the present study was to examine the relationship between athlete leadership and performance. Hierarchical regressions were conducted to investigate the direct relationship between athlete leadership and performance. It was found that only the athlete leadership behaviour of Training and Instruction was related to performance. Specifically, the informal athlete leadership behaviour of Training and Instruction significantly predicted 32% of the variance in Performance Achievement, $\beta = 8.29$, Adjusted $R^2 = .08$, $F(6, 181) = 3.54$, $p < .05$, as well as 34% of the variance in Performance Commitment, $\beta = 5.68$, Adjusted $R^2 = .09$, $F(6, 181) = 3.98$, $p < .05$. In addition, the formal athlete leadership behaviour of Training and Instruction significantly predicted 32% of the variance in Performance Achievement, $\beta = 5.68$, Adjusted $R^2 = .07$, $F(6, 181) = 3.54$, $p < .05$.

Relationship Between Athlete Leadership and Cohesion

Hierarchical regressions were performed to examine the direct relationship between athlete leadership and cohesion. Each of the four dimensions of cohesion served as the dependent variables, while athlete leader behaviours served as the predictor variables. With regards to formal athlete leaders, the behaviours of Democratic Behaviour, Positive Feedback, Social Support, and Training and Instruction all presented significant relationships with performance (see Table 3). Specifically, the formal athlete

leadership behaviour of Democratic Behaviour was significantly related to all four dimensions of cohesion (ATG-T, $\beta = .30$, $F(6, 178) = 10.21$, $p < .05$; ATG-S, $\beta = .23$, $F(6, 178) = 8.34$, $p = .05$; GI-T, $\beta = .39$, $F(6, 178) = 6.02$, $p < .01$; and GI-S, $\beta = .34$, $F(6, 178) = 6.97$, $p < .05$). The formal athlete leadership behaviour of Positive Feedback was related only to the cohesion dimension of ATG-S, $\beta = .37$, $F(6, 178) = 8.34$, $p < .01$. The formal athlete leadership behaviour of Social Support was associated with both ATG-T, $\beta = .35$, $F(6, 178) = 10.21$, $p < .05$, and GI-S, $\beta = .38$, $F(6, 178) = 6.97$, $p < .01$. While the formal athlete leadership behaviour of Training and Instruction was related to both ATG-T, $\beta = .39$, $F(6, 178) = 10.21$, $p < .05$, and GI-S, $\beta = -.36$, $F(6, 178) = 6.97$, $p < .01$.

With regards to the informal athlete leader behaviours, the informal athlete leadership behaviours of Social Support and Training and Instruction displayed significant relationships with cohesion (see Table 4). In particular, the informal athlete leadership behaviour of Social Support was related to both social cohesion dimensions (i.e., ATG-S, $\beta = .32$, $F(6, 181) = 5.69$, $p < .01$, and GI-S, $\beta = .41$, $F(6, 181) = 3.91$, $p < .01$), while the informal athlete leadership behaviour of Training and Instruction was associated with both the task cohesion dimensions (i.e., ATG-T, $\beta = .71$, $F(6, 181) = 8.51$, $p < .000$, and GI-T, $\beta = .47$, $F(6, 181) = 4.63$, $p < .001$).

Athlete Leadership as a Moderator

As noted earlier, the second purpose of the current study was to examine whether athlete leadership served as a moderator in the cohesion-performance relationship. In order to examine athlete leadership as a possible moderator of the cohesion-performance relationship, the analytic framework outlined by Baron and Kenny (1986) was followed (see Figure 2). This framework has three paths that feed into the outcome variable of

performance. The first path is the influence of cohesion as a predictor (Path a), the second is the influence of formal and informal athlete leadership behaviours also as a predictor (Path b), and the interaction of these two as a moderator (Path c). Due to the finding that gender affects both cohesion (Carron et al., 2002) and leadership (Chelladurai & Saleh, 1978) it was decided to control for gender as a covariate when testing for moderation (Frazier, Tix, & Barron, 2004).

Prior to conducting tests of moderation, procedures recommended by Frazier et al. (2004) were used whereby all continuous variables (athlete leadership behaviours, cohesion, and performance) were centered. To center a variable the sample mean was subtracted from each individual score, in order to produce a revised mean of zero. This procedure was executed to prevent the general trend of high correlation between predictor (cohesion) and moderator (athlete leadership behaviours) variables, and reduce the chance of multicollinearity. Next, product terms (cohesion X athlete leadership behaviour) were created to represent the interaction between the predictor and moderator. To form the product term the centered moderator and predictor variables were multiplied.

Once the variables were centered and the product terms created, the next step involved structuring the equation to test for moderation using hierarchical multiple regression (Frazier et al., 2004; Tabachnick & Fidell, 2007). Testing for moderator effects is accomplished by entering variables into a regression equation through a series of blocks (Aiken & West, 1991; Cohen, Cohen, West, & Aiken, 2003; West, Aiken, & Krull, 1996). The first block includes any covariates. The second block includes predictor variables and the third block contains the moderator variables. The final block contains the product terms. In the present study, gender was entered into the regression model in

the first block as a covariate, cohesion was then entered into the regression model in the second block, followed by the athlete leadership behaviours (formal or informal) in the third block, and the respective interaction terms representing the product of cohesion and athlete leadership in the final block, with performance (Performance Achievement or Performance Commitment) entered as the dependent variable. It is important to note that the inspection of product terms on their own is not recommended without controlling for the effects of both the predictor and moderator variables because it would confound the results (Judd, McClelland, & Culhane, 1995).

When the tests of moderation were conducted, the results showed that two moderating effects were present. It should be noted that both of these moderating effects involved informal athlete leader behaviours. That is, none of the formal athlete leader behaviours served as a moderator in the cohesion-performance relationship. The first moderating effect showed that the interaction term for the informal athlete leader behaviour of Social Support and the cohesion dimension of GI-T was significantly related to Performance Commitment (see Table 5). The second moderating effect showed that the interaction term for the informal leader behaviour of Training and Instruction and the cohesion dimension of AGT-S was significantly related to Performance Commitment (see Table 5).

To gain greater insight into the nature of the interaction, the particular form of each significant moderator effect was inspected (Frazier et al., 2004). To do this, truly different groups for the informal athlete leadership behaviours of Social Support and Training and Instruction were created based on tertile splits. Although the use of tertile splits is a conservative approach with respect to the reduction in statistical power in

comparison to median splits, it offers the advantage of being able to argue that if differences among the dependent variable (i.e., Performance Commitment) do not exist between those extreme in their athlete leadership behaviours, they are unlikely to exist in the overall sample (Bray & Brawley, 2002). Separate independent t tests were conducted to determine whether the informal athlete leadership behaviours of Social Support and Training and Instruction groups differed. Informal athlete leaders who were classified as displaying high amounts of Social Support ($M = 4.55, SD = 0.25$) significantly differed than those using low amounts of Social Support ($M = 2.88, SD = 0.38$), $t(1, 104) = -26.87, p = .000$). Similarly, informal athlete leaders classified as displaying high Training and Instruction ($M = 4.06, SD = 0.39$) significantly differed from those classified as displaying low Training and Instruction ($M = 2.46, SD = 0.38$), $t(1, 116) = -22.62, p = .000$). Therefore, the extreme groups for both of these informal athlete leader behaviours were truly different.

Two regression analyses for each moderating effect were then conducted. For the first effect, one regression was performed on participants who perceived high Social Support and one was performed on those who perceived low Social Support from their informal athlete leaders. Performance Commitment was the dependent variable and GI-T was entered as the independent variable. The regression analysis showed significant moderator relationships were present for both the high Social Support group, $R^2 = .56, F(1, 57) = 73.75, p = .000$, and the low Social Support group, $R^2 = .16, F(1, 56) = 10.52, p = .002$. That is, the result suggests that when Social Support was high, individuals who perceived high GI-T reported higher Performance Commitment than those who perceived low GI-T. Similarly, when Social Support was low, individuals who perceived high GI-T

also reported higher Performance Commitment than those who perceived low GI-T. The difference between the high and low Social Support groups was significant. Therefore, informal athlete leaders who displayed higher levels of Social Support were associated with teammates that perceived a higher GI-T-Performance Commitment relationship.

The form of the second moderating effect was also assessed using two regression analyses. The first regression was performed on athletes who perceived their informal athlete leaders to exhibit high amounts of Training and Instruction and the second was run on those who perceived low amounts of Training and Instruction. The results demonstrated significant moderator relationships were present for both high Training and Instruction, $R^2 = .13$, $F(1, 60) = 7.98$, $p = .007$, and low Training and Instruction, $R^2 = .11$, $F(1, 55) = 7.67$, $p = .007$. Therefore, the result suggests that when Training and Instruction was high, individuals who perceived high ATG-S reported higher Performance Commitment than those who perceived low ATG-S. Similarly, when Training and Instruction was low, individuals who perceived high ATG-S also reported higher Performance Commitment than those who perceived low ATG-S. The difference between the high and low Training and Instruction groups was significant. Therefore, informal athlete leaders who displayed higher levels of Training and Instruction had teammates that perceived a higher ATG-S- Performance Commitment relationship than informal athlete leaders who displayed lower Training and Instruction leadership behaviour.

Discussion

The first purpose of the current study was to explore athlete leadership in relation to both cohesion and performance. The secondary purpose was to examine the

moderating effect of athlete leader behaviours on the cohesion-performance relationship. As far as the first purpose is concerned, the results showed that only the athlete leadership behaviour of Training and Instruction was related to the performance. As for the athlete leadership-cohesion relationship, the results showed, on the one hand, that the formal athlete leader behaviours of Democratic Behaviour, Positive Feedback, Social Support, and Training and Instruction were related to perceptions of cohesion. On the other hand, the informal athlete leader behaviours of Social Support and Training and Instruction were related to perceptions of cohesion. Insofar as the second purpose is concerned, two moderating effects were found: (a) the informal athlete leadership behaviour of Social Support moderated the GI-T – Performance Commitment relationship, and (b) the informal athlete leadership behaviour of Training and Instruction moderated the ATG-S – Performance Commitment relationship.

Relationship Between Athlete Leadership and Performance

With regards to one of first purposes, it was found that three significant relationships existed between athlete leadership behaviours and performance. Specifically, the informal athlete leader behaviour of Training and Instruction was related to both Performance Achievement and Performance Commitment, whereas, the formal athlete leadership behaviour of Training and Instruction was related to Performance Achievement. This was one of the first studies in sport psychology to examine the direct relationship between athlete leadership and performance. Due to the lack of previous research on the athlete leadership-performance relationship and the equivocal findings from the coaching literature (Garland & Barry, 1990; Turman, 2001; Weiss & Friedrichs, 1986), it is possible that only Training and Instruction has a direct influence on

Performance Achievement and Performance Commitment. Interestingly, the four formal athlete leadership behaviours that did not have an effect on performance are affective types of behaviour that could arguably be more closely associated with the social aspects of sport rather than task aspects given that Training and Instruction is a more task-oriented leadership behaviour. Considering the task-oriented nature of performance (Chang & Bordia, 2001; Mullen & Copper, 1994), the finding that only Training and Instruction was related to performance seems plausible.

Relationship Between Athlete Leadership and Cohesion

The other first purpose examined the direct relationship between athlete leader behaviours and cohesion. The results of the present study were generally consistent with previous findings examining athlete leadership behaviours and cohesion (Vincer & Loughead, 2009). For example, Vincer and Loughead found the athlete leader behaviour of Autocratic Behaviour was negatively related to all four dimensions of cohesion, while Social Support and Training and Instruction were positively related to all four dimensions of cohesion. As well, they found that Democratic Behaviour was positively related to only the cohesion dimension of ATG-T. In addition, they also found that the athlete leadership dimension of Positive Feedback was not related to any dimension of cohesion. While there are some similarities in the results between Vincer and Loughead and the current study, the results of the current study expanded the literature concerning the athlete leadership-cohesion relationship by examining separately formal and informal athlete leader behaviours. By separating formal and informal athlete leaders, the results revealed that the majority of formal athlete leader behaviours (with the exception of Autocratic Behaviour) were associated with cohesion. In contrast, only the informal

athlete leader behaviour of Social Support was related to the social dimensions of cohesion (ATG-S & GI-S), while Training and Instruction was associated the task cohesion (ATG-T & GI-T).

The above results are interesting for several reasons. First, the findings indicated that both formal and informal athlete leaders are related to team cohesion differently. Second, the results showed that more formal athlete leader behaviours are related to cohesion. The athlete leadership behaviours of Democratic Behaviour, Social Support, and Training and Instruction were related to both task and social aspects of cohesion. Therefore, from a cohesion perspective, it is important how coaches select their formal athlete leaders (e.g., captains) for their teams. Given that formal athlete leader behaviours can positively influence perception of cohesion, and the fact that cohesion has been linked to several important team outcomes such as collective efficacy (Kozub & McDonnell, 2000, Paskevich, Brawley, Dorsch, & Widmeyer, 1995), satisfaction (Widmeyer & Williams, 1991; Williams & Hacker, 1982), and group norms (Prapavessis & Carron, 1997; Sheilds, Bredemeier, Gardner, & Bostrom, 1995), the presence of poor or weak formal athlete leaders may have detrimental effects on the team's environment.

