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Investigating Cohesion as a Mediator in the Athlete Leadership Behaviour and Collective Efficacy Relationship in Ice Hockey

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INVESTIGATING COHESION AS A MEDIATOR IN THE ATHLETE LEADERSHIP BEHAVIOUR AND COLLECTIVE EFFICACY RELATIONSHIP IN ICE HOCKEY

By

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Abstract

The purpose was to examine whether cohesion mediated the relationship between athlete leader behaviour and collective efficacy. The participants were 207 male ice hockey players. Each participant completed the Group Environment Questionnaire (Carron et al., 1985), assessing cohesion, the Leadership Scale for Sports (Chelladurai & Saleh, 1980), assessing athlete leadership behaviour, and the Collective Efficacy Questionnaire (Feltz & Lirgg, 1998), assessing collective efficacy in hockey. Cohesion (ATG-T, GI-T, GI-S) was found to mediate the Positive Feedback-collective efficacy relationship for both formal and informal leaders. In addition, cohesion (GI-T) mediated the Democratic Behaviour-collective efficacy relationship among informal athlete leaders. Findings suggest that coaches and sport psychologists should foster the development of specific athlete leader behaviours, which will lead to greater perceptions of team cohesion and in turn, athletes will have a greater sense of collective efficacy within their team.

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Introduction

An athlete, who becomes a member of a team, no longer acts solely as an individual, but becomes an integral component of a team (Carron, Hausenblas, & Eys, 2005). The members of a team, as a collective, share a common perception of their team's competency. This phenomenon is labeled as collective efficacy and is defined as a team's "shared belief in its conjoint capabilities to organize and execute the courses of action required to produce given levels of attainments" (Bandura, 1997, p. 477). This sense of competency, which has been suggested in situations of the allocation and coordination of resources, may be influenced through the actions of the leader (i.e., leadership behaviours) (Zaccaro, Blair, Peterson, & Zazanis, 1995) and by perceptions of the team's cohesiveness (Spink, 1990).

The relationship between leadership behaviours, cohesion, and collective efficacy in sport may be examined utilizing Carron's (1982) conceptual framework of cohesion (Figure 1). The conceptual framework is organized in a linear fashion, consisting of the antecedents of cohesion, throughputs, and the consequences of cohesion. In Carron's framework, cohesion is viewed as a mediating variable. Cohesion is defined as "a dynamic process that is reflected in the tendency for a group to stick together and remain united in the pursuit of its instrumental objectives and/or the satisfaction of member affective needs" (Carron, Brawley, & Widmeyer, 1998, p. 213). Based on this definition, Carron, Widmeyer, and Brawley (1985) proposed a conceptual model of cohesion (Figure 2) in which team members are believed to have two types of social cognitions about their team's cohesiveness: *Group Integration* (i.e., an individual's perceptions

about the closeness, similarity, and bonding within the group as a whole), and *Individual Attractions to the Group* (i.e., an individual's perceptions about motivations that act to retain the person in the group). It is assumed that individuals have two fundamental orientations: *task* and *social* aspects of group involvement. Therefore, the conceptual model of cohesion consists of four dimensions. First, Individual Attractions to the Group-Task (ATG-T) reflects the personal feelings an individual has regarding his/her personal involvement concerning the group's task. The second dimension is Individual Attractions to the Group-Social (ATG-S), which reflects the feelings an individual has in regards to the social relations and interactions with other group members. Third, Group Integration-Task (GI-T) reflects the feelings an individual has concerning the similarity, bonding, and closeness within the team regarding the group's objectives. Lastly, Group Integration-Social (GI-S) refers to an individual's perceptions regarding the similarity, closeness, and bonding within the group as a whole as a social unit.

Carron's (1982) conceptual framework proposes that four categories of antecedents will influence the throughput of cohesion (i.e., the four dimensions of cohesion). The first antecedent is labeled *environmental factors*, which consist of both contractual responsibilities (e.g., eligibility and contract demands) as well as organizational orientation (e.g., the goals of the organization). The second antecedent is labeled *personal factors*, which includes several factors such as individual motivation (e.g., task, affiliation, and self), individual satisfaction, and individual differences (e.g., race). The third antecedent influencing cohesion is *team factors* and consists of such variables as group orientation, group productivity norm, team stability, and desire for group success. The final antecedent impacting cohesion is *leadership factors*, which

contains four constructs: leadership behaviour, leadership style, coach-athlete relationship, and the coach-team relationship.

The present study examined the leadership behaviours of athletes, commonly referred to as athlete leadership. Loughead, Hardy, and Eys (2006) defined athlete leadership as a process whereby athletes occupying a formal or informal role influence and guide team members toward the attainment of a common goal. As noted within this definition, athlete leaders may occupy either a formal or informal leadership role. Formal leaders are identified as individuals prescribed to that role by members of a group or organization. In the context of athlete leadership, formal leaders would include team and/or assistant captains. Informal leaders have been identified as those individuals who emerge into a leadership role through the interactions with other team members. These leaders would include players on a team who do not occupy the position of captain or assistant captain, however are seen as leaders by team members (Carron et al., 2005).

Given the positive relationship between coaching leadership behaviours and cohesion (e.g., Gardner, Shields, Bredemeier, & Bostrom, 1996; Jowett & Chaundy, 2004), research has recently examined the nature of this relationship using athlete leaders. The importance of cohesion was shown in an examination of how team captains perceived their leadership (Dupuis, Bloom, & Loughead, 2006). Using in-depth semi-structured interviews, findings revealed that captains believed that an important role for them to fulfill was to foster a sense of cohesiveness amongst teammates. Similarly, using a variety of interdependent team sport athletes (i.e., ice hockey, soccer, volleyball and basketball), Vincer and Loughead (2009) found that athlete leadership behaviours were related to perceptions of cohesion. In particular, these authors found that the athlete

leadership behaviours of Training and Instruction, and Social Support positively influenced all four dimensions of cohesion (ATG-T, ATG-S, GI–T, GI-S), while Democratic Behaviour was positively related only to the cohesion dimension of ATG-T. Furthermore, Autocratic Behaviour was negatively associated with all four dimensions of cohesion. Taken together, the results from these studies have provided some empirical evidence that athlete leadership behaviours are related to perceptions of team cohesion.

The final component in Carron's (1982) conceptual framework is the outcomes of cohesion. As described in the framework, the outcomes can be viewed as the consequences of cohesion. The present study examined collective efficacy as a consequence of cohesion. The construct of collective efficacy has been suggested to impact the dynamics of a team. For instance, the level of collective efficacy beliefs within a group can influence the effort a group exerts and to what degree a group will persist, when faced with obstacles, in order to achieve their goal (Edmonds, Tenenbaum, Kamata, & Johnson, 2009). Furthermore, previous research has demonstrated an association between cohesion and collective efficacy. Taken together, this body of research has found that the cohesion dimensions of ATG-T (Spink, 1990; Heuzé, Bosselut, & Thomas, 2007), GI-S (Spink, 1990), and GI-T (Paskevich, Brawley, Dorsch, & Widmeyer, 1999) were positively related to higher perceptions of collective efficacy.

Therefore, using Carron's (1982) conceptual framework as a guide, the purpose of the study was to determine whether cohesion mediates the relationship between athlete leadership behaviour and collective efficacy in ice hockey. A mediator (cohesion in the present study) is the mechanism of how the predictor variable (i.e., athlete leadership behaviour) is able to affect the outcome variable (i.e., collective efficacy) (Baron &

Kenny, 1986). Mediational research is important as it is able to answer the questions "how" and "why" a predictor variable affects an outcome variable (Frazier, Tix, & Barron, 2004). The information gained from mediational research can be used in the development of theory. As well, the framework of mediation allows for the identification of the components that should be targeted for intervention (Baranowski, Anderson, & Carmack, 1998). Although no research to our knowledge has tested the mediational nature of cohesion in relation to athlete leadership behaviour and collective efficacy, previous research has found cohesion to be a mediator. For instance, Spink (1998) examined whether social cohesion mediated the relationship between coaching leadership behaviours and intention to return to sport the following season. Results indicated that the coaching leadership behaviour of Training and Instruction's affect on intention to return to sport was mediated by the cohesion dimension of ATG-S. In addition to this research, task cohesion has also been shown to play a mediating role. Loughead and colleagues (e.g., Loughead & Carron, 2004; Loughead, Colman, & Carron, 2001; Loughead, Patterson, & Carron, 2008) have conducted three studies to determine whether cohesion acted as a mediator between exercise fitness instructor leadership and several exercise-related outcomes. Taken together, the results from these studies indicated that task cohesion, both ATG-T and GI-T, served to mediate the relationship between fitness leader behaviours and three exercise-related outcomes: exerciser satisfaction, attendance, and exerciser mood.

Using Carron's (1982) framework and research from Spink (1998) and Loughead and colleagues (e.g., Loughead & Carron, 2004; Loughead et al., 2001, 2008) as a guide, it was hypothesized that cohesion would serve to mediate the relationship between athlete

leader behaviour and collective efficacy. That is, athlete leader behaviour would positively influence cohesion, and in turn, cohesion would positively influence collective efficacy. However, given the lack of research examining athlete leader behaviours, cohesion, and collective efficacy concurrently in sport, no specific a priori predictions were made for each specific manifestation of cohesion, each specific manifestation of athlete leader behaviour, and collective efficacy.

The significance of the study needs to be emphasized. First, as noted above, it is important to uncover mediational relationships. Results from this type of research provide empirical information on which variables should be targeted for intervention. Second, the definition of athlete leadership makes the distinction between informal and formal athlete leaders. While the definition distinguishes between these two types of athlete leaders, the majority of research has failed to examine these two types of athlete leaders separately. Third, research has stressed the importance of examining other group dynamic constructs that may be influenced by athlete leadership (Vincer & Loughead, 2009). To our knowledge, no research to date has examined the relationship between athlete leadership behaviours and collective efficacy. In determining the influence of athlete leadership on the construct of collective efficacy, it would enable researchers to determine which leadership behaviours should be developed to enhance collective efficacy.

Method

Participants

The participants were 207 male junior and juvenile ice hockey players from Southwestern Ontario. The junior hockey leagues are administered by the Ontario Hockey Association (OHA). Junior hockey in Ontario ranges from competitive levels A-

D with Junior A representing the highest level of amateur competitive hockey. The age range of junior hockey is from 16-21 years. That is, the player must be 21 years of age at the start of the season. The juvenile hockey leagues are overseen by the Ontario Minor Hockey Association (OMHA) and are typically comprised of house and travel leagues. The travel league is the highest level of competition and players competing at this level were recruited for this study. Typically, the age range of juvenile players is from 18-20 years (Ontario Minor Hockey Association, 2009). Taken together, the mean age of the participants was 18.5 years (*SD* = 1.35, range = 16-22 yrs.). The athletes represented a variety of levels in hockey including Junior B (*n* = 71), Junior C (*n* = 101), Junior D (*n* = 13), and Juvenile (*n* = 22). On average, the participants were involved in hockey for 13.7 years (*SD* = 2.75). As for tenure on their current team, there were 55.6% first-year players, 24.9% second-year players, 11.2% third-year players, 5.4% fourth-year players, 1.5% fifth-year players, and 1.5% sixth-year players. The players, on average, had previously played with 6.6 (*SD* = 5.00) other players on their current team.