Surprisingly it was also found that the formal athlete leadership behaviour of Training and Instruction was negatively related to the cohesion dimension of GI-S. Previous research has indicated that coaches tended to use Training and Instruction more often than athlete leaders (Loughead & Hardy, 2005). In their examination of team captains (formal athlete leadership), Dupuis, Bloom, and Loughead (2006) found that how formal athlete leaders verbally interacted with teammates influenced the team environment. Therefore, it is possible that formal athlete leaders who exhibited high

amounts of Training and Instruction are viewed less favourably by their teammates because they are providing feedback that is not wanted from this leadership role, which in turn impacts the social cohesion of the team.

A final point pertaining to the athlete leadership-cohesion relationship was the absence of a relationship between Autocratic Behaviour and cohesion. Loughead and Hardy (2005) found that coaches tended to display Autocratic Behaviour more often than athlete leaders. Thus, it appears that that Autocratic Behaviour exhibited by athlete leaders has less of an impact on team members than when coming directly from the coaching staff. Therefore, it may not be common practice among athlete leaders to use Autocratic Behaviour. In turn, team members assessing their athlete leader's behaviour would not condone the use of Autocratic Behaviour, but rather view it as a behaviour that coaches should exhibit, leading to the lack of impact on performance found in the current study.

Athlete Leadership as a Moderator

The findings from the second purpose, that athlete leadership would moderate the cohesion-performance relationship, extends the findings from Carron et al.'s (2002) meta-analysis. These authors examined three of the four moderating factors from Carron's (1982) model: environmental, team, and personal factors. The one moderating factor not examined from this model was the leadership factor. As noted above, two moderating relationships were found. The result showing that the informal athlete leader behaviour of Social Support moderating the GI-T – Performance Commitment relationship would tend to suggest that it is beneficial for teams with a high task cohesion-performance relationship to have informal athlete leaders who use high amounts

of Social Support behaviours. This finding is consistent with previous coaching research, in that coaches who exhibited a high frequency of Social Support leadership behaviours had teams that were more task cohesive (Shields, Gardner, Bredemeier, & Bostrom, 1997; Westre & Weiss, 1991). It is interesting to reflect on why a socially-oriented athlete leader behaviour (i.e., Social Support) would moderate the task cohesion dimension of GI-T and performance relationship. The cohesion dimension of GI-T is defined as an individual team member's feelings about the similarity, closeness, and unity within the group as a whole around the team's task objectives (Carron et al., 1985). Therefore, athlete leaders who show care and concern for their fellow teammates appear to promote a feeling of closeness and bonding among team members concerning task objectives. Practically, this finding will direct coaches to develop in their informal athlete leaders the behaviour of Social Support. This could be done by having intense training sessions. In doing so, this will allow the athletes to experience an uncomfortable situation together that will in turn provide the opportunity for the informal leaders to show care and concern for their fellow team members.

It was also found that the informal athlete leader behaviour of Training and Instruction moderated the ATG-S – Performance Commitment relationship. It is interesting to contemplate why a task-oriented leadership behaviour (i.e., Training and Instruction) would moderate a social cohesion-performance relationship. It has been noted that within interdependent sport teams increased coordination using task-oriented instructional behaviours are essential for team success (Carron et al., 2002). In addition, the cohesion dimension of ATG-S refers to an individual team member's feelings about his/her personal acceptance and social interactions within the team (Carron et al., 1985).

Therefore, higher levels of Training and Instruction behaviours could imply that there is good communication and adequate interaction between fellow teammates, in turn increasing a team member's perception of social cohesion and performance. Practically this finding will help coaches to develop in their informal athlete leaders the behaviour of Training and Instruction. Specifically, coaches could divide the team into two and have each new group compete against each other. By the coach not assigning the new group members to their position a leader must emerge and take the responsibility of the coach. This will provide an opportunity for the informal athlete leaders to instruct their fellow teammates.

Finally, it should be noted that both moderating relationships were found with informal athlete leaders rather than formal athlete leaders. Previous research has shown that athletes perceived between 31-47% of their teammates to occupy an informal athlete leadership role and between 8-15% of their teammates to occupy a formal athlete leadership role on their respective teams (Loughead et al., 2006). Consequently, it is possible that team members may experience a higher frequency of Social Support and Training and Instruction from their informal leaders because there are simply more of them and this in turn helps to foster higher perceptions of cohesion. In addition, formal athlete leaders are usually appointed to their position by the sporting organization whereas informal athlete leaders emerged based on their interactions with team members. It may be that informal athlete leaders are important to athletes because the athletes themselves have the opportunity to select the individuals to lead them. Therefore, the importance and meaning of the feedback originating from their formal leaders may have

less of an impact on the cohesion-performance relationship than when informal athlete leaders provide leadership.

Although the present study has extended the knowledge base concerning athlete leadership behaviours, cohesion, and performance, the study is not without limitations. One limitation is related to the cross-sectional design of the study. The data obtained from the participants was collected at one point in the season; therefore, causality cannot be inferred. The data were approximately collected at the mid-season point. While this allowed perceptions of cohesion to develop and athlete leadership behaviours to emerge, these two constructs are viewed as being dynamic in nature, which means that they can change over time (Alfermann et al., 2005; Carron et al., 1998; Loughhead & Hardy, 2005). Therefore, the present findings may have been different if the data were collected at a different time point in the season.

Another limitation is related to the method of assessment. Although the present study had an 86.4% response rate, perceptions were examined using self-report measures. It has been noted that participants sometimes answer self-report questions in a way that they perceive to be socially desirable, correct, or “good”, rather than in a way that best reflects the person’s feelings or beliefs. Therefore, the results may reflect more extreme scores than actually perceived (Loewenthal, 2001).

A final limitation that should be noted is related to the generalizability of the findings. While the current study sampled a variety of sports, all of the participants were young adults between the ages of 18 and 31 years. As a result both adolescent and older participants should be targeted for future studies. It has been found that youth sports tend to focus more on emphasizing the development of skills, knowledge, values, and

motivation (Smith, Ward, Rodrigues-Neto, & Zhang, 2009), whereas, older adults are more concerned about the health benefits and maintaining mobility as they age (Gill & Overdorf, 1994). Therefore, it is important for future research to investigate the effects of age on athlete leadership, cohesion, and performance.

In terms of future research, the findings from the current study highlighted the importance of examining formal and informal athlete leaders separately. Specifically, the results indicated that different formal and informal athlete leader behaviours were related to cohesion. Therefore, future research should examine how the various formal and informal athlete leader behaviours impact other team constructs such as collective efficacy and athlete satisfaction.

While the current study controlled for gender effects, the influence of gender are still unknown and warrant further research. Vincer and Loughhead (2009) suggested that the Multidimensional Model of Leadership (Chelladurai, 1994) maybe a potentially useful framework that guides future research since it hypothesizes that different leader characteristics such as gender, personality, or experience influences leader behaviour. Thus, the athlete leadership knowledge base may benefit from using this model as a guide for future research. Therefore, future research should focus on determining whether males and females differ in their leadership behaviours and determine if these impact the team environment.

Finally, and while not a primary focus on the present study, the results from the exploratory factor analysis found that performance was best operationalized as a multidimensional construct. This finding is consistent with how organizational psychology measures performance (Chang & Bordia, 2001; Gist, Locke, & Taylor, 1987;

Hackman, 1990), while sport traditionally has used unidimensional measures of performance (Lane & Chappell, 2001; Totterdell, 1999; Wilson & Stephens, 2005; Virginia & Vikki, 1996). Chang and Bordia noted that the operational definition of performance has received relatively little attention resulting in numerous variations of the definition and measurement of performance. Therefore, future sport research should focus on establishing a consistent operational definition and a measurement tool to measure this important sport outcome.

Athlete leadership is relatively a new construct in the field of sport psychology. The present study has contributed to this emerging field by highlighting how various athlete leadership behaviours served as a moderating variable in the cohesion-performance relationship. In particular, the present study has made a contribution by highlighting the importance of informal athlete leader behaviours on the cohesion-performance relationship, the influence that Training and Instruction has on performance, and the importance of formal athlete leadership on the construct of cohesion. However, there is still the need for a complete understanding of the impact that athlete leaders have on their team members, not only in relation to cohesion and performance, but to other aspects of group dynamics. It is hoped that the present study will encourage researchers to examine athlete leadership and determine its impact in the sporting environment.

References

- Aiken, L. S. & West, S. G. (1991). *Multiple regression: Testing and interpreting interactions*. Newbury Park, CA: Sage.
- Alfermann, D., Lee, M. J., & Wurth, S. (2005). Perceived leadership behavior and motivational climate as antecedents of adolescent athletes' skill development. *The Online Journal of Sport Psychology, 7*, 14-36.
- Alper, S., Tjosvold, D., & Law, K. S. (1998). Interdependence and controversy in group decision making: Antecedents to effective self-managing teams. *Organizational Behaviour and Human Decision Processes, 74*, 33-52.
- Baron R. M., & Kenny, D. A. (1986). The moderator-mediator variable distinction in social psychology research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology, 51*, 1173-1182.
- Bray, S. R., & Brawley, L. R. (2002). Role efficacy, role clarity, and role performance effectiveness. *Small Group Research, 33*, 233-253.
- Carron, A. V. (1982). Cohesiveness in sport groups: Interpretations and considerations. *Journal of Sport Psychology, 4*, 123-138.
- Carron, A. V., Brawley, L. R., & Widmeyer, W. N. (1998). Measurement of cohesion in sport and exercise. In J. L. Duda (Ed.), *Advances in sport and exercise psychology measurement* (pp. 213-226). Morgantown, WV: Fitness Information Technology.
- Carron, A. V., Colman, M. M., Wheeler, J., & Stevens, D. (2002). Cohesion and performance in sport: A meta-analysis. *Journal of Sport & Exercise Psychology, 24*, 168-188.

- Carron, A. V., Hausenblas, H. A., & Eys, M. A. (2005). *Group dynamics in sport* (3rd ed.). Morgantown, WV: Fitness Information Technology.
- Carron, A. V., Widmeyer, W. N., & Brawley, L. R. (1985). The development of an instrument to assess cohesion in sport teams: The Group Environment Questionnaire. *Journal of Sport Psychology, 7*, 244-266.
- Cattell, R. B. (1966) The scree test for the numbers of factors. *Multivariate Behavioral Research, 1*, 245-276.
- Chang, A., & Bordia, P. (2001). A multidimensional approach to the group cohesion-group performance relationship. *Small Group Research, 32*, 379-405.
- Chelladurai, P. (1994). Leadership. In R. N. Singer, M. Murphey, & L. K. Tennant (Eds.), *Handbook on research on sport psychology* (pp. 647-671). New York: MacMillan.
- Chelladurai, P., & Riemer, H. A. (1998). Measurement of leadership in sport. In J. L. Duda (Ed.), *Advances in sport and exercise psychology measurement* (pp. 227-253). Morgantown, WV : Fitness Information Technologies.
- Chelladurai, P., & Saleh, S. D. (1978). Preferred leadership in sport. *Canadian Journal of Applied Sport Sciences, 3*, 85-92.
- Chelladurai, P., & Saleh, S. D. (1980). Dimensions of leader behavior in sports: Development of a leadership scale. *Journal of Sport Psychology, 2*, 34-45.
- Cohen, J., Cohen, P., West, S. G., & Aiken, L. S. (2003). *Applied multiple regression/correlation analysis for the behavioral sciences* (3rd ed.). Mahwah, NJ: Erlbaum.

- Dupuis, M., Bloom, G. A., & Loughhead, T. M. (2006). Team captains' perceptions of athlete leadership. *Journal of Sport Behavior, 29*, 60-78.
- Frazier, P. A., Tix, A. P., & Barron, K. E. (2004). Testing moderating and mediating effects in counseling psychology research. *Journal of Counseling Psychology, 51*, 115-134.
- Garland, D. J., & Barry, J. R. (1990). Personality and leader behaviors in collegiate football: A multidimensional approach to performance. *Journal of Research in Personality, 24*, 355-370.
- Gill, K., & Overdorf, V. (1994). Incentives for exercisers in younger and older women. *Journal of Sport Behavior, 17*, 87-97.
- Gist, M. E., Locke, E. A., & Taylor, M. S. (1987). Organizational behaviour; Group structure, process, and effectiveness. *Journal of Management, 13*, 237-257.
- Grant, S., Aitchison, T., Henderson, E., Christie, J., Zare, S., McMurray, J., & Dargie, H. (1999). A comparison of the reproducibility and the sensitivity of change to visual analogue scales, borg scales, and likert scales in normal subject during submaximal exercise. *Chest, 116*, 1208-1217.
- Hackman, J. R. (1990). *Groups that work (and those that don't): Creating conditions for effective teamwork*. San Francisco: Jossey-Bass.
- Hardy, J., Eys, M. A., & Carron, A. V. (2005). Exploring the potential disadvantage of high cohesion in sport team. *Small Group Research, 36*, 166-187.
- Judd, C. M., McClelland, G. H., & Culhane, S. E. (1995). Data analysis: Continuing issues in the everyday analysis of psychological data. *Annual Review of Psychology, 46*, 433-465.