Measures

Demographics. Demographic information was collected for each of the participants including age, level of competition, tenure on their current team, the number of players they have previously played with, and the number of years of experience competing in ice hockey (Appendix A).

Athlete leadership behaviour. The behaviours of athlete leaders (both informal and formal) were measured using a modified version of the Leadership Scale for Sports (LSS; Chelladurai & Saleh; 1978, 1980) (Appendix B). The only modification made to the original inventory, as noted by Loughead and Hardy (2005), concerned the stem

which preceded the items. In the original version, the stem reads “My coach” whereas in the athlete leader version the stem reads “The athlete leader(s) on my team.” The modified version of the LSS assesses the same five dimensions as the original version: Training and Instruction, Positive Feedback, Social Support, Democratic Behaviour, and Autocratic Behaviour. The modified version has been used in previous athlete leadership research showing good psychometric properties (Loughead & Hardy; Vincer & Loughead, 2009). For instance, the internal consistency values from Loughead and Hardy were: Training and Instruction, α = .87; Positive Feedback, α = .85; Social Support, α = .86; Democratic Behaviour, α = .81, and Autocratic Behaviour, α = .75. In addition, Vincer and Loughead conducted a confirmatory factor analysis to determine the factorial validity of the athlete leadership version of the LSS. Results concluded that the five-factor model provided a reasonably good fit (CFI = .99, TLI = .98, RMSEA = .05).

The Training and Instruction dimension consists of 13 items and examines the leader’s behaviour aimed at improving the athlete’s performance by facilitating strenuous training. An example item is: “See to it that every team member is working to his/her capacity.” The Positive Feedback dimension consists of five items and assesses the leader’s tendency to reinforce a team member’s behaviour. An example is: “Compliment a team member for his/her performance in front of others.” Next, the Social Support dimension is comprised of eight items and it examines the leader’s concern for his/her teammates’ welfare. An example item is: “Help team members with their personal problems.” The Democratic Behaviour dimension consists of nine items and assesses the extent to which the leader involves his/her teammates in the decision making. An example item is: “Ask for the opinion of team members on strategies for specific

competitions." Finally, the Autocratic Behaviour dimension consists of five items and assesses behaviour that involves the athlete leader's independence in decision-making. An example item is: "Refuse to compromise a point." Answers are provided on a five point Likert scale anchored at 1 (*never*) and 5 (*always*). Thus, higher scores reflect stronger perceptions of athlete leader behaviour.

Cohesion. Cohesion was measured using the Group Environment Questionnaire (GEQ; Carron et al., 1985) (Appendix C). The GEQ consists of 18 items which are answered on a 9-point Likert type scale anchored at 1 (*strongly disagree*) and 9 (*strongly agree*), where a higher score indicates a stronger perception of cohesion. The ATG-T dimension contains four items with an example being "I'm happy with the amount of playing time I get." The statement "For me, this team is one of the most important social groups to which I belong" is an example of the ATG-S dimension, which contains a total of five items. The dimension GI-T is also represented by five items with an example item being "Our team is united in trying to reach its goals for performance." The fourth dimension is GI-S and contains four items with an example being "Our team would like to spend time together in the off season." The GEQ is the most widely used measure of cohesion (Paskevich, Estabrooks, Brawley, & Carron, 2001) and research has shown that it is internally consistent (e.g., Hoigaard, Safvenbom, & Tonnessen, 2006; Patterson, Carron, & Loughead, 2005), possesses face (e.g., Carron et al., 1985), concurrent and predictive (Paskevich et al.), and factorial validity (Carron et al., 1985).

Studies (e.g., Westre & Weiss, 1991) have reported less than ideal values of internal consistency ($\alpha < .70$), for the dimensions of cohesion. One reason for low internal consistency values may be due to the negative wording of 12 items in the

questionnaire. Eys, Carron, Bray, and Brawley (2007) compared the original version of the GEQ (with its 12 negatively worded items) to a version of the GEQ that contained all positively worded items. The results showed that the version with the positively worded items had greater internal consistency values on three of the four dimensions of cohesion (ATG-T, GI-T, GI-S) than on the original version. Due to these findings, the participants in the current study completed the GEQ version consisting of all positively worded items.

Collective efficacy. Collective efficacy was measured using a questionnaire developed specifically for the sport of hockey (Feltz & Lirgg, 1998) (Appendix D). This questionnaire was developed using Bandura's (1986) guidelines for creating efficacy measures. Feltz and Lirgg developed an ice hockey specific questionnaire consisting of eight items to which the players were asked to assess their degree of confidence they have in their team's ability to perform game competencies. Players were asked to assess their confidence in the ability to outperform the opponent in the following areas of competency; (a) outskate the opposing team (b) outcheck the opposing team (c) force more turnovers (d) bounce back from performing poorly (e) score on power plays (f) kill penalties against opposing team (g) have an effective goaltender who could block a high percentage of goal attempts, and (h) win against the opposing team. Ratings were made on an 11 point rating scale ranging from 0 (*can not do at all*) to 10 (*certain can do*). A global efficacy score was computed by averaging the eight items with a higher score reflecting a higher degree of team efficacy. The collective efficacy questionnaire has been shown to be internally consistent, obtaining a Cronbach alpha value of .93 (Feltz & Lirgg).

Procedures

Upon receiving ethical clearance, coaches of hockey teams were contacted via e-mail. A description of the study was provided and permission was sought for their players to participate in the study. If the coach agreed, the principal researcher met the players prior to or after a practice in order to administer the questionnaire packet. Each participant was given a letter of information outlining the study procedures prior to completing the questionnaire packet (Appendix E) and the principal researcher was present to answer any questions. Completion of the questionnaires signified consent, and anonymity was maintained as the questionnaires were completed and submitted anonymously. The completion of the questionnaire packet took approximately 20 minutes. Participants were thanked and provided the opportunity to fill out a ballot for a chance to win a $50 gift certificate to a sporting goods store (Appendix F). Athletes completed the questionnaires in the middle of the regular season in order to ensure perceptions of cohesion, collective efficacy, and athlete leadership behaviours have had time to develop.

Results

Descriptive Statistics

Internal consistencies were calculated for all dimensions of formal and informal athlete leadership, all dimensions of cohesion, and collective efficacy. As shown in Table 1, the internal consistency values for all dimensions of formal and informal athlete leadership, cohesion, and collective efficacy possessed adequate reliability (Nunnally & Bernstein, 1994).

In addition, the means and standard deviations were calculated for each dimension of formal and informal athlete leadership, each dimension of cohesion, and collective efficacy (see Table 1). Among the four dimensions of cohesion, all dimensions had fairly high means above 7.0 on a 9-point scale. This signifies that the athletes perceived high cohesion on both the task and social levels. The athletes were also shown to have fairly high perceptions of formal and informal athlete leadership with all means over 3.0 on a 5-point scale, with the exception of informal Autocratic Behaviour, which was slightly below this value. In addition, the athletes represented a fairly confident group with a mean collective efficacy score of 7.95 on an 11-point scale.

A summary of bivariate correlations among the variables can be found in Table 2. The results showed significant moderate positive correlations between the four dimensions of cohesion ranging from $r = .483$ to $r = .705$. In regards to the formal and informal athlete leadership behaviours, the results showed significant small to moderate positive correlations ranging from $r = .198$ to $r = .735$.

Testing for Mediation

Baron and Kenny (1986) suggested that a series of regression models should be used to test for mediation. Prior to testing for mediation, four assumptions concerning regression analyses were computed. To detect multivariate outliers, Mahalanobis distance was computed and no outliers were found. The second assumption of homoscedasticity was met by computing a scatter plot showing the standardized residuals against the predicted values, the scatter plot revealed no specific pattern in the spread of the residuals; thus, the threat of Type II error was reduced (Ntoumanis, 2001). Thirdly, in order to test for the assumption of normality, a Q-Q plot was computed and the residuals

clustered around the straight line, thus indicating normality. Finally, given the values of the regression coefficients, the assumption of the absence of multicollinearity was satisfied.

According to Baron and Kenny (1986), a variable functions as a mediator when it satisfies the following four conditions:

Condition 1: The predictor variable (i.e., athlete leadership behaviour) is significantly related to the mediator variable (i.e., cohesion).

Condition 2: The predictor variable (i.e., athlete leadership behaviour) is significantly related to the outcome variable (i.e., collective efficacy).

Condition 3: The mediator (i.e., cohesion) is significantly related to the outcome variable (i.e., collective efficacy) when regressed with the predictor variable (i.e., athlete leadership behaviour).

Condition 4: It has been stated that if conditions one to three do exist, the effect of the predictor variable (i.e., athlete leadership behaviour) on the outcome variable (i.e., collective efficacy) must be less pronounced when regressed with the mediator than when regressed without it. This decrease signifies that the mediator is present.

In addition to Baron and Kenny's (1986) guidelines, a bootstrapping procedure was performed to test the significance of the mediated effect as recommended by Frazier et al. (2004). Bootstrapping produces a representation of the sampling distribution of the mediating effect by repeatedly resampling with replacements and estimating (1) the path from the predicator variables to the mediator and (2) the path from the mediator to the outcome variable. A product of the path coefficients is then recorded. This resampling is performed *k* times, where *k* in the present study was 1000—as recommended by Preacher

and Hayes (2004). A confidence interval is then derived from the sampling distribution of the product of the path coefficients. Inferences were made in the present study regarding the mediating effects based on 95% confidence intervals. A mediating effect can be said to be present with 95% confidence when the upper and lower bounds of the confidence interval do not include zero. This method was performed utilizing a MACRO for SPSS software developed by Preacher and Hayes. It has been noted that bootstrapping has a higher power and lower type I error than alternative mediation tests available (Hayes, 2009). In addition, using bootstrapping procedures to examine mediated effects is recommended with small to moderate samples (Shrout & Bolger, 2002).

Using Baron and Kenny's (1986) procedures, five mediating relationships were found in the current study; three involving formal leader behaviours, and two involving informal leader behaviours. Each of these is highlighted below.

Influence of formal athlete leadership behaviour and cohesion on collective efficacy. Examining the relationship of formal athlete leader behaviour, cohesion and collective efficacy, three mediational relationships were found.

Specifically, insofar as Baron and Kenny's (1986) Condition 1 is concerned, Training and Instruction was related to GI-T, $\beta = .22$, $t(5, 201) = 2.70$, $p < .01$, and GI-S, $\beta = .20$, $t(5, 201) = 2.23$, $p < .05$. Social Support was related to ATG-S, $\beta = .21$, $t(5, 201) = 2.34$, $p < .05$. Positive Feedback was related to ATG-T, $\beta = .24$, $t(5, 201) = 2.78$, $p < .01$; GI-T, $\beta = .16$, $t(5, 201) = 2.01$, $p < .05$; and GI-S, $\beta = .22$, $t(5, 201) = 2.60$, $p < .05$.

Insofar as Baron and Kenny's (1986) Condition 2 is concerned, Positive Feedback was related to collective efficacy, $\beta = .21$, $t(5, 201) = 2.44$, $p < .05$.

Insofar as Barron and Kenny's (1986) Condition 3 is concerned, ATG-T, GI-T, and GI-S were significantly related to collective efficacy when regressed with Positive Feedback, $\beta = .20$, $t(2, 204) = 3.17$, $p < .01$; $\beta = .13$, $t(2, 204) = 2.13$, $p < .05$; and $\beta = .24$, $t(2, 204) = 3.57$, $p < .01$, respectively. Therefore the following combinations of variables satisfied the three required conditions: (a) Positive Feedback, ATG-T, and collective efficacy, (b) Positive Feedback, GI-T, and collective efficacy, and (c) Positive Feedback, GI-S, and collective efficacy.

Baron and Kenny's (1986) final condition was then considered. The effect of Positive Feedback on collective efficacy was less when regressed with ATG-T, $\beta = .20$, $t(2, 204) = 3.17$, $p < .01$, than when regressed without it, $\beta = .38$, $t(1, 205) = 5.86$, $p < .001$. In order to test the significance of the mediated effects, the results of the bootstrapping indicated that ATG-T significantly mediated this relationship with a point estimate of .42 and a 95% confidence interval of .20 to .69.

The effect of Positive Feedback on collective efficacy was less when regressed with GI-T, $\beta = .13$, $t(2, 204) = 2.13$, $p < .05$, than when regressed without it, $\beta = .38$, $t(1, 205) = 5.86$, $p < .001$. The bootstrapping procedure showed that GI-T significantly mediated this relationship with a point estimate of .60 and a 95% confidence interval of .23 to .94.

Lastly, the effect of Positive Feedback on collective efficacy was less when regressed with GI-S, $\beta = .24$, $t(2, 204) = 3.57$, $p < .01$, than when regressed without it, $\beta = .38$, $t(1, 205) = 5.86$, $p < .001$. Indeed, the bootstrapping procedure demonstrated that GI-S mediated the Positive Feedback- collective efficacy relationship with a point estimate of .33 and a 95% confidence interval of .15 to .55. Therefore, these data taken together

provided support for the suggestion that cohesion, manifested as ATG-T, GI-T, and GI-S served to mediate the relationship between Positive Feedback and collective efficacy.

Influence of informal athlete leadership behaviour and cohesion on collective efficacy. Examining the relationship of informal athlete leader behaviour, cohesion and collective efficacy, two mediational relationships were found.

Specifically, insofar as Baron and Kenny's (1986) Condition 1 is concerned, Training and Instruction was related to ATG-S, $\beta = .19$, $t(5, 201) = 2.02$, $p < .05$, and GI-S, $\beta = .23$, $t(5, 201) = 2.47$, $p < .05$. Democratic Behaviour was related to GI-T, $\beta = .27$, $t(5, 201) = 2.76$, $p < .01$. Autocratic Behaviour was related to ATG-T, $\beta = -.16$, $t(5, 201) = -2.41$, $p < .05$, and GI-T, $\beta = -.22$, $t(5, 201) = -3.32$, $p < .01$. Social Support was related to ATG-T, $\beta = .19$, $t(5, 201) = 2.11$, $p < .05$; ATG-S, $\beta = .34$, $t(5, 201) = 3.67$, $p < .001$; and GI-S, $\beta = .19$, $t(5, 201) = 2.10$, $p < .05$. Positive Feedback was related to ATG-T, $\beta = .16$, $t(5, 201) = 2.00$, $p < .05$.

Insofar as Baron and Kenny's (1986) Condition 2 is concerned, Democratic Behaviour as well as Positive Feedback were related to collective efficacy, $\beta = .23$, $t(5, 201) = 2.31$, $p < .05$ and $\beta = .18$, $t(5, 201) = 2.10$, $p < .05$, respectively.

Insofar as Barron and Kenny's (1986) Condition 3 is concerned, GI-T was significantly related to collective efficacy when regressed with Democratic Behaviour, $\beta = .14$, $t(2, 204) = 2.42$, $p < .05$. In addition, ATG-T was found to be significantly related to collective efficacy when regressed with Positive Feedback, $\beta = .17$, $t(2, 204) = 2.57$, $p < .05$. Therefore the following combinations of variables satisfied the three required conditions: (a) Democratic Behaviour, GI-T, and collective efficacy, and (b) Positive Feedback, ATG-T, and collective efficacy.

Baron and Kenny's (1986) final condition was then considered. The effect of Democratic Behaviour on collective efficacy was less when regressed with GI-T, $\beta = .14$, $t(2, 204) = 2.42$, $p < .05$, than when regressed without it, $\beta = .38$, $t(1, 205) = 5.80$, $p < .001$. The results of the bootstrapping procedure indicated that GI-T significantly mediated the effect of Democratic Behaviour on collective efficacy with a point estimate of .52 and a 95% confidence interval of .33 to .75.

Finally, the effect of Positive Feedback on collective efficacy was less when regressed with ATG-T, $\beta = .17$, $t(2, 204) = 2.57$, $p < .05$, than when regressed without it, $\beta = .34$, $t(1, 205) = 5.23$, $p < .01$. The results of the bootstrapping showed that ATG-T significantly mediated the effect of Positive Feedback on collective efficacy with a point estimate of .33 and a 95% confidence interval of .16 to .54. Therefore, these data taken together provided support that cohesion, manifested as ATG-T and GI-T served to mediate relations between informal athlete leader behaviours of Democratic Behaviour and Positive Feedback, and collective efficacy.

Discussion

The purpose of the current study was to determine whether cohesion served as a mediator between athlete leader behaviour and collective efficacy in ice hockey. A series of regression models were estimated to test for mediation. In general, these analyses supported the hypothesis, indicating that specific athlete leader behaviours were related to specific perceptions of cohesion, and in turn, those perceptions of cohesion were related to perceptions of collective efficacy. Furthermore, these mediation relationships were found to differ between informal and formal athlete leaders.

The three specific mediational relationships found for formal athlete leader behaviours were the following: (a) the cohesion dimension of ATG-T served to mediate the relationship between the formal athlete leader behaviour of Positive Feedback and collective efficacy, (b) the cohesion dimension of GI-T served to mediate the relationship between the formal athlete leader behaviour of Positive Feedback and collective efficacy, and (c) the cohesion dimension of GI-S served to mediate the relationship between the formal athlete leader behaviour of Positive Feedback and collective efficacy. As it can be noted, the three mediational relationships involved the single athlete leader behaviour of Positive Feedback. Positive Feedback involves a leadership behaviour that reinforces an athlete by recognizing good performance (Chelladurai & Saleh, 1980). It could be argued that the Positive Feedback dimension is more task oriented in nature and that it would be related to task cohesion (ATG-T & GI-T). In fact, research examining team captains in ice hockey found that these athlete leaders stressed the importance of communicating verbally, specifically, providing positive feedback to teammates (Dupuis et al., 2006). These captains believed that the use of positive feedback was a way to ensure that team members felt appreciated for their efforts. Using positive feedback in this manner could also increase group dimensions of cohesion (GI-T & GI-S), and in turn, enhance the team's confidence.

In terms of informal athlete leaders, two mediational relationships were found: (a) the cohesion dimension of GI-T served to mediate the relationship between the informal athlete leader behaviour of Democratic Behaviour and collective efficacy, and (b) the cohesion dimension of ATG-T served to mediate the relationship between the informal athlete leader behaviour of Positive Feedback and collective efficacy. Similar to formal

athlete leaders, the athlete leader behaviour of Positive Feedback, the cohesion dimension of ATG-T, and collective efficacy were found to be related. Loughead et al. (2006) found formal athlete leaders were identified as team leaders—meaning that they influenced more teammates; whereas informal leaders were viewed more as peer leaders—influencing a smaller group of teammates. It may be that informal athlete leaders are seen as focusing on more individual contributions toward the task rather than commenting on the positive actions of the group as a unit because they influence a smaller group of teammates. Therefore, the use of positive feedback from informal athlete leaders can increase a team's confidence by making an individual team member feel more involved with the team's task, productivity, goals, and objectives (i.e., ATG-T). In addition, Democratic Behaviour is viewed as the involvement of others in the decision making process (Chelladurai & Saleh, 1980). The presence of this mediational relationship was found only for informal athlete leadership and it may be due to the nature of team members' interactions. Previous research has suggested that while formal leaders have a more substantial relationship with the coach, informal leaders may be seen as having greater communication and interaction with fellow team members (Loughead et al., 2006). The act of the team participating as a group in regards to decision making would increase feelings of closeness as a unit surrounding the task (i.e., GI-T) and enhance the level of confidence the team has in its ability to perform.

The five mediational relationships found involving both formal and informal athlete leaders supports previous research identifying cohesion as a mediator. In addition, the results further support Carron's (1982) framework as being mediational in nature. In the present study, the task dimensions of cohesion (ATG-T & GI-T) were shown to serve

as mediators most frequently in the athlete leader behaviour and collective efficacy relationship. In particular, only task cohesion was found to mediate the relationship involving informal athlete leader behaviours. The finding that task cohesion was a dominant mediating variable supports the results reported by Loughead and colleagues (2001, 2004, 2008) where the cohesion dimensions of GI-T and ATG-T were found to be mediators in the relationship between exercise leader behaviours and several exercise-related outcomes. In addition, the current study also found that the social cohesion dimension of GI-S served as a mediating variable. This finding partially supports previous research which has found the social cohesion dimension of ATG-S to mediate the relationship between coaching leader behaviours and an athlete's intention to return to his/her team the following season (Spink, 1998). The discrepancy on why ATG-S and GI-S were found as mediators may be attributed to the nature of the outcome variable. In the study conducted by Spink, he investigated an outcome that was individual in nature—the intention to return to the team. However, in the present study, participants were asked about their team's confidence—clearly a team oriented outcome. Therefore, it is not surprising that the group oriented dimension of social cohesion (i.e., GI-S) was found to be a mediating variable in the present study.

Beyond these specific mediational findings, the relationship between athlete leader behaviours and cohesion should be highlighted. The findings indicated that athletes who perceived formal athlete leaders as engaging frequently in behaviours of Training and Instruction, Social Support, or Positive Feedback reported higher perceptions of team cohesion. Similarly, athletes who perceived informal leaders as frequently displaying behaviours of Training and Instruction, Democratic Behaviour,

Social Support, or Positive Feedback reported higher perceptions of team cohesion. Conversely, perceptions of informal leaders engaging in high levels of Autocratic Behaviour were associated with perceptions of low team cohesion. The above findings extend the results found by Vincer and Loughead (2009) of an association between athlete leader behaviours and cohesion. It should be pointed out that Vincer and Loughead did not measure informal and formal athlete leader behaviours separately. Thus, the results of the present study extend the literature to suggest that not only is there a relationship between athlete leader behaviours and cohesion, but also that this relationship differs according to the leadership role that an athlete occupies.