- Kaiser, H. F. (1960). The application of electronic computers to factor analysis. *Educational and Psychological Measurement, 29*, 141-151.
- Kozub, S. A., & McDonnell, J. F. (2000). Exploring the relationship between cohesion and collective efficacy in rugby teams. *Journal of Sport Behavior, 23*, 120-129.
- Lane, A. M., & Chappell, R. C. (2001). Mood and performance relationship among players at the work student games basketball competition. *Journal of Sport Behaviour, 24*, 182-196.
- Loewenthal, K., M. (2001). *An introduction to psychological tests and scales* (2nd ed.). Philadelphia, PA: Taylor & Francis.
- Loughead, T. M., & Hardy, J. (2005). An examination of coach and peer leader behaviors in sport. *Psychology of Sport and Exercise, 6*, 303-312.
- Loughead, T. M., Hardy, J., & Eys, M. A. (2006). The nature of athlete leadership. *Journal of Sport Behavior, 29*, 142-158.
- Mabry, E. A., & Barnes, R. E. (1980). *The Dynamics of Small Group Communication*. Prentice Hall: Englewood Cliffs.
- Mullen, B., & Copper, C. (1994). The relation between group cohesiveness and performance: An integration. *Psychological Bulletin, 115*, 210-227.
- Myers, R. (1990) *Classical and modern regression with applications* (2nd ed.). Boston, MA: Duxbury Press.
- Nunnally, J. C., & Bernstein, I. H. (1994). *Psychometric theory* (3rd ed.). New York: McGraw-Hill.
- Paradis, K. F., & Loughead, T. M. (November, 2009). *Follow the (athlete) leader: Examining the factorial validity of two leadership inventories in youth sport.*

Presented to the Canadian Society for Psychomotor Learning and Sport Psychology Conference, Toronto, ON.

Paskevich, D. M., Brawley, L. R., Dorsch, L. R., & Widmeyer, W. N. (1995).

Implications of individual and group level analyses applied to the study of collective efficacy and cohesion. *Journal of Applied Sport Psychology*, 7, S95.

Paskevich, D. M., Estabrooks, P. A., Brawley, L. R., & Carron, A. V. (2001). Group

cohesion in sport and exercise. In R. N. Singer, H. A. Hausenblas, & C. M.

Janelle (Eds.), *Handbook of sport psychology* (2nd ed., pp. 472-494). New York: John Wiley & Sons.

Patterson, M. M., Carron, A. V., & Loughhead T. M. (2005). The influence of group norms on the cohesion-performance relationship: A multi-level analysis.

Psychology of Sport and Exercise, 6, 479-493.

Prapavessis, H., & Carron, A. V. (1997). The role of sacrifice in the dynamics of sport teams. *Group Dynamics*, 1, 231-240.

Shields, D. L., Bredemeier, B. J. L., Gardner, D. E., & Bostrom, A. (1995). Leadership, cohesion, and team norms regarding cheating and aggression. *Sociology of Sport Journal*, 12, 324-336.

Shields, D. L., Gardner, D. E., Bredemeier, B. J. L., & Bostrom, A. (1997). The relationship between leadership behaviors and group cohesion in team sports. *The Journal of Psychology*, 131, 196-210.

Smith, R. C., Ward, P., Rodrigues-Neto, M., & Zhang, B. (2009). Practice behaviours of youth soccer players. *Physical Educator*, 66, 2-11.

- Steven, J. P. (2009). *Applied multivariate statistics for the social sciences* (5th ed.). New York: Routledge.
- Tabachnick, B. G., & Fidell, L. S. (2007). *Using multivariate statistics* (5th ed.). Boston: Pearson.
- Totterdell, P. (1999). Mood scores: Mood and performance in professional cricketers. *British Journal of Psychology, 90*, 317-332.
- Turman, P. D. (2001). Situational coaching styles: The impact of success and athlete maturity level on coaches' leadership styles over time. *Small Group Research, 32*, 576-594.
- Vincer, D., & Loughhead, T. M. (2009). *The relationship between athlete leadership behaviors and cohesion in team sports*. Manuscript submitted for publication.
- Virginia, A., & Vikki, K. (1996). Relationships among performance expectations, anxiety and performance in collegiate volleyball players. *Journal of Sport Behaviour, 19*, 246-270.
- Weiss, M. R., & Friedrichs, W. D. (1986). The influence of leader behaviors, coach attributes, and institutional variables on performance and satisfaction of collegiate basketball teams. *Journal of Sport Psychology, 8*, 332-346.
- West, S. G., Aiken, L. S., & Krull, J. L. (1996). Experimental personality designs: Analyzing categorical by continuous variable interactions. *Journal of Personality, 64*, 1-49.
- Westre, K. R., & Weiss, M. R. (1991). The relationship between perceived coaching behaviors and group cohesion in high school football teams. *The Sport Psychologist, 5*, 41-54.

Widmeyer, W. N., & Williams, J. M. (1991). Predicting cohesion in a coaching sport.

Small Group Research, 22, 548-570.

Williams, J. M., & Hacker, C. M. (1982). Casual relationships among cohesion, satisfaction and performance in women's intercollegiate field hockey teams.

Journal of Sport psychology, 4, 324-337.

Wilson, M. A., & Stephens, D. E. (2005). Great expectations: How do athletes of different expectancies attribute their perceptions of personal athletic performance?

Journal of Sport Behavior, 28, 392-406.

Table 1

Descriptive Statistics for Cohesion, Athlete Leadership, and Performance

	<i>M</i>	<i>SD</i>	α
Cohesion			
ATG-T ^a	6.85	1.44	.71
ATG-S ^a	7.61	1.00	.74
GI-T ^a	7.10	1.15	.85
GI-S ^a	7.22	1.23	.83
Athlete Leadership			
ABF ^b	2.54	0.94	.79
DBF ^b	3.64	0.77	.86
PFF ^b	4.26	0.64	.90
SSF ^b	3.76	0.80	.89
TIF ^b	3.73	0.68	.94
ABI ^b	2.38	0.81	.78
DBI ^b	3.53	0.67	.81
PFI ^b	4.13	0.71	.86
SSI ^b	3.74	0.72	.84
TII ^b	3.29	0.71	.90
Performance			
PA ^c	58.50	21.05	.92
PC ^c	68.17	18.58	.96

Note. ATG-T = Individual Attractions to the Group – Task; ATG-S = Individual Attractions to the Group – Social; GI-T = Group Integration – Task; GI-S = Group Integration – Social; ABF = Autocratic Behaviour formal; DBF = Democratic Behaviour formal; PFF = Positive Feedback formal; SSF = Social Support formal; TIF = Training and Instruction formal; ABI = Autocratic Behaviour informal; DBI = Democratic Behaviour informal; PFI = Positive Feedback informal; SSI = Social Support informal; TII = Training and Instruction informal; PA = Performance Achievement; PC = Performance Commitment.

- a. Assessed on a 9-point scale ranging from 1 to 9.
- b. Assessed on a 5-point scale ranging from 1 to 5.
- c. Assessed on a 100-point scale ranging from 0 to 100.

Note. ATG-T = Individual Attractions to the Group – Task; ATG-S = Individual Attractions to the Group – Social; GI-T = Group Integration – Task; GI-S = Group Integration – Social; ABF = Autocratic Behaviour formal; DBF = Democratic Behaviour formal; PFF = Positive Feedback formal; SSF = Social Support formal; TIF = Training and Instruction formal; ABI = Autocratic Behaviour informal; DBI = Democratic Behaviour informal; PFI = Positive Feedback informal; SSI = Social Support informal; TII = Training and Instruction informal; PA = Performance Achievement; PC = Performance Commitment.

* $p < .05$, ** $p < .01$.

Table 3

The Direct Relationship Between Formal Athlete Leadership and Cohesion

Variable	<u>ATG-T</u>		<u>ATG-S</u>		<u>GI-T</u>		<u>GI-S</u>	
	β	t	β	t	β	t	β	t
ABF	0.07	0.66	0.02	-0.31	0.04	0.45	0.08	0.92
DBF	0.30	1.97*	0.23	2.17*	0.39	3.06**	0.34	2.50*
PFF	0.25	1.43	0.37	2.99**	0.13	0.88	0.22	1.38
SSF	0.35	2.28*	0.17	1.53	0.18	1.39	0.38	2.74**
TIF	0.39	2.61*	-0.03	-0.28	0.04	0.34	-0.36	-2.64**
R^2	0.26		0.22		0.17		0.44	
F	10.21***		8.34***		6.02***		6.97***	
R^2 Change	0.26		0.21		0.17		0.18	

Note. ATG-T = Individual Attractions to the Group – Task; ATG-S = Individual Attractions to the Group – Social; GI-T = Group Integration – Task; GI-S = Group Integration – Social; ABF = Autocratic Behaviour formal; DBF = Democratic Behaviour formal; PFF = Positive Feedback formal; SSF = Social Support formal; TIF = Training and Instruction formal.

* $p < .05$, ** $p < .01$, *** $p < .001$.

Table 4

Direct Relationship Between Informal Athlete Leadership and Cohesion

Variable	<u>ATG-T</u>		<u>ATG-S</u>		<u>GI-T</u>		<u>GI-S</u>	
	β	t	β	t	β	t	β	t
ABI	0.11	0.92	-0.07	2.76	-0.09	-0.84	-0.00	-0.04
DBI	-0.08	-0.45	0.00	.001	-0.00	-0.02	0.17	1.03
PFI	0.24	1.52	0.23	1.97	0.15	1.11	0.11	0.74
SSI	0.28	1.69	0.32	2.76**	0.10	0.73	0.41	2.77**
TII	0.71	4.40***	0.09	0.81	0.47	3.44**	0.04	-0.25
R^2	0.22		0.16		0.13		0.12	
F	8.51***		5.69***		4.63***		3.91***	
R^2 Change	0.22		0.15		0.13		0.12	

Note. ATG-T = Individual Attractions to the Group – Task; ATG-S = Individual Attractions to the Group – Social; GI-T = Group Integration – Task; GI-S = Group Integration – Social; ABI- Autocratic Behaviour informal; DBI = Democratic Behaviour informal; PFI = Positive Feedback informal; SSI = Social Support informal; TII = Training and Instruction informal.

** $p < .01$, *** $p < .001$.

Table 5

Moderated Hierarchical Regression Analysis for the Informal Athlete Leader Behaviours of Social Support Predicting Group Integration-Task and Performance Commitment, and Training and Instruction Predicting Individual Attractions to the Group-Social and Performance Commitment.

Variable	R ² Adjusted	R ²	F	df	R ² Change	GIT-S & SSI		ATG-S & TTI			
						b	SE	t	b	SE	t
Block 1											
Gender	.039	-.004	.283	1		1.45	2.72	0.53	1.45	2.72	0.53
Block 2											
Constant											
Gender						0.52	1.86	0.28	0.52	1.86	0.28
Cohesion	.750	.550	46.695***	5	.560***	3.71	1.12	3.32***	-1.42	1.17	-1.21
Block 3											
Constant											
Gender						-0.98	3.17	-0.31	-0.98	3.17	-0.31
Cohesion						0.64	1.96	0.33	0.64	1.96	0.33
Athlete Leadership	.753	.542	23.141***	10	.005	3.68	1.15	3.20***	-1.44	1.22	-1.19
Block 4											
Constant											
Gender						1.92	3.23	0.59	1.92	3.23	0.59
Cohesion						-0.79	2.01	-0.39	-0.79	2.01	-0.39
Athlete Leadership	.803	.577	9.513***	30	.079*	4.27	1.24	3.45***	-1.20	1.28	-0.93
Interaction						-2.70	1.69	-1.59	-0.03	1.84	0.16
						5.38	2.21	2.44*	4.97	2.18	2.28*

Note. GIT-S = Group Integration Task-Social ; SSI = Social Support Informal; ATG-S = Individual Attractions to the Group-Social;

TTI = Training and Instruction Informal.

* $p < .05$, *** $p < .001$.

REVIEW OF LITERATURE

The general purpose of the current study was to examine the effect that athlete leader behaviours have on the cohesion-performance relationship. As a result, the literature review will focus on the areas of cohesion, leadership, and athlete leadership.

Cohesion

This section of the thesis reviews previous literature pertaining to cohesion. First, the construct of cohesion is defined. Second, the characteristics of cohesion are explained. Third, a conceptual model and a measurement tool is discussed. Fourth, a conceptual framework of the antecedents and consequences for the study of cohesion is described. Lastly, literature regarding the cohesion-performance relationship is presented.

Defining Cohesion

The cohesiveness of groups has been an important topic in the areas of sociology, social psychology, counseling psychology, military psychology, organizational psychology, educational psychology, and sport psychology dating back as long as six decades (Mudrack, 1989). Since cohesion has been examined in numerous areas, several authors (Golembiewski, 1962; Lott & Lott, 1965) have suggested that cohesion is the most important small-group variable. Given the perceived importance of cohesion, there have been numerous attempts to define this construct. One of the earliest definitions was proposed by Festinger, Schachter, and Back (1950), who defined cohesion as “the total field of forces that act on members to remain in the group” (p.164). This definition takes into account that cohesion is a result of the group member’s perception of (a) individual attractiveness to the group, and (b) the ability of the group as a means to achieving goals. However, later that same year Festinger (1950) advanced another definition of cohesion suggesting that it is “the resultant of all the forces acting on members to

remain in the group” (p. 247). As Mudrack (1989) pointed out this subtle change suggested that only those forces that continue to affect a specific group are worthy of attention.

Gross and Martin (1952) criticized Festinger et al.’s (1950) definition in that measuring the “total field of forces” is difficult to measure. Their criticism was based on the fact that assessing all of the forces influencing members to stay in a group would vary from group to group resulting in an unlimited number of possibilities. Therefore, Gross and Martin forwarded another definition of cohesion by suggesting that it is “the resistance of a group to disruptive forces” (p. 553). They claimed their definition was superior to Festinger et al.’s definition as it examined the group from the perspective of what keeps the group together, rather than what forces act on the group.

It should be pointed out that Gross and Martin’s (1952) definition of cohesion was criticized by researchers, and in turn received very little empirical investigation. Three main criticisms were noted by Escovar and Sim (1974) that focused on practical, conceptual, and measurement issues. From a practical perspective, Escovar and Sim noted that there are serious ethical issues when attempting to expose groups to disruptive forces. Furthermore, disruptive events in groups are an infrequent occurrence making observation inconvenient and measurement difficult. From a conceptual perspective, operationally defining cohesion as a disruptive force may vary from group to group as some forces may be disruptive to one group but not another. Lastly, from a measurement perspective, Escovar and Sim pointed out at least two issues. The first issue concerned how to measure the frequency, intensity, and/or certainty of a disruptive force while not physically disrupting a group. The second issue concerned the assessment of the disruptions meaningfulness as some members of a group may believe the disruption weakens the bonds between members, while others may feel that it strengthens them.

Consequently, Mudrack (1989) boldly stated that “the history of research into group cohesiveness has been dominated by confusion, inconsistency, and almost inexcusable sloppiness with regard to defining the construct” (p. 45).

Given the issues surrounding the definition of cohesion, Carron (1982) attempted to resolve the issue by defining cohesion as “a dynamic process which is reflected in the tendency for a group to stick together and remain united in the pursuit of its goals and objectives” (p. 124). Carron, Brawley, and Widmeyer (1998) revised Carron’s (1982) definition to include an affective component and resulted in defining cohesion as “a dynamic process which is reflected in the tendency for a group to stick together and remain united in the pursuit of its instrumental objectives and/or for the satisfaction of member affective needs” (p. 213). The Carron et al. definition has been suggested as the best definition of cohesion by several authors (e.g., Cota, Evans, Dion, Kilik, & Longman, 1995; Loughhead & Hardy, 2006) and thus is the most widely used definition in sport research (Loughhead & Hardy).

Characteristics of Cohesion

Carron et al.’s (1998) definition of cohesion highlighted four fundamental characteristics in understanding the nature of cohesion. The first characteristic states that cohesion is *multidimensional*. In other words, there are many factors that can influence a group to remain united. As such, factors that affect one group may not have an affect on another. For example, one baseball team may be strongly united on task cohesion, and therefore perform well, but the same team may not be cohesive on a social level.

The second characteristic in Carron et al.’s (1998) definition is the *dynamic* nature of cohesion whereby the construct is not as fixed as a trait, but neither is it as momentary as a state. The definition suggests that factors which cause a team to unite at one time may not have the

same effect at another time. Specifically, factors can and do change over time so that those factors affecting a group at the beginning of a season may not have a similar affect at the end of a season. For example, when an individual first joins a team, this individual may feel a bond around the group's task objectives. However, over the course of time, this same individual may forge friendships with other team members and feel a stronger bond around the social aspects of the team.

The third characteristic of cohesion highlighted in Carron et al.'s (1998) definition is the *instrumental* nature of groups. That is, all groups form for a specific purpose. Intuitively military, work groups, and sport teams clearly form for task objectives. However, even social groups (e.g., social clubs) form to fulfill an instrumental need (e.g., the need to socially connect). Thus, teammates who decide to have lunch together once a week to develop or maintain friendships are gathering for the instrumental purpose of developing social bonds.

The fourth characteristic of cohesion is that it involves an *affective* component. That is to say, social relationships may already exist in a group or they may develop over time. Even those groups that are highly task-oriented will develop social cohesion given that team members communicate with each other and have social interactions. For example, an individual who experiences failure on a task may feel negative affect (e.g., depression or frustration) while another teammate who experiences that same failure may experience positive affect (e.g., motivation or determination) due to the support received from teammates (Carron et al., 1998).

The Conceptual Model of Cohesion

In order to systematically study the construct of cohesion, Carron, Widmeyer, and Brawley (1985) developed a conceptual model of cohesion based on Carron's (1982) definition (see Figure 1). The conceptual model's foundation relied on three fundamental assumptions. The

first assumption, grounded in social cognitive theory (Bandura, 1986; Schlenker, 1975), stated that cohesion, a group property, can be measured through individual perceptions. Carron et al. argued that members of a group possessed observable properties (e.g., roles, status relationships), are socialized into the group, experience social situations, and developed beliefs about the group. They also believed that a member's belief is constructed based on selective processing and personal integration of group-related information. Therefore, member's beliefs are measurable and accurately portray various group unity characteristics (Carron et al., 1998).

Based on group dynamics literature, the second assumption noted that researchers need to distinguish between the group and the individual (Ver Bergen & Koekebakker, 1959; Zander, 1971). Specifically, it was argued that each group member's personal perception regarding cohesiveness is related to the degree that the group satisfies the needs and objectives of its members personally and the group as a whole. In turn, two specific categories emerged to classify each of these social cognitions. The first, *Individual attractions to the group*, is reflected in the interaction between the motives working on the individual to remain in the group, or what is driving that individual to stay in the group (Carron et al., 1985). The second is, *Group integration*, and it is reflected in member's perceptions regarding the closeness, similarity, and bonding within the total group, as well as the degree of unification experienced (Carron et al.)

The third assumption is also based on group dynamics literature, and emphasizes the need to discriminate between task-oriented and social-oriented concerns of the group and its members (Loughead & Hardy, 2006). Task-oriented perceptions concern the general orientation or motivation toward achieving the group's performance objectives. Social-oriented perceptions represent the general orientation or motivation towards establishing and maintaining social relationships and activities with fellow group members (Carron et al., 1985).

Based on these three assumptions, Carron et al. (1985) advanced a theoretically derived conceptual model of the dimensions of cohesion. In particular, the resultant model consists of four dimensions of cohesion: Individual attractions to the group-task (ATG-T), Individual attractions to the group-social (ATG-S), Group integration-task (GI-T), and Group integration-social (GI-S). Specifically, ATG-T represents individual team member's feelings of personal involvement with the team's goals, productivity, or objectives. ATG-S represents an individual's feelings of personal interaction with group members and the degree of acceptance felt within the group. GI-T represents individual team member's feelings towards the similarity, closeness, and bonding around the group's objectives. GI-S represents individual team member's perceptions of the similarity, closeness, and bonding around the group's social function. (Carron et al., 1998).

Measurement of Cohesion: The Group Environment Questionnaire

Once the conceptual model of cohesion was advanced, the next step to overcoming the noted shortcomings of previous measures was to develop an inventory that incorporated the four dimensions of cohesion. Therefore, the Group Environment Questionnaire (GEQ; Carron et al., 1985) was developed. The GEQ is an 18-item measure that assesses each of the four dimensions of cohesion: GI-T, GI-S, ATG-T, and ATG-S. Specifically, GI-T is represented by five items. An example GI-T item is "Our team is united in trying to reach its goals for performance". GI-S is comprised of four items and an example GI-S item is "Members of our team would like to spend time together in the off season". ATG-T is represented by four items and an example item includes "This team gives me enough opportunities to improve my personal performance". ATG-S is composed of five items and an example item is "Some of my best friends are on this team". All items are measured on a 9-point Likert scale anchored with the extremes of 1 (strongly disagree) and 9 (strongly agree).

The GEQ is the most widely used measure of cohesion (Eys, Carron, Bray, & Brawley, 2007). One of the reasons why it has been the most used measure of cohesion concerns its psychometric properties. In terms of its validity, results have shown that the GEQ demonstrates adequate content (e.g., Carron et al., 1985), concurrent (e.g., Brawley, Carron, & Widmeyer, 1987), predictive (e.g., Spink & Carron, 1992), and factorial validity (e.g., Li & Harmer, 1996).

As for the reliability of the GEQ, some studies have reported adequate internal consistency values (e.g., Carron et al., 1985; Paskevich, 1995) while others (e.g., Gardner, Shields, Bredemeier, & Bostrom, 1996; Jowett & Chaundy, 2004; Salminen & Luhtanen, 1998; Shields, Gardner, Bredemeier, & Bostrom, 1997) have shown lower than ideal values (i.e., $> .70$, Nunnally & Bernstein, 1994). Two reasons have been given for the lower than ideal internal consistency values. The first reason is associated with the previously mentioned characteristic that cohesion is a multidimensional construct. Thus, it is not surprising for the dimensions of cohesion not be equally present across different groups at the same time in the life of a group (Carron, Brawley, & Widmeyer, 2002). The second reason concerns the use of items that are both negatively and positively worded (Eys, Carron, et al., 2007). This strategy is used to avoid agreement tendency or “the tendency of an individual to agree or say “yes” to.... Inventory statements, regardless of the content of the items” (Block, 1965, p.1). However, Spector (1992) cautioned test developers to avoid the use of negation (i.e., adding *no* or *not* to scale items) as this adds to the potential of misinterpreting the former statement and responding on the wrong extreme of the scale. Out of the 18 items contained in the GEQ, 12 are negatively worded using negation (i.e., all four of the ATG-T items, three of the five ATG-S items, two of the five GI-T items, and three of the four GI-S items). To test the effects of negation in the GEQ, Eys and Carron et al. (2007) compared the original version of the GEQ (with its 12 negatively worded

items) to a version of the GEQ with all positively worded items. The results demonstrated that the positively worded version of the GEQ had significantly higher Cronbach alpha values for three (i.e., GI-T, GI-S, ATG-S) of the four dimensions. The ATG-T subscale did not differ between the original and the positively worded versions of the GEQ. Eys and Carron et al. surmised that a significant difference was not found between the original and positively worded versions because all of the items reflecting ATG-T were negatively worded in the original version, thus lowering the chance for misinterpretation.

Conceptual Framework for the Study of Cohesion

In order guide research on the factors that influence and are influenced by cohesion, Carron (1982) developed a conceptual framework for the study of cohesion (see Figure 3). The framework for the study of cohesion is a linear model consisting of inputs, throughputs, and outputs. According to Carron, the inputs represent the antecedents, the throughputs represent the different manifestations of cohesion, and the outputs are considered the consequences of cohesion. The antecedents include leadership, environmental, personal, and team factors which contribute to perceptions of cohesion. The leadership factor is comprised of four sources of influence: leader behaviors, leadership style, coach-athlete interpersonal relationship, and the coach-team relationship. The environmental factor includes such variables as the proximity of team members, group distinctiveness, contractual responsibility, and organizational orientation. While Carron noted that it is difficult to outline a complete list of personal factors, he noted that constructs such as ability, attitude, commitment, individual orientation, satisfaction, and individual differences would influence perceptions of cohesion. Finally, team factors represent group task, desire for group success, group productivity, team ability, team stability, goals, roles, and group outcomes.

As for the consequences or outputs that are hypothesized to be influenced by cohesion, Carron (1982) classified them into two general categories (i.e., group outcomes and individual outcomes). On the one hand, group outcomes involve team outcomes, absolute team performance, and relative team performance. On the other hand, individual outcomes include behavioral consequences, absolute individual performance, relative individual performance, and personal satisfaction.

As noted by the conceptual model, performance is an important outcome. The following section of the literature review examines the cohesion-performance relationship.

Cohesion and Performance

Despite the belief that a more cohesive sport team should perform better, the results from studies examining the cohesion-performance relationship in sport have been equivocal. Previous findings have found a negative (e.g., Landers & Luschen, 1974), positive (e.g., Carron, Bray, & Eys, 2002; Tziner, Nicola, & Rizac, 2003), and no relationship (Davids & Nutter, 1988; Slater & Sewell, 1994) between cohesion and performance. Insofar as the finding of a positive relationship is concerned, Carron, Bray, and Eys examined the cohesion-performance relationship in university basketball teams ($n = 18$) and club level soccer teams ($n = 9$). The authors tested only the task dimensions of cohesion (i.e., ATG-T and GI-T) and performance, operationalized as total winning percentage during the regular season. The results indicated a moderately strong relationship between the cohesion dimensions of ATG-T ($r = .67$) and GI-T ($r = .57$) with team success. In another study that examined the relationship between a global measure of social cohesion and performance success (measured by subsequent wins) in the Israeli National League for soccer, Tziner et al. found a moderate positive correlation between social cohesion and successful performance ($r = .27$).

In contrast, some studies have found a negative or no cohesion-performance relationship. For example, Landers and Luschen (1974) tested the relationship between cohesion and performance using the top 15 and bottom 15 bowling teams from a university intramural bowling league consisting of 52 teams. The results showed that task cohesion and global attraction to the group were the greatest discriminators in successful and unsuccessful teams. Additionally, it was also found that unsuccessful teams had higher interpersonal attraction than successful teams. Finally, Davids and Nutter (1988) investigated the relationship between team cohesion and performance in elite level volleyball. Using top male volleyball players ($n = 114$) from 14 first and second division English clubs, the authors found no relationship between any of the four dimensions of cohesion and performance. Furthermore, Slater and Sewell (1994) examined university field hockey and found that the task aspects of cohesion were not as strongly related to better performance as the social aspects were.

Given the equivocal findings concerning the cohesion-performance relationship, Loughead and Hardy (2006) noted that a more systematic and objective technique be utilized to provide a better understanding of the cohesion-performance relationship. The meta-analysis is a widely accepted technique to use when summarizing large bodies of research that has produced equivocal findings. To date, there have been two meta-analysis conducted to analyze the cohesion-performance relationship in sport.