As noted above, the difference between informal and formal athlete leaders and cohesion may be due to the discrepancy amongst roles. In studying formal athlete leaders, Dupuis et al. (2006) found team captains to play a significant role regarding the leadership on teams. Furthermore, team captains acknowledged the importance of having strong informal athlete leaders. Therefore, formal and informal leaders both fill essential roles, however differences may lie within the leadership duties these athlete leaders perform for their teammates. Athletes may expect formal and informal athlete leaders to display behaviours focusing on separate elements, therefore influencing different dimensions of cohesion. For instance, a formal leader may be expected to show leadership behaviours that are autocratic, while this behaviour was found not to be conducive to the team environment when displayed by informal athlete leaders, as Autocratic Behaviour was found to negatively influence cohesion.

In addition to these findings, it was found that athlete leader behaviour was related to collective efficacy. More specifically, the formal athlete leader behaviour of

Positive Feedback was shown to be positively related to collective efficacy, while the informal athlete leader behaviours of Positive Feedback and Democratic Behaviour were shown to be positively related to collective efficacy. The significance of this finding refers to the suggestion of Vincer and Loughead (2009) indicating the need to examine various team outcomes that are influenced by athlete leadership. Furthermore, the results of the present study support the hypothesis proposed by Carron et al. (2005), suggesting that leadership behaviours of coaches are related to collective efficacy. Expanding on this point, the findings of the present study demonstrated that the leadership behaviours of both formal and informal athlete leaders can also act as a source of collective efficacy within sport.

While the results of the present study are encouraging, a few limitations should be noted. First, the sample contained a variety of skill levels within the game of ice hockey. Research conducted by Spink (1990) found the strongest relationship between cohesion and collective efficacy to exist at elite levels of sport. Therefore, it is possible that had only the highest level of junior hockey been used (i.e., Major Junior A), the results may have indicated a greater number of mediational relationships. Secondly, the results of the study cannot be generalized to female hockey players. Chelladurai's (1990) multidimensional model of leadership proposes that the gender of team members can influence the preference of leadership behaviours. Research examining collegiate coaching behaviour indicated that athletes preferred significantly different leadership behaviour depending on the gender of the coach (Beam, Serwatka, & Wilson, 2004). It could be suggested that within female teams, different athlete leadership behaviours would influence different dimensions of cohesion, which in turn could influence

collective efficacy. Therefore, different mediational relationships may be present among these three variables dependent on the gender of the athlete leaders. Finally, the design of the present study was cross-sectional in nature. The results demonstrated a relationship between the three variables examined, however the cause and effect relationship is unknown.

Given the above limitations, future research should consider using one level of highly competitive ice hockey (i.e., Major Junior A) in order to maximize the possibility of finding mediational relationships among athlete leadership behaviours, cohesion, and collective efficacy. Secondly, the majority of research testing mediation utilizing Carron's (1982) framework, with the exception of Spink (1998), has investigated these relationships in the exercise setting. Therefore, it is suggested that future research further test Carron's framework and examine cohesion as a mediator within the realm of sport. Early indication is that cohesion may be an important variable that should be targeted for intervention by coaches and sport psychology consultants. Thirdly, the presence of collective efficacy as an outcome in Carron's conceptual framework stresses the importance for future research to examine whether additional antecedents enhance collective efficacy through the mediational role of cohesion. For instance, research can examine whether cohesion mediates the relationship between the environmental factor of the organization's goals and collective efficacy. Lastly, additional research should explore the cause and effect relationship between athlete leadership behaviour, cohesion, and collective efficacy. The present study revealed a relationship among these three variables, however future research can examine the relationship of these variables utilizing a longitudinal study design to determine the causal nature of this relationship.

Therefore, it is suggested that researchers examine this relationship by collecting data at several time-points throughout the season.

The findings of the present study provide several practical implications. In regards to formal athlete leader behaviour, leaders demonstrating Positive Feedback positively influenced three dimensions of cohesion (ATG-T, GI-T, & GI-S), which positively influenced collective efficacy. Furthermore, the informal athlete leader behaviours of Positive Feedback and Democratic Behaviour positively influenced task cohesion (ATG-T & GI-T), which in turn positively influenced collective efficacy. Therefore, coaches who want to enhance the cohesion and collective efficacy within their teams should consider implementing interventions that focus on these athlete leadership behaviours. More specifically, interventions should be developed that highlight the importance for all athlete leaders to provide Positive Feedback to their teammates. In addition, coaches should encourage the use of Democratic Behaviour with their informal athlete leaders. The nurturing of these types of athlete leader behaviours would not only improve the cohesion of the team, but also perceptions of collective efficacy. Furthermore, research has consistently shown a positive relationship between collective efficacy and performance (Edmonds et al., 2009; Hodges & Carron, 1992; Myers, Feltz, & Short, 2004), as well as a positive relationship between cohesion and performance (Carron, Colman, Wheeler, & Stevens, 2002). As coaches and organizations within junior hockey focus on the goal of high performance (i.e., winning), it is suggested that incorporating interventions to increase cohesion and collective efficacy would lead to greater performance.

In summary, the present study provided further evidence of the importance of athlete leadership, cohesion, and collective efficacy in sport. Specifically, the study attempted to build upon research demonstrating the influence of athlete leadership behaviour on team oriented variables (Vincer & Loughead, 2009). The results supported the hypothesis demonstrating both formal and informal athlete leader behaviours to influence both cohesion and collective efficacy. The results further supported Carron's (1982) framework, identifying cohesion as a mediating variable. It is hoped that the findings from the present study will encourage coaches and sport psychology consultants to develop the leadership behaviours of their athletes. In doing so, this will increase perceptions of cohesion and enhance collective efficacy within the team. It is anticipated that the present findings will encourage researchers to investigate the role of cohesion as a mediator in Carron's (1982) framework, as well as examine additional team outcomes which are influenced by athlete leader behaviours.

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Table 1

Descriptive Statistics for the Dimensions of Cohesion, Athlete Leadership and Collective Efficacy

Dimension	Mean	Standard Deviation	Cronbach Alpha
		Formal Athlete Leadership	
Training and Instruction [a]	3.90	.60	.90
Democratic Behaviour [a]	3.79	.65	.81
Autocratic Behaviour [a]	3.02	.90	.78
Social Support [a]	3.94	.68	.82
Positive Feedback [a]	4.26	.66	.83
		Informal Athlete Leadership	
Training and Instruction [a]	3.34	.71	.91
Democratic Behaviour [a]	3.44	.70	.81
Autocratic Behaviour [a]	2.88	.84	.79
Social Support [a]	3.66	.75	.85
Positive Feedback [a]	3.99	.83	.88

Cohesion			
Individual Attractions to the Group - Task [b]	7.46	1.13	.67
Individual Attractions to the Group - Social [b]	7.87	1.01	.71
Group Integration - Task [b]	7.30	1.13	.85
Group Integration - Social [b]	7.48	1.14	.81
Collective Efficacy			
Collective Efficacy [c]	7.95	1.55	.88

Note: [a] Assessed on a 5 point Likert scale ranging from 1 - never, to, 5- always

[b] Assessed on a 9 point Likert scale ranging from 1 - strongly disagree, to, 9 - strongly agree

[c] Assessed on a 11 point Likert scale ranging from 0 – can not do at all, to, 10 - certain can do

Table 2

Zero-Order Pearson Correlations between Cohesion, Athlete Leadership Behaviour, and Collective Efficacy

	ATG-T	ATG-S	GI-T	GI-S	TI-F	TI-I	DB-F	DB-I	AB-F	AB-I	SS-F	SS-I	PF-F	PF-I	CE
ATG-T[a]	-------	.506**	.705**	.483**	.661**	.358**	.351**	.374**	.051	-.005	.348**	.406**	.406**	.396**	.515**
ATG-S[a]	-------	-------	.526**	.594**	.272**	.299**	.232**	.256**	.037	.012	.335**	.401**	.312**	.319**	.381**
GI-T[a]	-------	-------	-------	.706**	.461**	.362**	.433**	.404**	.066	-.036	.432**	.360**	.433**	.305**	.637**
GI-S[a]	-------	-------	-------	-------	.379**	.372**	.333**	.355**	.077	.059	.362**	.344**	.399**	.257**	.450**
TI-F[b]	-------	-------	-------	-------	-------	.627**	.663**	.472**	.131	.051	.523**	.358**	.511**	.336**	.359**
TI-I[b]	-------	-------	-------	-------	-------	-------	.487**	.717**	.170*	.330**	.298**	.493**	.388**	.442**	.321**
DB-F[b]	-------	-------	-------	-------	-------	-------	-------	.664**	.291**	.246**	.580**	.424**	.541**	.304**	.373**
DB-I[b]	-------	-------	-------	-------	-------	-------	-------	-------	.170*	.363**	.397**	.593**	.384**	.429**	.375**
AB-F[b]	-------	-------	-------	-------	-------	-------	-------	-------	-------	.735**	.198**	.039	.057	-.051	.104
AB-I[b]	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	.090	.248**	.032	.056	.090
SS-F[b]	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	.665**	.617**	.377**	.322**

SS-I[b]	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	------	.536**	.621**	.338**
PF-F[b]	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	------	.685**	.379**
PF-I[b]	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	------	.343**
CE[c]	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	------	------

Note: ATG-T = Individual Attraction to The Group-Task, ATG-S = Individual Attraction to The Group- Social, GI-T = Group Integration-Task, GI-S = Group Integration-Social, TI-F = Training and Instruction-Formal, TI-I = Training and Instruction-Informal, DB-F = Democratic Behaviour-Formal, DB-I = Democratic Behaviour-Informal, AB-F = Autocratic Behaviour-Formal, AB-I = Autocratic Behaviour-Informal,

SS-F = Social Support-Formal, SS-I = Social Support-Informal, PF-F = Positive Feedback-Formal, PF-I = Positive Feedback-Informal, CE = Collective Efficacy

[a] Assessed on a 9 point Likert scale ranging from 1 - strongly disagree, to, 9 - strongly agree

[b] Assessed on a 5 point Likert scale ranging from 1 - never, to, 5- always

[c] Assessed on a 11 point Likert scale ranging from 0 - cannot do at all, to, 10 - certain can do

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

REVIEW OF LITERATURE

The present thesis is designed to examine the influence of athlete leadership behaviours on collective efficacy and cohesion. More specifically, the purpose of the present thesis was to determine whether cohesion mediates the relationship between athlete leader behaviours and collective efficacy. Consequently, the review of literature will be divided into three parts: (a) cohesion, (b) collective efficacy, and (c) leadership.

Cohesion

This section of the thesis will review the literature relevant to cohesion. First, the construct of cohesion will be defined. Second, a conceptual model of cohesion along with the measurement of cohesion will be presented. Third, Carron's (1982) conceptual framework for the study of cohesion will be explained.