The first meta-analysis was performed by Mullen and Copper (1994). The focus of the meta-analysis was to examine the cohesion-performance relationship from various disciplines in psychology (e.g., industrial, military, social, and sport). A total of 49 studies were collected representing the responses of 8,702 subjects. The results concluded that there was a small significant cohesion-performance relationship ($r = .25$). However, it should be noted that the

strongest cohesion-performance relationship was found with sport teams. Specifically, it was found that sport teams ($r = .54$) displayed a significantly higher cohesion-performance relationship than military groups ($r = .23$), intact organizational behaviour groups ($r = .20$), and experimental groups ($r = .16$).

Loughead and Hardy (2006) pointed out that the results of the Mullen and Copper (1994) meta-analysis should be interpreted with caution as they did not include all the sport-related studies that were available to them including unpublished papers and masters theses. Due to the low number of sport studies analyzed ($n = 8$), it is possible that the conclusions from Muller and Copper were not representative of sport. As a result Carron, Coleman, Wheeler, and Stevens (2002) performed a more comprehensive sport specific meta-analysis on the cohesion-performance relationship. Their meta-analysis included a total of 46 studies representing the response of 9,988 athletes from 1,044 teams. Overall, the results indicated that there was a moderate to large effect size ($ES = .66$) in the cohesion-performance relationship. Specifically, social cohesion ($ES = .70$) was found to have a stronger effect on performance than task cohesion ($ES = .61$). However, the differences between social and task cohesion were not statistically significant. In addition, the meta-analysis also examined various moderating variables believed to influence the cohesion-performance relationship. In particular, sport type, gender, measures of performance, level of skill, and direction of the cohesion-performance relationship were examined. As for sport type, the results indicated that coactive sports ($ES = .77$) have a slightly larger effect than interdependent sports ($ES = .66$) although the difference was not statistically significant. The results also showed a large cohesion-performance relationship existed for female athletes ($ES = .95$) while a moderate relationship existed for male athletes ($ES = .56$). It should be noted this difference was statistically significant. As for

measures of performance, the findings found no difference between self-report measures of performance ($ES = .58$) and actual performance indices ($ES = .69$). In terms of level of competition, there were no significant differences amongst professional ($ES = .20$), club ($ES = .23$), intercollegiate ($ES = .55$), high school ($ES = .83$), and intramural ($ES = .74$) level athletes. Finally, the causal relationship between cohesion and performance displayed no significant difference, suggesting that both social and task cohesion are a cause of ($ES = .57$) and a result of ($ES = .69$) performance.

Leadership

Definition and Characteristics of Leadership

As with cohesion, there are a variety of ways to define leadership. In fact, during the last five decades, there has been over 65 different ways of defining the construct of leadership (Fleischman et al., 1991). Despite the various ways to define leadership, Northouse (2004) identified four components central to the construct of leadership. First, leadership is a process, which indicates that leadership is not a trait one is born with, but an interactional event that occurs between the leader and followers. Second, leadership involves influence, whereby leaders have an affect on the followers, and without a leader there is no influence. Third, leadership occurs within a group context, meaning that leaders influence a group of individuals to achieve a common goal. Fourth, leadership involves goal attainment. That is, leaders emerge in order to direct a group of individuals who are trying to achieve some type of task objective. Based on these four components, Northouse defined leadership as “a process whereby an individual influences a group of individuals to achieve a common goal” (p. 3). By defining leadership in this way, it becomes available to everyone, and thus it is not restricted to only the formal appointed leader (i.e., the coach or captain) (Loughead, Hardy, & Eys, 2006).

Model for the Study of Leadership in Sport

The Multidimensional Model of Leadership (Chelladurai, 1978, 1994) is one of the most widely used models to explain the nature of leadership in sport (Vincer & Loughhead, 2009). Chelladurai based the development of the model using four theoretical approaches to leadership (Chelladurai & Reimer, 1997). Specifically, Chelladurai incorporated Fiedler's (1967) Contingency Model of Leadership, House's (1971) Path-Goal Theory of Leadership, Osborn and Hunt's (1975) Adaptive-Reactive Theory of Leadership, and Yukl's (1971) Discrepancy Model of Leadership.

Fiedler's (1967) Contingency Model of Leadership refers to how situational variables interact with the leader's personality and behaviour. Specifically, this theory suggested that leader effectiveness was a function of how well the leadership style fit with the situational characteristics (Northouse, 1999). Leadership style was divided into two distinct styles: task-motivated and relationship-motivated. Task-motivated leadership styles are mainly directed at achieving the goals or objectives of the group. Relationship-motivated leadership styles are mainly directed at developing close interpersonal relationships within the group.

The second theory to influence the development of the Multidimensional Model of Leadership was the Path-Goal Theory (House, 1971). In essence, this theory examines which type of leadership style (i.e., directive, supportive, participative, or achievement-oriented) is appropriate to the situation in order to maximize the motivation of subordinates. This theory hypothesizes that a directive leadership style is most suitable in a situation of low follower ability, ambiguous task demands, and unclear organizational procedures. A supportive leadership style is predicted to be most suitable in situations when followers have an internal locus of control, follower ability is high. Supportive leadership provides intrinsic motivation by providing

nurturance and empathy to group members (Northouse, 2001). Participative leadership is best when the tasks are ambiguous and complex, but follower's want to be involved and their ability is high. Participation in the decision making involved in these tasks provides information to the followers and leads to greater clarity on the way to accomplish the task, which will lead to achieving the task objectives. Finally, achievement-oriented leadership style is most suitable when the task is ambiguous, as the leader sets difficult but achievable goals, expects followers to perform at their highest level, and rewards them for performing well. Overall, Path-Goal Theory assumes successful leaders adapt their leadership style to the specific demands of the situation.

The third theory that influenced the development of the Multidimensional Model of Leadership was the Adaptive-Reactive Theory (Osborn & Hunt, 1975). The Adaptive-Reactive Theory is an extension of Path-Goal Theory and states that effective leaders must adapt to the individual needs of their followers and the situation. Essentially the Adaptive-Reactive Theory differs from Path-Goal Theory in that it is more situational. Specifically, Adaptive-Reactive Theory suggests that leaders must adapt to the individual needs, desires, and pressures of group members, rather than just the ability of group members. The theory then assumes that group members will react to the adapted behaviours of the leaders. Thus, there is an ongoing two-way relationship between leaders and followers. As such, leaders must constantly adapt to the situation and the group members.

The last theory to influence the development of the Multidimensional Model of Leadership was the Discrepancy Model of Leadership (Yukl, 1971). This theory states that satisfaction is a function of the congruence between leadership behaviours preferred by the subordinates and the actual behaviours adopted by the leader. Consequently, the less discrepancy

between follower preference and the actual behaviour of the leader, the greater the degree of satisfaction followers experience.

Using these four theories as basis, Chelladurai (1978, 1994) developed the Multidimensional Model of Leadership, which is a linear model that consists of antecedents, throughputs, and consequences (see Figure 4). The antecedents of the model are divided into three categories that include situational characteristics, leader characteristics, and member characteristics. The situational characteristics consist of variables such as group goals, task type (e.g., individual versus team, closed versus open tasks), and the social context of the group. The leader characteristics include personal characteristics of the leader such as age, gender, or experience. Finally, member characteristics include factors such as personality (e.g., need for achievement, need for affiliation, cognitive structure) and ability to perform the specific task.

The throughputs contained in the model are leader behaviours and according to Chelladurai (1978, 1994) there are three types. First, required leader behaviours are specific to the situational demands and are directly influenced by the antecedents of situational and member characteristics. Second, actual leader behaviour reflects the behaviours that the leader exhibits, and is largely influenced by the antecedent of leader characteristics. Furthermore, actual leader behaviour is also influenced by the throughputs of required and preferred behaviour. Lastly, preferred leader behaviour refers to the preferences of the members for instruction, guidance, social support, and/or feedback (Chelladurai, 2007). Preferred behaviour is influenced by the antecedents of member and situational characteristics.

The final component of the model is the consequences. Chelladurai (1978, 1994) initially identified two consequences: satisfaction and performance. Satisfaction relates directly to an individual's reaction to his/her group experience, while performance is associated with the

achievement of group goals (Chelladurai, 2007). However, Chelladurai (2007) highlighted that the consequences should not be limited to only performance or satisfaction. For instance, leader behaviours have been shown to be related to cohesion. It should be noted that there is a feedback loop from the consequences to actual leader behaviour suggesting that a leader may alter their behaviour depending on the relative attainment of the outcome variables (Chelladurai, 2007).

Measuring Leadership Behaviours in Sport

The most widely used measure of leadership behaviours in sport is Chelladurai and Saleh's (1980) Leadership Scale for Sports (LSS). The LSS was developed in conjunction with the Multidimensional Model of Leadership (Chelladurai, 1978, 1994) in order to test the constructs contained in the model. The LSS consists of 40 items representing five leadership behaviours: Autocratic behaviour, Democratic behaviour, Positive feedback, Social support, and Training and instruction. Overall, the LSS consists of one direct task subscale (i.e., Training and instruction), two decision-style subscales (i.e., Democratic behaviour and Autocratic behaviour), and two motivational subscales (i.e., Social support and Positive feedback).

The leadership dimension of Autocratic behaviour refers to the extent to which the leader makes independent decisions and stresses personal authority. There are five items associated with Autocratic behaviour and an example item is "Refuse to compromise a point". Democratic behaviour refers to the extent to which the leader allows participation in decisions concerning game tactics, strategies, and team goals. This dimension is represented by nine items where an example item is "Ask the opinion of the athletes on strategies for specific competitions". Positive feedback is reflected in the tendency of the leader to reinforce an athlete's behaviour by recognizing and rewarding good performance. This dimension is represented by five items and an example item is "Complements an athlete for good performance in front of others". Social

support reflects the degree to which the leader shows a concern for the welfare of athletes, develops a positive team atmosphere, and establishes warm interpersonal relations with team members. This dimension is represented by eight items where an example item is “Encourage close and informal relationships with athletes”. Lastly, Training and instruction reflects leader behaviour aimed at improving individual member’s performance by emphasizing hard work and strenuous training. This dimension is represented by 13 items where an example item is “Pays special attention to correcting athletes’ mistakes” (Chelladurai, 1978, 1994). All items of the LSS are measured on a five point Likert-type scale ranging from 1 (never) to 5 (always). Thus, higher scores reflect stronger perceptions of the respective leader behaviour.

Research using the Leadership Scale for Sport

This section of the literature review will discuss three important outcome variables that have been examined in relation to coaching leadership behaviours. In particular, the constructs of performance, cohesion, and satisfaction will be examined.

Performance. Considering that performance is highlighted as an important outcome in the Multidimensional Model of Leadership (Chelladurai, 1978, 1994), research has shown equivocal findings between leadership behaviours and performance. For example, the leadership behaviours of Democratic behaviour and Social support has displayed a negative relationship (e.g., Weiss & Friedrichs, 1986), positive relationship (e.g., Garland & Barry, 1990), and no relationship (e.g., Turman, 2001) with performance. Similarly, Autocratic behaviour has also displayed a positive (e.g., Weiss & Friedrichs), negative (e.g., Garland & Barry; Turman), and no relationship (e.g., Weiss & Friedrichs) with performance. However, it should be noted that the leadership behaviours of Positive feedback and Training and instruction have only displayed a

positive relationship with performance (e.g., Alfermann, Lee, & Wurth, 2005; Garland & Barry; Weiss & Friedrichs).

There are many reasons for the equivocal findings with regards to the relationship between performance and leadership such as the different inventories used, the use of different sports (e.g., football, basketball, wrestlers, and swimmers), assessing athletes of different ages (e.g., varsity, youth), and using different assessments of performance (e.g., win/loss percentages, difference in points scored for and against the team, ratio of the final score).

Cohesion. In contrast to the leadership-performance findings, research examining the relationship between the four dimensions of cohesion and the leadership behaviours, as measured by the LSS, have been relatively consistent. Specifically, the cohesion dimension of ATG-T has been found to have a positive relationship with the leader behaviours of Democratic behaviour, Positive feedback, Social support, and Training and instruction (e.g., Pease & Kozub, 1994; Shields et al., 1997; Westre & Weiss, 1991), while displaying a negative relationship with Autocratic behaviour (e.g., Shields et al.). Along the same line, the cohesion dimension of GI-T was perceived to be greater by athletes when coaches were using more of the leadership behaviours of Democratic behaviour, Positive feedback, Social support, and Training and instruction (e.g., Shields et al.; Westre & Weiss), while utilizing less Autocratic behaviour (e.g., Shields et al.).

Satisfaction. Another outcome variable of the Multidimensional Model of Leadership is athlete satisfaction. Satisfaction is defined as “a positive affective state resulting from a complex evaluation of the structures, processes, and outcomes associated with the athletic experience” (Chelladurai & Riemer, 1997, p. 135). According to this definition satisfaction can be an affective need or the degree of congruence between ones expectations or wants and perceptions

of what actually occurs (Riemer & Chelladurai, 1997). With regards to the relationship between leader behaviours and satisfaction, there have been relatively inconsistent findings. On the one hand, Chelladurai (1984) and Weiss and Friedrichs (1986) found that coaches who provided Democratic behaviour, Positive feedback, Social support, and Training and instruction had more satisfied athletes. On the other hand, Dwyer and Fischer (1990) found no relationship between either Democratic behaviour or Social support with athlete satisfaction. Furthermore, Andrew and Kent (2007) found Democratic behaviour to have a negative relationship with athlete satisfaction; while Social support positively influenced team member satisfaction. Finally, the leadership dimension of Autocratic behaviour has consistently been found to have a negative relationship with satisfaction (Chelladurai; Dwyer & Fischer). Thus, coaches who displayed less Autocratic behaviour had more satisfied athletes (Chelladurai; Weiss & Friedrichs).

In summary, previous research has shown that leadership behaviours are related to cohesion, performance, and athlete satisfaction on sport teams. However, it should be noted that the majority of research has focused on the leadership behaviours of the coach. This is not surprising since the coach holds the most responsibility in making final decisions (e.g., strategy, tactics, and team personnel) (Loughead et al., 2006). Recently, another source of leadership within teams has gained some research attention—the athlete. Consequently, athlete leadership has emerged as a topic of interest in recent years.

Athlete Leadership

This section of the literature review will focus on leadership provided by athletes. First, athlete leadership will be defined, followed by a review of the research pertaining to athlete leadership.

Definition of Athlete Leadership

It has been suggested that athlete leaders serve an important function within sport teams (Loughead et al., 2006). Furthermore, Glenn and Horn (1993) noted that coaches require usually one or two athletes to provide motivation and foster cohesion with teams. Thus, it is not surprising that coaches have either team elections or appoint athletes to serve in a leadership capacity (e.g., captain) (Loughead et al.). From a roles perspective, an athlete appointed as a captain may be viewed as fulfilling a formal leadership role (Loughead & Hardy, 2005). Formal leaders can be viewed as a team leader that has been prescribed to that position by the organization (i.e., coach) or the group (i.e., team) (Loughead et al.). Mabry and Barnes (1980) identified another type of leadership by members within a group who served in an informal leadership capacity. Specifically, an informal leader emerges within a team through interactions with group members. Taken together, athlete leaders can serve either in a formal or informal leadership capacity within the sporting environment.

As mentioned previously, Northouse (2004) defined leadership as “a process whereby an individual influence a group of individuals to achieve a common goal” (p. 3). Using Northouse’s (2004) definition as a basis, Loughead et al. (2006) subsequently defined athlete leadership as “an athlete occupying a formal or informal role within a team who influences a group of team members (i.e., minimum of two team members) to achieve a common goal” (p. 144).

Research on Athlete Leadership

Some of the earliest research to examine athlete leadership focused on the positions that formal leaders played (Lee, Coburn, & Partridge, 1983; Tropp & Landers, 1979) or the characteristics that team captains exhibited (Glenn & Horn, 1993; Yukelson, Weinberg, Richardson, & Jackson, 1983). For example, Lee et al. examined the relationship between playing positions in soccer and team captaincy. Specifically, results concluded that team captains

on professional and high school soccer teams were more likely to hold the position of center-back. In another study, Yukelson et al. identified common characteristics exhibited by individuals who possess high leadership and friendship status among members of two intercollegiate sport teams. They found that players possessing an internal locus of control and who were rated as a highly skilled athlete by the coach were the most likely to be perceived as an athlete leader by their teammates.

In addition to the examination of playing position and identifying the characteristics of athlete leaders, early athlete leadership investigations also focused on the style of leadership provided by the athlete to their respective teams. Specifically, Rees and Segal (1984) examined the difference between instrumental (best player) and expressive (contribute the most to team harmony) leadership. The results concluded that leaders who are perceived as fulfilling an instrumental leadership position often fulfilled an expressive leadership position as well. Additionally, the majority of athlete leaders (i.e., both instrumental and expressive) who were viewed as having a high “formal status” in that they were all starters who had been with the team for a number of years. Finally, athlete leaders (both instrumental and expressive) were perceived by their peers as being highly respected as individuals.

Glenn and Horn (1993) investigated athlete leader behaviours among female high school soccer players. This study examined a number of psychological factors (i.e., perceived confidence, global self-worth, sex-role orientation (i.e., masculinity and femininity), competitive trait anxiety, leadership behavioural tendencies, position played, and actual skill ability of the leaders in order to explain the emergence of leaders. Using measures from teammates, self-reported perceptions, and the coach’s perceptions, results concluded that athletes who rated themselves high in leadership ability also perceived themselves as high in self-confidence,

femininity, and masculinity. Moreover, athletes who were rated by their teammates as leaders exhibited higher levels of competitive trait anxiety, masculinity, ability, and perceived soccer competence. In addition, it was found that coaches tended to rate those with high skill ability as leaders. And finally, consistent with previous finding athlete leaders in general were more likely to occupy a central position (e.g., central midfield, central defense) (Lee et al., 1983).

The aforementioned studies were notably some of the first to examine athlete leadership; however, there are limitations to this body of research. For example, athlete leadership was not operationally defined; thus there was no consistent definition of the construct which has limited the generalizability of the findings. In order to overcome previous limitations and as noted above, Loughhead et al. (2006) advanced a definition of athlete leadership.

Using the Loughhead et al. (2006) definition of athlete leadership, Loughhead and Hardy (2005) compared the leadership behaviours (as measured by the LSS) exhibited by coaches and athlete leaders. Another purpose of their study was to determine who the leaders were and how many athlete leaders are present on a team. The results concluded that coaches exhibited the leadership behaviours of Training and instruction and Autocratic behaviour to a greater extent than athlete leaders. Conversely, athlete leaders were found to display the behaviours of Democratic behaviour, Positive feedback, and Social support more than their coaches. In terms of who is providing leadership, 32.4% of athletes identified their captain as the only source of athlete leadership, while only 2% specified an informal leader. The majority of athletes (65.1%) pointed out that both captains and informal leaders provided leadership to their team. In terms of how many athlete leaders are present on a team, results indicated that athletes perceived 27% of their teammates to be a source of leadership. These findings were important because they were

the first to show that coaches and athlete's fulfill different leadership functions and indicated that athlete leadership was widespread.

Using the Loughhead and Hardy (2005) finding that there are numerous athlete leaders on a team, recent research has examined how the number of athlete leaders influence variables such as athlete satisfaction, cohesion, and communication. Eys, Loughhead, and Hardy (2007) examined the relationship between athlete leader dispersion (i.e., the number of leaders on a team divided by its roster size) from three leadership perspectives (task, social, external) and athlete satisfaction. Interestingly, it was found that athletes who perceived a relatively equal number of leaders across each leadership function indicated greater satisfaction for team performance and integration than those who perceived an unbalanced number of leader's across the three leader functions. In addition, Hardy, Eys, and Loughhead (2008) investigated the effects of athlete leader dispersion on communication and cohesion. Results indicated that a negative relationship existed between task leadership dispersion and GI-T. Also, a negative relationship was found between task leader dispersion and communication indicating that as the number of task leaders increased the cohesion dimension of GI-T and communication decreased.

Moving beyond the examination of athlete leadership dispersion, Vincer and Loughhead (2009) investigated the influence of athlete leader behaviours on perceptions of team cohesion. Using a large sample of varsity and club athletes from a variety of interdependent team sports, the results indicated that the athlete leadership behaviours of Training and instruction and Social support positively influenced all four dimensions of cohesion as measured by the GEQ. In addition, it was found that Democratic behaviour was positively related to ATG-T and Autocratic behaviour was negatively related all four dimensions of cohesion.

Another approach that has been used in the study of athlete leadership has been the examination of team captains. Dupuis, Bloom, and Loughhead (2006) examined the characteristics and leadership behaviours exhibited by formal athlete leaders (i.e., team captains). Using a qualitative methodology, the authors conducted semi-structured interviews with six former university male ice hockey team captains. The results revealed the emergence of three categories: interpersonal characteristics and experiences, verbal interactions, and task behaviours. Interpersonal characteristics and experiences included basic components of team captains' personal make-up and previous leadership experiences. The interpersonal characteristics that were required to be an effective team captain included being an effective communicator, having a positive attitude, controlling emotions, and remaining respectful towards teammates. Verbal interactions included interactions with teammates and coaches. Specifically the participants noted that as team captains they served as a bridge of communication between coaches and players. In particular, the issue of developing a trusting and open relationship between teammates and coaching staff was essential for success. Lastly, the task leadership behaviours that were found to be important for team captains included setting the right example, dealing with team issues, and ensuring that they structured and coordinated team activities.

References

- Alfermann, D., Lee, M. J., & Wurth, S. (2005). Perceived leadership behavior and motivational climate as antecedents of adolescent athletes' skill development. *The Online Journal of Sport Psychology, 7*, 14-36.
- Andrew, D. P. S., & Kent, A. (2007). The impact of perceived leadership behaviors on satisfaction, commitment, and motivation: An expansion of the multidimensional model of leadership. *International Journal of Coaching Science, 1*, 37-58.
- Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. Englewood Cliffs, NJ: Prentice Hall.
- Block, J. (1965). *The challenge of response sets*. New York: Harper Torchbooks.
- Brawley, L. R., Carron, A. V., & Widmeyer, W. N. (1987). Assessing the cohesion of teams: Validity of the group environment questionnaire. *Journal of Sport Psychology, 9*, 275-294.
- Carron, A. V. (1982). Cohesiveness in sport groups: Interpretations and considerations. *Journal of Sport Psychology, 4*, 123-138.
- Carron, A. V., Brawley, L. R., & Widmeyer, W. N. (1998). Measurement of cohesion in sport and exercise. In J. L. Duda (Ed.), *Advances in sport and exercise psychology measurement* (pp. 213-226). Morgantown, WV: Fitness Information Technology.
- Carron A. V., Brawley, L. R., & Widmeyer, W. N. (2002). *The Group Environment Questionnaire Test Manual*. Morgantown, WV: Fitness Information Technology.
- Carron, A. V., Bray, S. R., & Eys, M. A. (2002). Team cohesion and team success in sport. *Journal of Sports Sciences, 20*, 119-126.

- Carron, A. V., Colman, M. M., Wheeler, J., & Stevens, D. (2002). Cohesion and performance in sport: A meta-analysis. *Journal of Sport & Exercise Psychology, 24*, 168-188.
- Carron, A. V., Widmeyer, W. N., & Brawley, L. R. (1985). The development of an instrument to assess cohesion in sport teams: The Group Environment Questionnaire. *Journal of Sport Psychology, 7*, 244-266.
- Chelladurai, P. (1978). *A contingency model of leadership in athletics*. Unpublished doctoral dissertation, University of Waterloo, Department of Management Sciences, Ontario, Canada.
- Chelladurai, P. (1984). Discrepancy between preferences and perceptions of leadership behavior and satisfaction of athletes in varying sports. *Journal of Sport Psychology, 6*, 27-41.
- Chelladurai, P. (1994). Leadership. In R. N. Singer, M. Murphey, & L. K. Tennant (Eds.), *Handbook on research on sport psychology* (pp. 647-671). New York: MacMillan.
- Chelladurai, P. (2007). Leadership in sports. In G. Tenenbaum, & R. C. Eklund (Eds.), *The sport psychology handbook* (3rd ed., pp. 113-135). Indianapolis, IN: Wiley.
- Chelladurai, P., & Riemer, H. (1997). A classification of facets of athlete satisfaction. *Journal of Sport Management, 11*, 133-159.
- Chelladurai, P., & Saleh, S. D. (1980). Dimensions of leader behavior in sports: Development of a leadership scale. *Journal of Sport Psychology, 2*, 34-45.
- Cota A. A., Evans, C. R., Dion, K. L., Kilik, L., & Longman, R. S. (1995). The structure of group cohesion. *Personality and Social Psychology Bulletin, 21*, 572-580.
- Davids, K., & Nutter A. (1988). The cohesion-performance relationship of English national league volleyball teams. *Journal of Human Movement Studies, 25*, 205-213.

- Dupuis, M., Bloom, G. A., & Loughead, T. M. (2006). Team captains' perceptions of athlete leadership. *Journal of Sport Behavior, 29*, 60-78.
- Dwyer, J. J. M., & Fischer, D. G. (1990). Wrestlers' perceptions of coaches' leadership as predictors of satisfaction with leadership. *Perceptual and Motor Skills, 71*, 511-517.
- Escovar, L. A., & Sim, F. M. (1974). *The cohesion of groups: Alternative conceptions*. Paper presented at the meeting of the Canadian Sociology and Anthropology Association, Toronto, Ontario, Canada.
- Eys, M. A., Carron, A. V., Bray, S. R., & Brawley, L. R. (2007). Item wording and internal consistency of a measure of cohesion: The Group Environment Questionnaire. *Journal of Sport & Exercise Psychology, 29*, 395-402.
- Eys, M. A., Loughead, T. M., & Hardy, J. (2007). Athlete leadership dispersion and satisfaction in interactive sport teams. *Psychology of Sport and Exercise, 8*, 281-296.
- Festinger, L. (1950). Informal social communication. *Psychological Review, 57*, 271-282.
- Festinger, L., Schachter, S., & Back, K. (1950). *Social pressure in informal groups*. New York: Harper & Row.
- Fiedler, F. E. (1967). *A theory of leadership effectiveness*. New York: McGraw-Hill.
- Fleishman, E. A., Mumford, M. D., Zaccaro, S. J., Levin, K. Y., Korotkin, A. L., & Hein, M. B. (1991). Taxonomic efforts in the description of leader behavior: A synthesis and functional interpretation. *The Leadership Quarterly, 2*, 245-287.
- Gardner, D. E., Shields, D. L. L., Bredemeier, B. J. L., & Bostrom, A. (1996). The relationship between perceived coaching behaviors and team cohesion among baseball and softball players. *The Sport Psychologist, 10*, 367-381.