Defining Cohesion

Originally investigated in the domain of social psychology, the definition of cohesion has evolved over the last 60 years. One of the first attempts to define the concept of cohesion was Festinger, Schachter, and Back (1950), who defined it as "the total field of forces that act on members to remain in the group" (p. 154). While the development of an operationalized definition helped to advance cohesion research, this definition did present some shortcomings. The proposed definition suggested that all "forces", which contributed to an individual's decision to either leave or stay in a group were needed to be measured. A second drawback was that Festinger et al. identified attractiveness to the group as being central to the definition of cohesion. Based on these two shortcomings, Gross and Martin (1952) advanced another definition of cohesion whereby they viewed it as "the resistance of a group to disruptive forces" (p. 553),

focusing on what maintains the existence of a group. Regardless of whether researchers adopted the Festinger et al. or Gross and Martin definition of cohesion, the main problem was both of these definitions viewed cohesion as a unidimensional construct (e.g., Lott & Lott, 1965; Pepiton & Kleiner, 1957; Van Bergen & Koelcebakker, 1959). The operationalization of cohesion as a unidimensional construct was a significant limitation in the research literature. First, operationalizing cohesion as attraction to the group neglects to incorporate all other relevant forces that keep a group together (Mudrack, 1989). Second, operationalizing cohesion as attraction to the group failed to adequately represent the construct of cohesion due to the fact that this definition concerned exclusively the individual members that make up a group (Mudrack).

In response to operationalizing cohesion as a unidimensional construct, Carron (1982) argued that this construct should be viewed as a multidimensional phenomenon and proposed a definition to emphasize this aspect. This definition was later modified by Carron, Brawley, and Widmeyer (1998) who stated that cohesion be defined 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 the satisfaction of member affective needs" (p. 213). This definition highlighted the multidimensional nature of cohesion, suggesting that the factors, which may lead a group to remain united, may not be the same as the underlying factors of a similar group. For example, an ice hockey team may have a strong bond among members; however they may lack in harmony in regards to their task objectives. On the contrary, a second ice hockey team may be fully united in their objectives, therefore demonstrating high task cohesion, but feel disconnected socially from their teammates. In addition, Carron et al. also noted

three other characteristics of cohesion. The second characteristic of cohesion is its dynamic nature. That is, cohesion can change over time. For instance, a newly formed competitive ice hockey team may be united in their task objectives and low in social cohesion. As the team develops and is maintained through time, the increase in the opportunities to bond with members can result in both high social and task cohesion at the end of the season. A third characteristic of cohesion is that all groups have an underlying purpose; an instrumental basis for their development. In sport, teams are generally formed for a task-oriented purpose, where the basis of development is performing tasks successfully. The final characteristic of cohesion is its affective dimension. This refers to social relationships that exist within the group. While this dimension may not be present at the formation of the group, it is noted that even in task-oriented groups, social cohesion usually emerges over time. This is demonstrated among competitive sport teams, where a primary focus of the athletes is winning, however the bond between members increases in a way to satisfy the members of the team.

Conceptual Model and Measurement of Cohesion

Carron, Widmeyer, and Brawley (1985) advanced a conceptual model of cohesion (Figure 2). The conceptual model was developed using three assumptions. First, based on research from social cognition theory, Carron et al. argued that it was possible to measure cohesion by assessing the perceptions of individual members. They noted that observable properties exist within a group, such as roles. Through social interactions, members build beliefs regarding the group, consequently developing personal perceptions of the group. Second, the perceptions a member holds about cohesion concerns both the group as a whole and the individual. Therefore, it is necessary to differentiate between perceptions

of cohesion regarding the group as a whole and perceptions about the personal satisfaction and feelings an individual derives from the group. The third assumption notes that a member's perception of his/her group will have two key orientations. The first of which is a task orientation, which deals with the task objectives for both the group and its members. The second is a social orientation which deals with building and maintaining social relations and activities within the group (Carron et al., 1998).

Utilizing these three assumptions as a foundation, Carron et al. (1985) advanced a conceptual model of cohesion. The conceptual model consisted of two primary categories labeled as Group Integration (GI), encompassing perceptions of closeness and unity at a group level, and Individual Attractions to the Group (ATG), encompassing personal feelings and motives of an individual to be a member of a group. These two categories are further separated to include a social and task component. The result is cohesion being represented by four dimensions. The first is Individual Attractions to the Group-Task (ATG-T), which reflects the personal feelings an individual has regarding the group and motives to maintain a member. The second is Individual Attractions to the Group-Social (ATG-S), which reflects the feelings an individual has in regards to the social relations and interactions with other group members. Third, Group Integration-Task (GI-T), reflects the feelings an individual has concerning the closeness of the team regarding the group's objectives. Lastly, Group Integration-Social (GI-S), reflects the feelings an individual has regarding the commonality of the team and its closeness as a social unit.

Using the conceptual model as a guide, Carron et al. (1985) then developed an inventory to assess the four dimensions of cohesion. This inventory was named the Group

Environment Questionnaire (GEQ; Carron et al., 1985) and consists of 18 items. Twelve of the 18 items of the GEQ are negatively worded and need to be reversed scored. All of the items on the GEQ are answered on a 9-point Likert type scale anchored at 1 (*strongly disagree*) and 9 (*strongly agree*), where a higher score indicates a stronger perception of cohesion. The ATG-T dimension contains four items with an example being "I'm not happy with the amount of playing time I get." The statement "For me this team is one of the most important social groups to which I belong" is an example of the ATG-S dimension, which contains a total of five items. The dimension GI-T is also represented by five items with an example item being "Our team is united in trying to reach its goals for performance." The fourth dimension is GI-S and contains four items with an example being "Our team would like to spend time together in the off season." Carron et al. demonstrated that the GEQ had good internal consistency as well as stability across two independent samples. In addition, the GEQ was found to have both content validity and construct validity. Since the original development, additional research has shown that the GEQ also possesses concurrent validity and predictive validity (Carron, Brawley, & Widmeyer, 1987).

Although some research (e.g., Li & Harmer, 1996) has shown the GEQ to possess adequate internal consistency, there are some studies (e.g., Westre & Weiss, 1991) that have reported less than ideal values. Researchers have advanced two reasons for these equivocal findings concerning internal consistency values. The first is based on the multidimensional nature of cohesion (Carron, Brawley, & Widmeyer, 2002). The authors noted that not all dimensions of cohesion are equal throughout time in a group or between groups. This can be demonstrated, for example, in the stages of development in a group.

For instance, in the beginning stages of group formation in an ice hockey team, there may be low levels of GI-S present since the focus rests on attaining team task objectives. A lower internal consistency at this point may reflect that the members of the team do not have reliable perceptions of cohesion represented by GI-S. However, team members may have strong perceptions about the group's belief in the task and therefore result in high internal consistency for the GI-T scale. The second reason for low internal consistency values may be due to the negative wording of the items in the questionnaire. The negative wording of the items may lead to variability in internal consistency. In fact, Eys, Carron, Bray, and Brawley (2007) compared the original version of the GEQ (with its 12 negatively worded items) and a modified version of the GEQ that contained all positively worded items. The results showed that the version with the positively worded items had greater internal consistency values on three of the four dimensions of cohesion (ATG-T, GI-T, GI-S) than on the original version.

Conceptual Framework for the Study of Cohesion

In conjunction with the development of the conceptual model for cohesion, Carron (1982) proposed a conceptual framework for the study of cohesion in sport, providing guidance for future research by highlighting the antecedents and consequences of cohesion (Figure 1). This framework is organized in a linear fashion consisting of inputs (antecedents), throughputs (dimensions of cohesion), and outputs (consequences). The antecedents of this framework include four categories: environmental, personal, leadership, and team. Each of these four antecedents will now be discussed.

Environmental. Environmental factors are viewed as the social and physical characteristics of the group's environment. Carron (1982) identified two factors

influencing the group's environment: contractual responsibility and organizational orientation. The degree to which these two factors contribute to cohesiveness are determined by the characteristics of the team. Contractual responsibility refers to eligibility and contract demands. This factor distinguishes sport teams from social groups, where membership is more easily terminated due to the fact that contractual binding does not exist. Organizational orientation refers to the goals and methods of goal attainment of the organization. This factor contributes to cohesiveness as these ideals create a foundation effecting the extent of both social and task cohesion of the team.

Personal. Carron (1982) acknowledged that it would be difficult to outline an exhaustive list of all of the personal factors that contribute to cohesion. Based on the support from previous research, three factors were outlined encompassing personal factors: individual motivation, individual satisfaction, and individual differences. Individual motivation is comprised of three elements. The first element is task motivation, which refers to accomplishing the task of the group. The second element is affiliation motivation, which refers to the development and maintenance of pleasant and harmonious relationships with group members. The third element is self-motivation and is concerned with personal gratification and rewards gained from group membership.

Individual satisfaction is the second personal factor. It has been suggested by Carron (1982) that satisfaction, cohesion, and performance will have a circular relationship. That is, athletes who are more satisfied will feel more cohesive with their team, which in turn, will enhance performance. Furthermore, athletes who perform well will typically be more satisfied with their athletic experience. Lastly, the factor of

individual differences was identified as a personal factor that could influence cohesion. Carron noted that factors such as age or race may influence perceptions of cohesion.

Leadership. The third antecedent impacting cohesion is leadership. Carron (1982) identified four leadership contexts that will influence perceptions of cohesion. The first two, leadership behaviour and leadership style, have been associated with cohesion. Westre and Weiss (1991) found that coaches who demonstrated greater behaviours of Social Support, Training and Instruction, Positive Feedback, and who have a Democratic leadership style was related to greater perceptions of task cohesion. In addition, the coach-athlete relationship and the coach-team relationship are two other leadership factors that have influenced cohesion. For instance, Jowett and Chaundy (2004) examined the coach-athlete relationship as a predictor of cohesion. It was found that 8% of total variance in the prediction of task cohesion and 3% of total variance in the prediction of social cohesion was due to variables concerning this relationship. The findings suggest that cohesion is influenced not only by the leadership behaviours, but also by the relationship between the coach and his/her athletes.

Team. The final antecedent of the conceptual framework is team factors. One of these team factors is group orientation, which refers to the degree of social and task forces. A second factor, group productivity norm, refers to the expectations and acceptance by the team in regards to productivity. Team stability, a third factor, is viewed as the length of time a team exists together. The longer a team is maintained, the greater the interactions among members, therefore creating more possibilities to enhance both social and task cohesion. The fourth factor is the desire for group success, which deals with the motivation of the group to overcome obstacles and achieve success.

Consequences. The consequences that have been proposed in the conceptual framework are separated into group (e.g., team stability, team performance) and individual outcomes (e.g., individual performance, individual satisfaction). An outcome that has been examined the most is performance. Using meta-analytic techniques, Carron, Colman, Wheeler, and Stevens (2002) found a strong positive relationship between performance and cohesion in sport. Another outcome that has been examined in relation to cohesion is satisfaction. For instance, Widmeyer and Williams (1991) found member satisfaction to be correlated with all four dimensions of cohesion. Recently, research has also shown the construct of collective efficacy to be related to cohesion (Heuzé, Bosselut, & Thomas 2007; Heuzé, Raimbault, & Fontayne, 2006).

Collective Efficacy

This section of the thesis will review the literature relevant to collective efficacy. First the construct of collective efficacy will be defined. Second, the measurement of collective efficacy will be discussed. Third, research examining collective efficacy will be reviewed.

Defining Collective Efficacy

The construct of collective efficacy was first proposed by Bandura (1986) and stemmed from the examination of self-efficacy, which was defined as the assessment an individual has in regards to his/her capability to plan and execute specific steps in order for performance attainment. Although the emphasis of efficacy was placed on a personal level, Bandura noted that it is rare for individuals to act solely in isolation and often interact as members of a group. This notion led to the development of collective efficacy. At first, a specific definition was not proposed, but instead Bandura stated that "collective

efficacy is rooted in self-efficacy" (p.143). Nonetheless, Bandura highlighted the importance of collective efficacy by suggesting that it "will influence what people choose to do as a group. How much effort they put into it, and their staying power when group efforts fail to produce results" (p. 449). More than a decade later, Bandura (1997) advanced a definition of collective efficacy stating that it is "a group's shared belief in its conjoint capabilities to organize and execute the courses of action required to produce given levels of attainments" (p. 477).

Building on the construct proposed by Bandura (1986), a second definition of collective efficacy was advanced by Zaccaro, Blair, Peterson, and Zazanis (1995), who defined collective efficacy as "a sense of collective competence shared among individuals when allocating, coordinating, and integrating their resources in a successful concerted response to specific situational demands" (p. 309). The common thread between the Zaccaro et al. and Bandura (1997) definitions is the emphasis on members sharing a common belief in regard to the group's capabilities. The definitions provided by both Zaccaro et al. and Bandura have been utilized in the majority of research examining collective efficacy. Although both definitions have been used in sport psychology research, most of the research in this domain has used Bandura's (1997) operationalization.

Measurement of Collective Efficacy

There are four methods to assess collective efficacy (CE) in sport. These methods are related to how collective efficacy has been defined by Bandura (1997) and Zaccaro et al. (1995). First, Bandura suggested that collective efficacy can be measured by aggregating the responses of each team members' perception of their *self-efficacy* (CE-

SE). Bandura noted a second method of assessing collective efficacy is by aggregating the individual team members' responses of each team member's judgment of their team's capability as a whole, which asks individuals to rate *his or her own confidence* in the team's abilities (CE-CEI, where I represents the individual). In addition, Bandura noted that this second method may be preferred when groups are engaging in interdependent tasks, such as team sports like ice hockey. The final two methods to assess collective efficacy were developed using Zaccaro et al.'s definition of collective efficacy. The third method to assess CE is to aggregate the individual's assessment of *his or her team's confidence* in its capabilities (CE-CET, where T denotes team). Lastly, collective efficacy can be measured by assessing the group as a whole to obtain a *group level* estimate (CE-GCE, where G denotes group).

The majority of research in sport psychology has used Bandura's (1997) definition of collective efficacy and that body of research has assessed collective efficacy by employing the CE-CEI method of measurement. The prevalence of using the CE-CEI method was explained by Myers and Feltz (2007) who noted that "people have better access to their own beliefs about a group's capabilities than they do to a group's beliefs about its capabilities" (p. 803). One point that should be highlighted is when using Bandura's definition, he advocated for the development of situation specific questionnaires to measure collective efficacy. As such, numerous researchers have created sport-specific questionnaires based on Bandura's guidelines including basketball (Bray & Widmeyer, 2000), football (Myers, Feltz, & Short, 2004), hockey (Feltz & Lirgg, 1998), rowing (Magyar, Feltz, & Simpson, 2004), and volleyball (Paskevich,

Brawley, Dorsch, & Widmeyer, 1999). The items of these questionnaires were based on particular tasks relevant to the specific sport under examination.

In developing sport-specific questionnaires, Bandura (2006) advanced the following guideline, which consists of seven components. The first is *content validity*, which is to ensure that efficacy is measured and not an individual's intention. Consequently, the items should be written as "can do", which signifies the assessment of capabilities, instead of "will do", which represents perceptions of intent. The second component is *domain specification*, which refers to the fact that the content should be specific to the sport domain rather than utilizing efficacy beliefs that are global in nature. The third is *gradations of challenge*, which refers to the levels of task demands; thus the items should reflect the varying degrees of the activity. If the items do not reflect this reality then all participants will feel capable of completing the tasks, resulting in all the participants feeling greatly efficacious. The fourth component is *response scale* and refers to the recommendation that the strength of participants' efficacy beliefs be measured on a scale ranging from 0-10 in intervals of one unit or 0-100 in 10 unit intervals. The 11-point scale is sensitive and more reliable than scales with fewer response categories (Bandura). The fifth component is *minimizing response bias* and is achieved by ensuring anonymity and confidentiality. The sixth component is *item analysis in scale construction*, which includes pilot testing and revisiting items that are ambiguous or receive the same response from all participants. Lastly, the seventh component is *predictive and construct validity*, which refers to the notion that the efficacy scales should have face validity as well as discriminative and predictive validity.

While Bandura's (1997, 2006) approach to measuring collective efficacy (i.e., the development of sport-specific questionnaires) has been used the most, recently there have been attempts to developed a universal measurement tool. Short, Sullivan, and Feltz (2005) developed the Collective Efficacy Questionnaire for Sport (CEQS), a 20-item measure focused on assessing five factors of collective efficacy including; ability, effort, preparation, persistence, and unity. The questionnaire was developed as a measure of collective efficacy that would not be constrained to utilization in one sport. While the reasoning for developing a universal measure is understandable, to date no published research has employed this measurement tool. Consequently, the validity of a universal questionnaire measuring collective efficacy in sport has been heavily criticized (Bandura, 2006). Furthermore Bandura (2006) argued that in environments such as sports, a measure of collective efficacy is only valid if developed for that specific sport, addressing the specific functions of that activity. Therefore, Bandura (2006) advocated that a measurement tool for collective efficacy must be created for the specific sport that is under investigation. Specifically Bandura (2006) states,

> The "one measure fits all" approach usually has limited explanatory and predictive value because most of the items in an all-purpose test may have little or no relevance to the domain of functioning. Moreover, in an attempt to serve all purposes, items in such a measure are usually cast in general terms divorced from the situational demands and circumstances. This leaves much ambiguity about exactly what is being measured or the level of task and situational demands that must be managed. (p. 307)

Relationships with Collective Efficacy

Collective efficacy is a relatively new construct to be examined in the sport domain. The research that has been conducted has shown this construct to be related to

several other variables. As such, the following section of the literature review has been categorized by the type of outcome: individual, team, and performance. Each of these sections will be reviewed.

Individual outcomes. Collective efficacy has been examined in relation to individual outcomes such as imagery. Shearer, Thomson, Mellalieu, and Shearer (2007) examined the relationship between the five functions of imagery (i.e., Cognitive General, Cognitive Specific, Motivational Specific, Motivational General-Arousal, and Motivational General-Mastery) and individual perceptions of collective efficacy in elite (n = 70) and non-elite (n = 71) male athletes from a variety of interdependent team sports. In general, the results showed that collective efficacy was associated with an athlete's use of Motivational General-Mastery imagery, which refers to images of being confident in various situations. It should be noted that this finding was only for elite level athletes. As for non-elite athletes, none of the five functions of imagery were found to be predictive of collective efficacy. It was thought that the elite level athletes' experience playing sport may facilitate the ability to produce Motivational General-Mastery images and therefore use this type of imagery to a greater degree than non-elite athletes.

Another individual outcome examined has been anxiety. Greenlees, Nunn, Graydon, and Maynard (1999) examined male rugby players (n = 66) at least eight weeks into the season prior to games that were viewed by the athletes as important to win. Collective efficacy regarding match outcome (i.e., participants' perceptions of the team's chance of winning) was found to be associated with cognitive anxiety. Specifically, higher scores of collective efficacy predicted lower levels of cognitive anxiety.

Greenlees, Graydon, and Maynard (2000) investigated the relationship between collective efficacy and goals. Twenty-six male university students and 14 confederates participated as triads in two trials on a cycle ergometer task. Triads were randomly placed into a high collective efficacy or low collective efficacy condition. Prior to the first trial, collective efficacy was measured and participants were asked to set a goal concerning the triad's finishing time. After trial one, those participants in the high collective efficacy condition were given false feedback telling them that their team had a finishing time in the top 5% of all teams. In contrast, the low collective efficacy condition received false feedback indicating their results placed them in the bottom 20% of all teams participating in the study. Before the start of the second trial, collective efficacy and goals were assessed. The results showed that participants in the low collective efficacy condition had a decrease in collective efficacy from trial one to trial two, while collective efficacy was maintained between trials in the high collective efficacy groups. Results also indicated that participants in the low collective efficacy condition decreased their goal difficulty between trials (i.e., more time to complete the task).

Team outcomes. One of the most studied team outcomes examined in relation to collective efficacy has been cohesion. Spink (1990) examined the relationship between collective efficacy and cohesion in elite and recreational volleyball players. Collective efficacy was operationalized by asking participants to predict their team's final standing in a tournament. Those participants who indicated that their team would finish high in the standings were classified as being high in collective efficacy and those who predicted their team to finish low in the standings were classified as being low in collective efficacy. In the elite sample, it was found that the high collective efficacy participants

reported greater levels of GI-S and ATG-T than those elite athletes reporting low collective efficacy. As for the recreational sample, participants did not differ in any of the four dimensions of cohesion when comparing low and high collective efficacy. It was suggested that recreational participants may hold the primary goal of bonding and cohesion on a team; whereas an elite participant may see cohesion as a means to an end, where the goal is winning.

In order to determine if the four dimensions of cohesion were related to all or certain aspects of collective efficacy, Paskevich et al. (1999) examined university and club level volleyball players. Collective efficacy was operationalized as each player rated his/her team's confidence in performing eight skills related to volleyball. The eight skills consisted of offensive, defensive, and transition tasks, communication, motivation, overcoming obstacles associated with teammates or losing a key player, and general items related to the pursuit of normal team functioning. Two days before or after a competition, athletes were administered the GEQ along with the collective efficacy questionnaire. Findings revealed that those athletes who perceived their team high in GI-T were found to have greater collective efficacy than those athletes perceiving their team low in GI-T. Specifically, GI-T was related to the collective efficacy dimensions of communication, motivation, overcoming obstacles associated with teammates, and general collective efficacy of team functioning.

Heuzé et al. (2007) examined the direction of the collective efficacy-cohesion relationship. A sample of elite handball players were administered the GEQ as well as a collective efficacy questionnaire at two time periods during the competitive season (early and mid-season). Collective efficacy was assessed in the areas of offensive, defensive and

transitional tasks of handball. A significant relationship was revealed between early season collective efficacy and mid-season cohesion for the dimension of ATG-T. It was suggested that athletes' perceptions of collective efficacy leads to greater feelings related to personal involvement with their team's tasks and objectives. The authors stated that a direction change in this relationship could be expected at varying stages of team membership. Therefore the relationship between collective efficacy and cohesion could be circular in nature.