- Garland, D. J., & Barry, J. R. (1990). Personality and leader behaviors in collegiate football: A multidimensional approach to performance. *Journal of Research in Personality, 24*, 355-370.
- Glenn, S. D., & Horn, T. S. (1993). Psychological and personal predictors of leadership behavior in female soccer athletes. *Journal of Applied Sport Psychology, 5*, 17-34.
- Golembiewski, R. (1962). *The small group*. Chicago: University of Chicago Press.
- Gross, N., & Martin, W. E. (1952). On group cohesiveness. *American Journal of Sociology, 52*, 546-554.
- Hardy, J., Eys, M. A., & Loughhead, T. M. (2008). Does communication mediate the athlete leadership to cohesion relationship? *International Journal of Sport Psychology, 39*, 329-345.
- House, R. J. (1971). A path-goal theory of leadership. *Administrative Science Quarterly, 16*, 321-339.
- Jowett, S., & Chaundy, V. (2004). An investigation into the impact of coach leadership and coach-athlete relationships on group cohesion. *Group Dynamics: Theory, Research, and Practice, 8*, 302-311.
- Landers, D. M., & Luschen, G. (1974). Team performance outcome and cohesiveness of competitive co-acting groups. *International Review of Sport Sociology, 9*, 57-69.
- Lee, M. J., Coburn, T., & Partridge, R. (1983). The influence of team structure in determining leadership function in association football. *Journal of Sport Behavior, 6*, 59-66.
- Li, F., & Harmer, P. (1996). Confirmatory factor analysis of the Group Environment Questionnaire with an intercollegiate sample. *Journal of Sport & Exercise Psychology, 18*, 49-63.

- Lott, A. J., & Lott, B. E. (1965). Group cohesiveness as interpersonal attraction: A review of relationships with antecedent and consequence variables. *Psychological Bulletin*, *64*, 259-309.
- Loughead, T. M., & Hardy, J. (2005). An examination of coach and peer leader behaviors in sport. *Psychology of Sport and Exercise*, *6*, 303-312.
- Loughead, T. M., & Hardy, J. (2006). Team cohesion: From theory to research to team building. In S. Hanton, & S. Mellalieu (Eds.), *Literature reviews in sport psychology* (pp. 257-287). Hauppauge, NY: Nova Science Publishers.
- Loughead, T. M., Hardy, J., & Eys, M. A. (2006). The nature of athlete leadership. *Journal of Sport Behavior*, *29*, 142-158.
- Mabry, E. A., & Barnes, R. E. (1980). *The Dynamics of Small Group Communication*. Prentice Hall: Englewood Cliffs.
- Mudrack, P. E. (1989). Defining group cohesiveness: A legacy of confusion? *Small Group Behavior*, *20*, 37-49.
- Mullen, B., & Copper, C. (1994). The relation between group cohesiveness and performance: An integration. *Psychological Bulletin*, *115*, 210-227.
- Northouse, P. G. (1999) *Leadership: Theory and practice*. Thousand Oaks, CA: Sage.
- Northouse, P. G. (2001) *Leadership: Theory and practice* (2nd ed.). Thousand Oaks, CA: Sage.
- Northouse, P. G. (2004) *Leadership: Theory and practice* (3rd ed.). Thousand Oaks, CA: Sage.
- Nunnally, J. C., & Bernstein, I. H. (1994). *Psychometric theory* (3rd ed.). New York: McGraw-Hill.

- Osborn, R. N., & Hunt, J. G. (1975). An adaptive-reactive theory of leadership: The role of macro variables in leadership research. In J. G. Hunt and L. L. Larson (Eds.) *Leadership Frontiers*. Kent, OH: Kent State University Press.
- Paskevich, D. M. (1995). *Conceptual and measurement factors of collective efficacy in its relationship to cohesion and performance outcomes*. Unpublished doctoral dissertation, University of Waterloo, Waterloo, Canada.
- Pease, D. G., Kozub, S. A. (1994). Perceived coaching behaviors and team cohesion in high school girls basketball teams. *Journal of Sport & Exercise Psychology*, 16, S93.
- Rees, C. R., & Segal, M. W. (1984). Role differentiation in groups, the relationship between instrumental and expressive leadership. *Small Group Behavior*, 15, 109-123.
- Riemer H. A., & Chelladurai, P. (1998). Development of the athlete satisfaction questionnaire (ASQ). *Journal of Sport & Exercise Psychology*, 20, 127-156.
- Salminen, S., & Luhtanen, P. (1998). Cohesion predicts success in junior ice hockey. *Perceptual and Motor Skills*, 87, 649-650.
- Schlenker, B. R. (1975). Group members' attributions of responsibility for prior performance. *Representative Research in Social Psychology*, 6, 96-108.
- Shields, D. L. L., Gardner, D. E., Bredemeier, B. J. L., & Bostrom, A. (1997). The relationship between leadership behaviors and group cohesion in team sports. *The Journal of Psychology*, 131, 196-210.
- Slater, M. R., & Sewell, D. F. (1994). An examination of the cohesion-performance relationship in university hockey teams. *Journal of Sport Sciences*, 12, 423-431.

- Spector, P. E. (1992). *Summated rating scale construction: An introduction*. (Sage University Paper series on Quantitative Applications in the Social Sciences, series no. 07-082). Newbury Park, CA: Sage.
- Spink, K. S., & Carron, A. V. (1992). Group cohesion and adherence in exercise classes. *Journal of Sport & Exercise Psychology, 14*, 78-86.
- Tropp, K. J., & Landers, D. M. (1979). Team interaction and the emergence of leadership and interpersonal attraction in field hockey. *Journal of Sport Psychology, 1*, 228-240.
- Turman, P. D. (2001). Situational coaching styles: The impact of success and athlete maturity level on coaches' leadership styles over time. *Small Group Research, 32*, 576-594.
- Tziner, A., Nicola, N., & Rizac, A. (2003). Relation between social cohesion and team performance in soccer teams. *Perceptual and Motor Skills, 96*, 145-148.
- Ver Bergen, A., & Koekebakker, J. (1959). Group cohesiveness in laboratory experiments. *Acta Psychologica, 16*, 81-98.
- Vincer, D., & Loughhead, T. M. (2009). *The relationship between athlete leadership behaviors and cohesion in team sports*. Manuscript submitted for publication.
- Weiss, M. R., & Friedrichs, W. D. (1986). The influence of leader behaviors, coach attributes, and institutional variables on performance and satisfaction of collegiate basketball teams. *Journal of Sport Psychology, 8*, 332-346.
- Westre, K. R., & Weiss, M. R. (1991). The relationship between perceived coaching behaviors and group cohesion in high school football teams. *The Sport Psychologist, 5*, 41-54.
- Yukelson, D., Weinberg, R., Richardson, P., & Jackson, A. (1983). Interpersonal attraction and leadership within collegiate sport teams. *Journal of Sport Behavior, 6*, 28-36.

Yukl, G. A. (1971). Toward a behavioural theory of leadership. *Organizational Behavior and Human Performance*, 6, 414-440.

Zander, A. (1971). *Motives and goals in groups*. New York: Academic Press.

Figure Captions

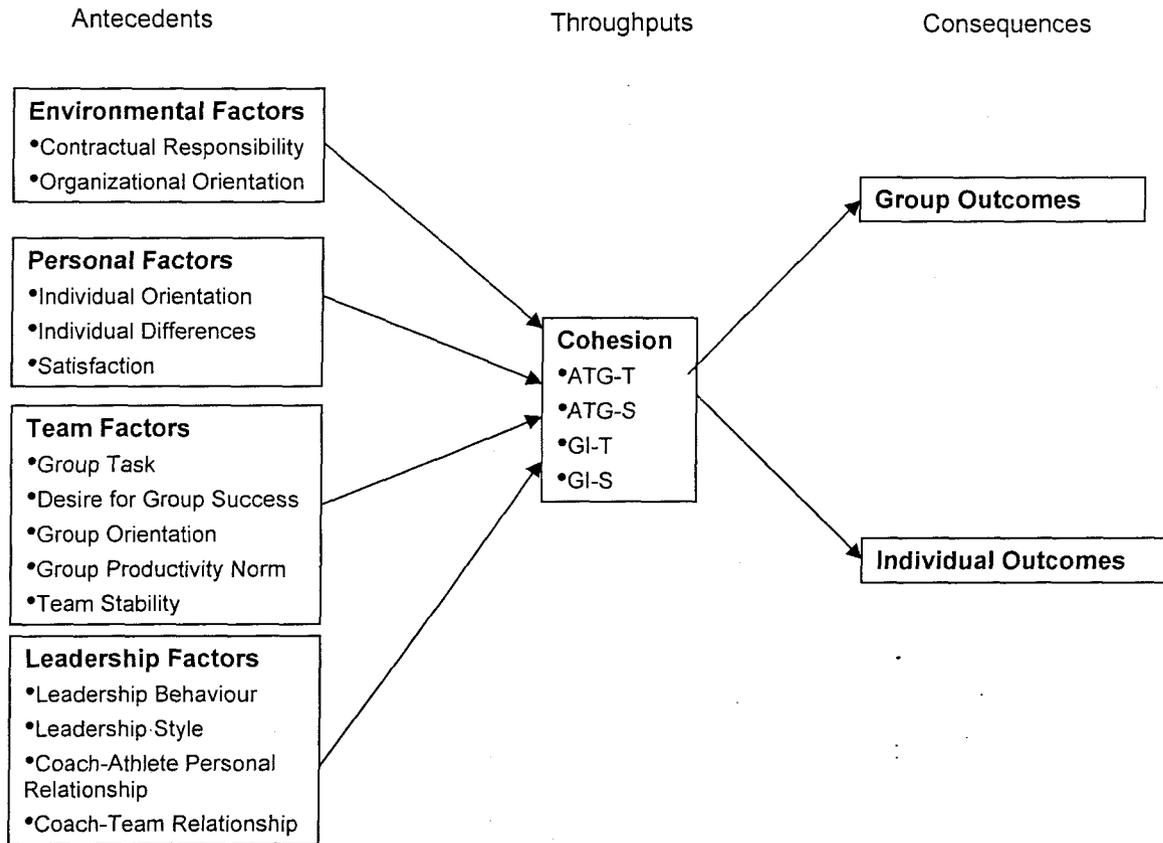
Figure 1. Conceptual Framework for the Study of Cohesion in Sport (Carron, 1982)

Figure 2. Moderation Model (Baron & Kenny, 1986)

Figure 3. Conceptual Model for Cohesiveness in Sport (Carron, Widmeyer, & Brawley, 1985)

Figure 4. Multidimensional Model for Leadership (Chelladurai, 1993)

Figure 1

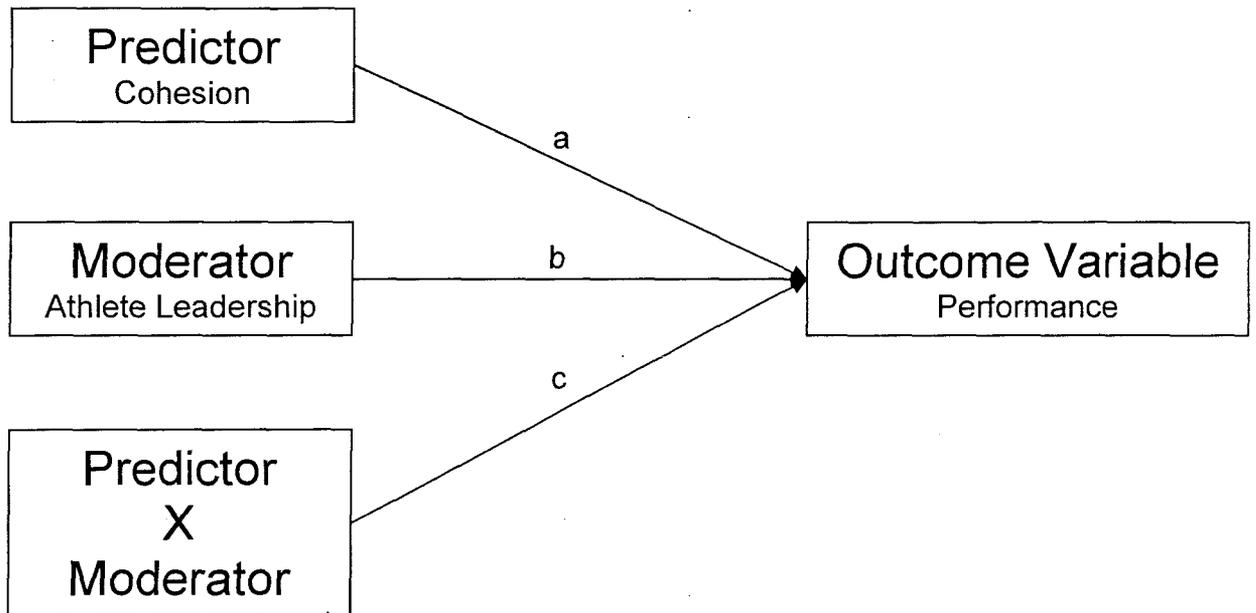


Note. ATG-T = Individual Attractions to the Group – Task; ATG-S = Attractions to the Group – Social, GI-T – Group Integration – Task; GI-S = Group Integration – Social.

Adapted from “Cohesiveness in Sport Groups: Interpretations and Considerations”, by A. V.