Another team outcome which has been examined is team attributions. Chow and Feltz (2008) examined high school athletes from 20 track relay teams. Four dimensions of causality were operationalized as a measurement of team attributions, consisting of, locus of causality, stability, personal control, and external control. Twenty minutes prior to competition, collective efficacy was assessed as athletes were asked to rate their confidence that their team can perform skills related to relay team. The results indicated that athletes reporting higher perceptions of collective efficacy attributed performance outcomes as being controllable by the team. This relationship was found to be stronger in female relay teams. It was suggested that the enhanced ability for females to emotionally communicate can lead to increased feelings of support and a sense of control.

Performance outcomes. The bulk of research has focused on the relationship between collective efficacy and performance. Hodges and Carron (1992) randomly assigned 153 high school students into either a low collective efficacy or high collective efficacy condition. In addition, the investigation included two confederate groups against whom the participants competed against. Collective efficacy was manipulated by having the participants perform a hand dynamometer task. Regardless of the performance on this

task, participants received false feedback. In particular, participants in the high collective efficacy condition received feedback indicating that their group was superior to the confederates. For the low collective efficacy condition, they received feedback indicating that their performance was inferior to those of the confederate group. Once the participants were in their respective condition (high or low collective efficacy), they were asked to hold out a medicine ball for as long as possible trying to beat the confederate group against whom they competed against. It should be noted that the confederate group performed the task with a foam filled ball and held the ball 5-10 seconds longer than all groups. Results indicated that the high collective efficacy condition was more confident prior to the medicine ball task compared to the low collective efficacy condition. Performance results of the task showed the high collective efficacy group increased performance from trial one to trial two, while the low collective efficacy group decreased performance (i.e., held the medicine ball for a shorter amount of time).

Similar results were found utilizing a cycle ergometer activity. Male university students were randomly assigned to a group containing two other confederates. Half of the groups were assigned to a low collective efficacy condition, while the second half to a high collective efficacy condition. Participants were given two trials to use a cycle ergometer to cover a distance of 2000 meters as a group. Collective efficacy was operationalized as the participants' estimate of their chance to win first prize both prior to trial one and two. After trial one, participants had a 20 minute rest where they received false feedback dependent on the collective efficacy group to which they were assigned. Individuals in the high collective efficacy condition were told their team's performance was in the top 5%, while participants assigned to the low collective efficacy condition

were given feedback that their team's performance placed them in the bottom 20%. Performance was operationalized in terms of effort and the time it took participants to complete 700 meters on the cycle ergometer. While no significant difference was found in participant effort between the low and high collective efficacy groups during trial one, in trial two, high collective efficacy participants were significantly faster than those in the low collective efficacy condition. The high collective efficacy condition did not differ in effort from trial one to trial two, however the low collective efficacy condition showed a decrease in performance time across trials (Greenlees et al., 2000).

Myers et al. (2004) investigated the relationship between collective efficacy prior to and the following team performance of offensive players among ten intercollegiate football teams (n = 197). Participants completed questionnaires assessing self-efficacy (i.e., their own confidence to perform specific tasks on the upcoming opponent) and collective efficacy (i.e., the degree of confidence the athlete had in their team's ability to perform specific tasks against an upcoming opponent) within 24 hours prior to eight consecutive games. Offensive performance was measured utilizing five offensive categories (e.g., points scored). Collective efficacy prior to a performance was found to positively predict offensive performance within weeks across teams as well as within teams across games. However, previous offensive performance was found to be a negative predictor of collective efficacy. It was suggested that this negative relationship was due to the quality of the upcoming opponent.

More recently, changes in the collective efficacy-performance relationship during competition were examined among 17 adventure racing teams (n = 51 participants). Performance was operationalized as the time it took each team to arrive at the first three

race checkpoints and total performance was measured as the finishing time of the race. At the first three checkpoints, participants were assessed in collective efficacy by completing a questionnaire regarding their team's capabilities in tasks specifically related to adventure racing. The results indicated that prior performance (i.e., previous experience on the racing team) was strongly related to initial perceptions of collective efficacy. It was also found that collective efficacy measured at the previous checkpoint influenced the performance at the subsequent checkpoint. In general, the collective efficacy-performance relationship revealed that the higher the collective efficacy prior to each checkpoint, the better the performance (Edmonds, Tenenbaum, Kamata, & Johnson, 2009).

Leadership

This section of the thesis will review the literature relevant to leadership. First, the construct of leadership will be defined. Second, Chelladurai's (1978, 1993) multidimensional model of leadership will be explained. Third, the measurement of leadership will be presented. Fourth, the research utilizing the leadership measure will be presented. Fifth, the construct of athlete leadership will be discussed.

Defining Leadership

Leadership has been examined in a variety of organizational domains, including sport. The term leadership has been defined in these contexts in several different ways. Despite the various ways in which leadership has been defined, Northouse (2001) noted that all of the definitions had some similarities and he defined it as "a process whereby an individual influences a group of individuals to achieve a common goal" (p. 3). This definition encompassed four common components generally seen in leadership

definitions. First, leadership is a *process*; it is not a trait or characteristic, but an interaction between the leader and followers. This signifies that leadership is non-directional, therefore in addition to the leader affecting the follower; the leader is also affected by the follower. Based on this assumption, everyone can be a leader and is not limited to those individuals appointed as formal leaders, such as team captains or coaches. *Influence* is the second component, which encompasses how a leader affects followers. This component is essential, for without it, leadership cannot exist. The third component posits that leadership occurs within a *group* context. The final component deals with *goals*. That is, leadership includes the ability to guide a group toward the attainment of a common goal.

The Multidimensional Model of Leadership

The multidimensional model of leadership was developed by Chelladurai (1978, 1993) for the use of studying leadership in the sport domain (Figure 3). Chelladurai developed the multidimensional model of leadership based on four leadership theories: Fielder's (1967) contingency model of leadership effectiveness, Evans' (1970) and House's (1971; House & Dressler, 1974) path-goal theory of leadership, Osborn and Hunt's (1975) adaptive-reactive theory of leadership, and Yukl's (1971) discrepancy model of leadership.

Contingency model of leadership effectiveness. This theory states that the style, which the leader uses to interact with the group, as well as the favorableness of the situation, influences leadership effectiveness (group performance and member satisfaction). The two types of leadership styles are represented by task-oriented (satisfaction is gained from success and productivity) and person-oriented (satisfaction is

gained from affiliations and social interactions). Favorable situations are seen as those which are; high in power, high in leader-member relations, and have high task structure. Unfavorable situations are seen as those which are; low in power, low in leader-member relations, and have low task structure. It is proposed that a task-oriented leadership style is most effective in both the most favorable and the most unfavorable situations. Conversely, a person-orientated leader is more effective in situations that are considered moderately favorable, consisting of a moderate power position of the leader, moderate relations with group members, and the task is moderate in structure (Carron, Hausenblas, & Eys, 2005; Fielder, 1967).

Path-goal theory of leadership. This theory suggests that the effectiveness of a leader depends on the leader's ability to influence the motivation of the subordinates. This motivation in turn leads to member satisfaction and effective performances. There are two general propositions: (1) the behaviours expressed by the leader are considered acceptable and satisfying to the degree where the behaviour is viewed as providing satisfaction to the individual, and (2) that the leader behaviour will be motivational. The behaviour will increase effort where subordinate satisfaction is dependent on effective performance, as well as match the environment by providing tools for effective performance. The theory suggests that it is the role of the leader to provide support and resources in order for goal attainment. The effectiveness of the leader lies in his/her ability to communicate and make certain that subordinates expect to attain the goals, and as a result, will feel intrinsic satisfaction as well as receive rewards (Evans, 1970; House, 1996).

Adaptive-reactive theory of leadership. This theory expands on the path-goal theory. A leader must adapt to the particular needs of their subordinates, as well as adapt to the situation, in order to be effective. When a leader adapts to the demands of the environment, as well as fulfills the needs and desires of the subordinates, it is assumed that the subordinates will then respond to the behaviours of the leader. Therefore, a two-way relationship develops as leader behaviours are affected by the wants and needs of the subordinates, who are responsive to the leader's behaviours. This relationship exists only when leaders are able to acknowledge and act upon the preferences and needs of the subordinates (Osborn & Hunt, 1975).

Discrepancy model of leadership. It is suggested that subordinate satisfaction is due to the discrepancy between subordinate's preference of behaviour, consisting of both the personality of the subordinate as well as situational variables, and the leader's behaviour. The more discrepancy between the two, the more dissatisfaction felt by the subordinate (Yukl, 1971).

Based on the above four theories of leadership, Chelladurai (1978, 1993) advanced a linear model of leadership for sport consisting of inputs, throughputs, and outputs. The inputs consist of three characteristics. First, *situational characteristics* include the nature of the task, the degree to which it is independent, and the structure of the organization. Second, *leader characteristics* include factors such as the leader's ability, experience, and personality. Third, *member characteristics* include team member's age, experience, and culture.

The throughputs are categorized into three types of leadership behaviours. *Required behaviours* refer to those viewed as necessary to carry out the task. This

category is directly influenced by situational characteristics. For example, in an ice hockey playoff game, a team may be down by one goal when a time-out is called. It would not be an effective strategy to utilize a democratic approach to discuss the players' opinions on how to score the tying goal. Instead, the situation demands a swift autocratic behaviour approach. In addition, required behaviours are also directly influenced by member characteristics. For instance, beginner skaters may need more instructional behaviour compared to those athletes who have experience. The second type of leadership behaviour is *actual behaviour* and refers to the behaviours performed by the leader. Actual behaviour is directly influenced by the input of leader characteristics as well as the throughputs of required and preferred behaviour. The last throughput is *preferred behaviour*, which is identified as the preferences that a member has for instruction and guidance, social support, and feedback. This behaviour is directly influenced by member characteristics as well as situational characteristics.

A central tenet of the multidimensional model of leadership is that the degree of congruency between the three leadership behaviours will have a direct impact on the output variables of performance and member satisfaction. It was proposed by Chelladurai (1990) that the congruency between the three behaviours (i.e., required, actual, and preferred) would result in higher athlete satisfaction and enhanced performance. The model also incorporates two feedback loops from the outputs to the actual behaviour. These loops represent the change in leadership behaviour based on the attainment of the outcome variables. Failing to meet performance expectations may influence the leader to exert more task-oriented behaviours. Becoming aware of low member satisfaction with the team may influence the leader to emphasize behaviours which would create warm

interpersonal interactions. It is also acknowledged that the outcome variables should not be limited to performance and satisfaction.