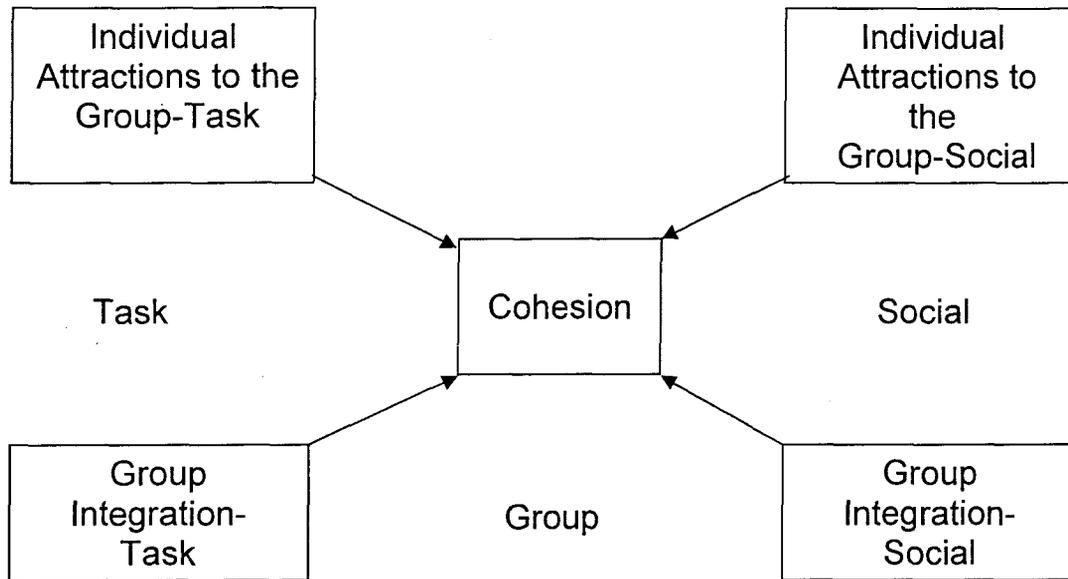
Carron, 1982, *Journal of Sport Psychology*, 4, pp. 131.

Figure 2



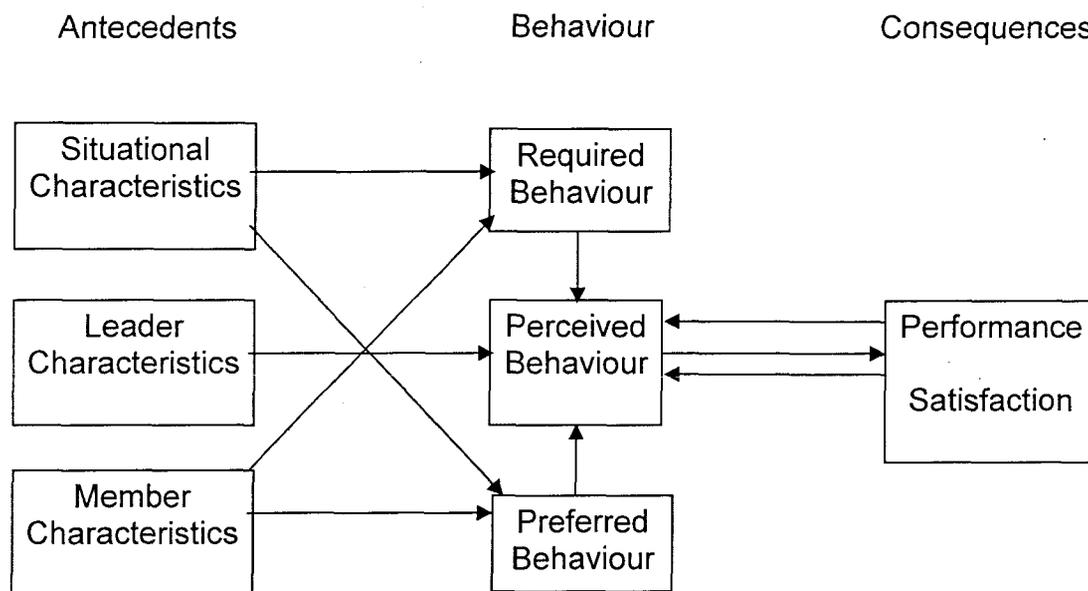
Adapted from "The moderator-mediator variable distinction in social psychology research: Conceptual, strategic, and statistical considerations", Baron, R. M., & Kenny, D. A. (1986). *Journal of Personality and Social Psychology*, 51, 1173-1182.

Figure 3



Adapted from "The Development of an Instrument to assess Cohesion in Sport Teams: The Group Environment Questionnaire", by A. V. Carron, W. N. Widmeyer, and L. R. Brawley, 1985, *Journal of Sport Psychology*, 7, pp. 248.

Figure 4



Adapted from "Leadership" by P. Chelladurai, 1993, In R. N. Singer, M. Murphy, and L. K. Tennant (Eds.), *Handbook on research on sport psychology* (pp. 648). New York: McMillan.

Appendix B

Leadership Scale for Sports (LSS; Chelladurai & Saleh, 1980)

Age: _____ yrs. Gender: _____

What sport are you participating in? (i.e., hockey, soccer, etc.): _____

How many years have you been involved in your sport? _____ yrs.

What position do you play on your team? (i.e., goalie, guard, etc.): _____

How long have you been involved with your current team? _____

INSTRUCTIONS

Athlete leaders are team members who influence other team members. That is athlete leaders can be captains and/or other teammates. Athlete leaders are not coaches. The following questions are designed to assess your opinions about the ATHLETE LEADERS on your team. There are no right or wrong answers. Please take your time to complete the questionnaire and remember to answer the questions honestly. Thank you!

Formal Leader: a team leader that has been prescribed to that position by the organization (i.e., coach) or the group (i.e., team).

Informal Leader: emerge within a team through interactions with group members.

1 Never	2 Seldom 25% of the time	3 Occasionally 50% of the time	4 Often 75% of the time	5 Always
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The athlete leader(s) on my team...

13. Specifies in detail what is expected of teammates

Formal Leader(s)...1 2 3 4 5

Informal Leader(s)...1 2 3 4 5

14. Asks for the opinion of teammates on strategies for specific competitions

Formal Leader(s)...1 2 3 4 5

Informal Leader(s)...1 2 3 4 5

15. Gets team approval on important matters before going ahead

Formal Leader(s)...1 2 3 4 5

Informal Leader(s)...1 2 3 4 5

16. Lets the other teammates share in the decision making

Formal Leader(s)...1 2 3 4 5

Informal Leader(s)...1 2 3 4 5

17. Encourages teammates to make suggestions for ways of conducting practices

Formal Leader(s)...1 2 3 4 5

Informal Leader(s)...1 2 3 4 5

18. Lets the team set its own goals

Formal Leader(s)...1 2 3 4 5

Informal Leader(s)...1 2 3 4 5

19. Lets teammates try their own way even if they make mistakes

Formal Leader(s)...1 2 3 4 5

Informal Leader(s)...1 2 3 4 5

20. Asks for the opinion of teammates on important team matters

Formal Leader(s)...1 2 3 4 5

Informal Leader(s)...1 2 3 4 5

21. Lets teammates work at their own speed

Formal Leader(s)...1 2 3 4 5

Informal Leader(s)...1 2 3 4 5

22. Asks teammates on the plays that should be used in the game

Formal Leader(s)...1 2 3 4 5

Informal Leader(s)...1 2 3 4 5

23. Works relatively independent of teammates

Formal Leader(s)...1 2 3 4 5

Informal Leader(s)...1 2 3 4 5

24. Does not explain their actions

Formal Leader(s)...1 2 3 4 5

Informal Leader(s)...1 2 3 4 5

1 Never	2 Seldom 25% of the time	3 Occasionally 50% of the time	4 Often 75% of the time	5 Always
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The athlete leader(s) on my team...

37. Tells teammates when they do a particularly good job

Formal Leader(s)...1 2 3 4 5

Informal Leader(s)...1 2 3 4 5

38. Sees that a teammate is rewarded for a good performance

Formal Leader(s)...1 2 3 4 5

Informal Leader(s)...1 2 3 4 5

39. Expresses appreciation when a teammate performs well

Formal Leader(s)...1 2 3 4 5

Informal Leader(s)...1 2 3 4 5

40. Gives credit where credit is due

Formal Leader(s)...1 2 3 4 5

Informal Leader(s)...1 2 3 4 5

Appendix C

Performance (Chang & Bordia, 2001; Alper, Tjosvold, & Law, 1998)

Performance Measure

The following questions are designed to assess your perceptions of your team's performance up to this point in your season. Please place a vertical mark on the line below each statement to indicate your answer to the following statements.

1. Our team performs very well.

Strongly Disagree | _____ | Strongly Agree

2. Team members perform very well together.

Strongly Disagree | _____ | Strongly Agree

3. Team members are very satisfied with the team's overall performance.

Strongly Disagree | _____ | Strongly Agree

4. Team members feel a strong commitment to achieving the best possible outcome.

Strongly Disagree | _____ | Strongly Agree

5. Team members are highly committed to the goals of the team.

Strongly Disagree | _____ | Strongly Agree

6. The team is highly satisfied with the outcomes achieved.

Strongly Disagree | _____ | Strongly Agree

7. Team members regularly engage in reviewing their performance so that they can improve it.

Strongly Disagree | _____ | Strongly Agree

8. Team members work effectively together.

Strongly Disagree | _____ | Strongly Agree

9. Team members put considerable effort into their performance.

Strongly Disagree | _____ | Strongly Agree

10. Team members are concerned about the quality of their performance.

Strongly Disagree | _____ | Strongly Agree

11. Team members meet or exceed performance requirements.

Strongly Disagree | _____ | Strongly Agree

12. Team members are committed to producing quality performances.

Strongly Disagree | _____ | Strongly Agree

13. Team members search for ways to improve team performance.

Strongly Disagree | _____ | Strongly Agree

14. Team members have successfully implemented strategies to improve team performance.

Strongly Disagree | _____ | Strongly Agree

15. Team members have successfully implemented game plans to be a more successful team.

Strongly Disagree | _____ | Strongly Agree

~WIN A MP3 Player~

To be entered to win a MP3, please indicate your name, phone number, and email address

Name: _____

Phone: _____

Email: _____

****Please detach this ballot and return it to the researcher****

Appendix D

Participant Letter of Information

**LETTER OF INFORMATION FOR CONSENT TO PARTICIPATE IN RESEARCH****An Examination of the Team Sport Environment**

You are asked to participate in a research study conducted by Sonya Spalding (master's student) under the direction of Dr. Todd Loughead (faculty) from the Department of Kinesiology at the University of Windsor. This research is being conducted to satisfy the requirements for the thesis of a Master's Degree in Human Kinetics.

If you have any questions or concerns about the research, please feel to contact either Ms. Sonya Spalding at 519-253-3000 ext. 4273 or Dr. Todd Loughead at 519-253-3000 ext. 2450.

PURPOSE OF THE STUDY

To examine how the team environment influences perceptions of athlete leadership, cohesion, and performance.

PROCEDURES

If you volunteer to participate in this study, you will complete a survey/questionnaire that may take up to 20 minutes to complete.

POTENTIAL RISKS AND DISCOMFORTS

There are no foreseeable psychological or physical risks or discomforts associated with participation in this study.

POTENTIAL BENEFITS TO SUBJECTS AND/OR TO SOCIETY

The information gained from this study will help advance knowledge in the field of sport psychology. The results will help to better understand how athlete leadership and cohesion impacts team performance. This knowledge can be used by sport psychology consultants to enhance the effectiveness of team building interventions.

PAYMENT FOR PARTICIPATION

You will not be compensated for your participation in this study. However, if you chose, you can enter your name into a draw for a MP3 player.

CONFIDENTIALITY

Any information that is obtained in connection with this study and that can be identified with you will remain confidential. All data will be kept in a locked cabinet which will only be accessible by the primary investigator. Data will be kept secured for five years, when it will then be destroyed. However, while the questionnaire is anonymous, if one fills out a ballot for the MP3 player draw, your contact information is on it and thus you may be identifiable.

PARTICIPATION AND WITHDRAWAL

Participation in this study is voluntary. You can choose whether to be in this study or not. If you volunteer to be in this study, you may withdraw at any time while you are filling out the surveys. However, once you have handed in the completed surveys this will be accepted as your consent to participate and it is not possible to withdraw because the surveys are anonymous, hence one cannot withdraw post-submission. You may also refuse to answer any questions and still remain in the study.

FEEDBACK OF THE RESULTS OF THIS STUDY TO THE SUBJECTS

The results will be posted at the University of Windsor's Research Ethics Board website by August 2010 (<http://www.uwindsor.ca/reb>). If you have any additional concerns or questions, you can email or call the investigators at the address or number above.

SUBSEQUENT USE OF DATA

This data may be used in subsequent studies.

RIGHTS OF RESEARCH SUBJECTS

You may withdraw your consent at any time prior to handing in the completed survey package and discontinue participation without penalty. If you have questions regarding your rights as a research subject, contact: Research Ethics Coordinator, University of Windsor, Windsor, Ontario, N9B 3P4; Telephone: 519-253-3000, ext. 3948; e-mail: ethics@uwindsor.ca

SIGNATURE OF INVESTIGATOR

These are the terms under which I will conduct research.

Signature of Investigator

Date

Revised April 2009

****Please detach and keep this letter of information.****

VITA AUCTORIS

NAME: Sonya M. Spalding

PLACE OF BIRTH: Toronto, Ontario, Canada

YEAR OF BIRTH: 1983

EDUCATION: University of Windsor, Windsor,
Ontario 2007-2010, M.H.K.

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