Measuring Leadership

The Leadership Scale for Sports (LSS; Chelladurai & Saleh, 1978; 1980) was developed in conjunction with the multidimensional model of leadership in order to test the relationship hypothesized in this model. The LSS assesses five different dimensions of leadership behaviour. This 40-item questionnaire contains a task factor: Training and Instruction, two decision-style factors: Democratic and Autocratic Behaviour, and two motivational factors: Social Support and Positive Feedback. Thus, the LSS measures five dimensions of leadership behaviours. The Training and Instruction dimension is measured by 13 items and refers to helping an athlete to enhance his/her performance by teaching and developing skills, techniques, and tactics of the sport. The dimension of Democratic Behaviour consists of nine items and is represented by the degree to which athletes are allowed to participate in the decision-making process. There are five items that comprise the Autocratic Behaviour dimension and it reflects the degree to which the leader emphasizes his or her authority over them. Social Support is represented by eight items and reflects the degree to which the leader meets the interpersonal needs of the athletes. This factor is demonstrated through direct behaviours of the leader or through the creation of a socially supportive environment. Finally, the dimension of Positive Feedback consists of five items and deals with the degree to which the leader reinforces an athlete by recognizing and rewarding good performance.

All of the items from the LSS are scored on a 5-point Likert scale. Each item is responded to with five response categories: 1 (*never*), 2 (*seldom*), 3 (*occasionally*), 4

(*often*), and 5 (*always*). The LSS has been used to measure three types of leadership behaviours; athletes' preferences for specific leader behaviours, athletes' perceptions of their leaders' behaviours, and leaders' perceptions of their own behaviour. The LSS has been shown to have factorial validity as well as content validity. In addition, the internal consistencies of the subscales have been acceptable except for Autocratic Behaviour (e.g., Chelladurai & Saleh, 1980; Sullivan & Kent, 2003). The internal consistency estimates for Autocratic Behaviour has ranged from .45 to .93. Chelladurai and Riemer (1998) suggested one method of increasing the internal consistency of the Autocratic Behaviour dimension was by adding additional items as a way to increase homogeneity of the items. This suggestion was adopted by Price and Weiss (2000) who added three items and resulted in an alpha value of .71.

Research Using the LSS

Research utilizing the LSS has been widespread. The majority of previous research has demonstrated links between leadership behaviours and three variables; satisfaction, cohesion and performance. Each of these variables will be reviewed in relation to the LSS. All of this research has examined the leadership behaviours of coaches.

Satisfaction. Chelladurai (1984) was the first to examine leadership behaviours and satisfaction of athletes. The participants were 196 Canadian varsity athletes, participating in the sports of basketball, wrestling, and track and field, who completed the preferred and perceived versions of the LSS. The results showed that congruency between preferred and perceived leader behaviour affected three types of satisfaction: satisfaction with performance, satisfaction with leadership, and satisfaction with overall

involvement. In particular, basketball players who preferred higher amounts of Training and Instruction, Democratic Behaviour, Social Support, Positive Feedback and lower perceptions of Autocratic Behaviour from their coach had higher perceptions of satisfaction with leadership. Furthermore, basketball players were also found to have greater satisfaction with team performance when they perceived greater Positive Feedback relative to their preference.

Similarly, wrestlers had higher perceptions of satisfaction with leadership behaviour when their coaches displayed greater leadership behaviours of Training and Instruction and Social Support. In addition, a curvilinear relationship was found between Positive Feedback and satisfaction with leadership behaviour. Wrestlers had higher satisfaction with team performance when coaches demonstrated more Training and Instruction, Democratic Behaviour, and Social Support coaching behaviours. Another curvilinear relationship was also found between Training and Instruction and satisfaction with overall involvement.

In track and field, athletes having higher perceptions relative to preferences in the leadership behaviour of Training and Instruction had higher satisfaction with leadership. This relationship was also demonstrated between Social Support and satisfaction with overall involvement. The leadership behaviours of Democratic Behaviour and Autocratic Behaviour were shown to be curvilinear with this measure of satisfaction. A curvilinear relationship was also found between Training and Instruction and satisfaction with team performance.

Weiss and Friedrichs (1986) investigated the satisfaction-leader behaviour relationship in a sample of 251 National Collegiate Athletic Association, male basketball

players. Satisfaction was assessed by asking the athletes about their satisfaction in the following areas: supervision, playing conditions, teammates, amount of work, kind of work, and school identification. Total satisfaction (a composite score) was significantly related to all five leadership behaviours from the LSS.

Cohesion. Research investigating baseball and softball high school and college athletes has found a relationship between cohesion and leadership behaviours (e.g., Gardner, Shields, Bredemeier, & Bostrom, 1996; Shields, Gardner, Bredemeier, & Bostrom, 1997). In these studies the four subscales of cohesion were collapsed in order to improve reliability scores. ATG-T and GI-T were combined and labeled as task cohesion, while ATG-S and GI-S were combined to form a general dimension of social cohesion. Four dimensions of the LSS (Democratic Behaviour, Positive Feedback, Training and Instruction, and Social Support) significantly positively correlated with task cohesion, however the dimension of Autocratic Behaviour was found to be negatively correlated to task cohesion (Gardner et al., 1996). Shields et al. (1997) utilized the three versions of the LSS (required, preferred, and perceived) and revealed that the strongest relationship was found between perceived leadership behaviours and task cohesion, with the dimension of Training and Instruction being the strongest. In relation to social cohesion, Gardner et al. (1996) found only two of the five leadership behaviours (i.e., Training and Instruction and Social Support) to be positively correlated with social cohesion.

Athlete Leadership

To date, the majority of research examining leadership in sport has focused on the coach. However recently, leadership in sport psychology has started examining the leadership role of the athletes. From a roles perspective, athlete leaders are able to occupy

either a formal or informal leadership position. Athletes who maintain a formal leadership role (e.g., team captain) are either appointed by the organization or elected by members of the team. These formal athlete leaders have the responsibility to insure the team is effective at meeting the goals of the organization as well as to insure the satisfaction of team members' needs. In contrast, an informal athlete leader emerges from the interactions and communications among members (Carron et al., 2005). Using this distinction and Northouse's (2001) definition of leadership as a basis, Loughead, Hardy, and Eys (2006) defined athlete leadership as a process whereby athletes influence and guide team members toward the attainment of a common goal.

While the Loughead et al. (2006) definition is fairly recent, it should be noted that athlete leadership research has occurred sporadically in the past. However, this early research failed to operationalize the term athlete leadership. The focus of this early research was to examine athlete leaders in regard to their characteristics or the position which they occupy on a team. One of the first studies investigating athlete leadership by Tropp and Landers (1979) examined playing position and leadership amongst female field hockey players. The authors measured leadership by asking one question, *How much of a team leader is [insert player name]*? The results found that the position of goalie was rated highest in leadership than any other position by team members. It was proposed that the nature of the task in this position can predict leadership. Specifically, it was argued that task independency may lead to greater perceptions of leadership by members, more so than having higher interactions during game play and position centrality. In contrast, Glenn and Horn (1993) found that in female soccer, players who occupied central field positions (e.g., central midfield, central defense), self-rated

themselves and were rated by their coach as providing more leadership than those players occupying a non-central position. Furthermore, the authors also found various personal and psychological characteristics to be associated with these athlete leaders. That is, athletes who rated themselves high in leadership were associated with higher scores on masculinity, femininity, and soccer competence. Finally, athletes who were perceived as high in leadership behaviours from their teammates were rated higher in sport competence, masculinity, and competitive trait anxiety than non-athlete leaders.

Characteristics distinguishing athlete leaders from non-athlete leaders have also been examined by Wright and Côté (2003). These authors interviewed six male varsity athlete leaders to determine the characteristics that differentiated them from non-athlete leaders. The six athlete leaders all reported to have a strong work ethic, an excellent rapport with other team members, similar activity involvement, a strong skill set, and knowledge of the sport. Athlete leadership characteristics have also been examined from the perspective of the team captain (Dupuis, Bloom, & Loughead, 2006). Employing a series of open-ended questions, interviewing former varsity ice hockey captains, three higher order categories of athlete leader characteristics were revealed. The first category, interpersonal characteristics, represented the ability to remain positive, have control over their emotions, as well as viewing themselves as effective communicators. The second category was labeled verbal interactions and dealt with interactions with members of the team. The category represented the importance that the captains placed on creating a trusting and open relationship, as well as bridging the communication with both players and coaches. The final category of task behaviour encompassed behaviours and

responsibilities such as enhancing the climate and functioning of the team, as well as setting the proper example for teammates.

Recently, research on athlete leadership has moved from examining the characteristics to the behaviours. In one of the first studies examining the behaviours of athlete leaders, Loughead and Hardy (2005) compared the leader behaviours demonstrated by the coach and athlete leaders as perceived by the athletes. The participants completed the LSS to measure the leadership behaviours of their coaches and athlete leaders. In general, the results showed that coaches and athlete leaders used different leadership behaviours. Specifically, athletes perceived their coaches as using more Training and Instruction and Autocratic Behaviours than athlete leaders. In contrast, athlete leaders were perceived to demonstrate the leadership behaviours of Social Support, Positive Feedback, and Democratic Behaviour more than coaches. The importance of these research findings indicated that there were distinct differences between the leadership behaviours of coaches and athlete leaders and therefore, athlete leaders within a team are not merely an extension of their coaches.

Given that coaches and athletes differ on leadership behaviours, Vincer and Loughead (2009) examined the influence of athlete leadership behaviours on an important team variable, team cohesion. The participants (n = 312 varsity and club level athletes) completed the GEQ, which assessed cohesion, and the LSS, which assessed athlete leadership behaviours. The results indicated that the athlete leadership behaviours of Training and Instruction and Social Support positively influenced all four dimensions of cohesion (ATG-T, ATG-S, GI–T, GI-S). Furthermore, Autocratic Behaviour was

negatively associated with the four dimensions of cohesion. Finally, Democratic Behaviour was positively related to ATG-T.

In addition to examining athlete leadership behaviours, research has also examined the number of athlete leaders on teams and how the number of athlete leaders influence aspects such as athlete satisfaction, cohesion, and communication. In terms of the number of athlete leaders on sport teams, Glenn and Horn (1993) suggested that coaches require one or two athletes within a team to motivate and guide fellow members. Loughead and Hardy (2005) found results contrary to this suggestion in the examination of the number of athlete leaders within sport teams. Their findings revealed that approximately 27% of athletes within a team were viewed as demonstrating leadership. For example, if an ice hockey team had a roster size of 25 players, seven of the players would be viewed as athlete leaders.

The number of athlete leaders has also been examined in relation to athlete satisfaction (Eys, Loughead, & Hardy, 2007). The authors examined athlete leadership across three types of leadership functions: social, task, and external. Task leadership refers to athletes who help their team reach its goals; social leadership involves creating team harmony and satisfying member psychosocial needs, and; external leadership is related to functions beyond the team such as promoting the team or representing the team in meetings. Athletes who perceived an equal number of athlete leaders across three leadership functions had greater satisfaction than those athletes who perceived an unbalanced distribution of leaders occupying the three functions. Finally, the number of athlete leaders has most recently been examined in relation to cohesion and communication (Hardy, Eys, & Loughead, 2008). The authors found that among the three

functions of athlete leadership, only the number of task athlete leaders was related to the cohesion dimension of GI-T and communication.

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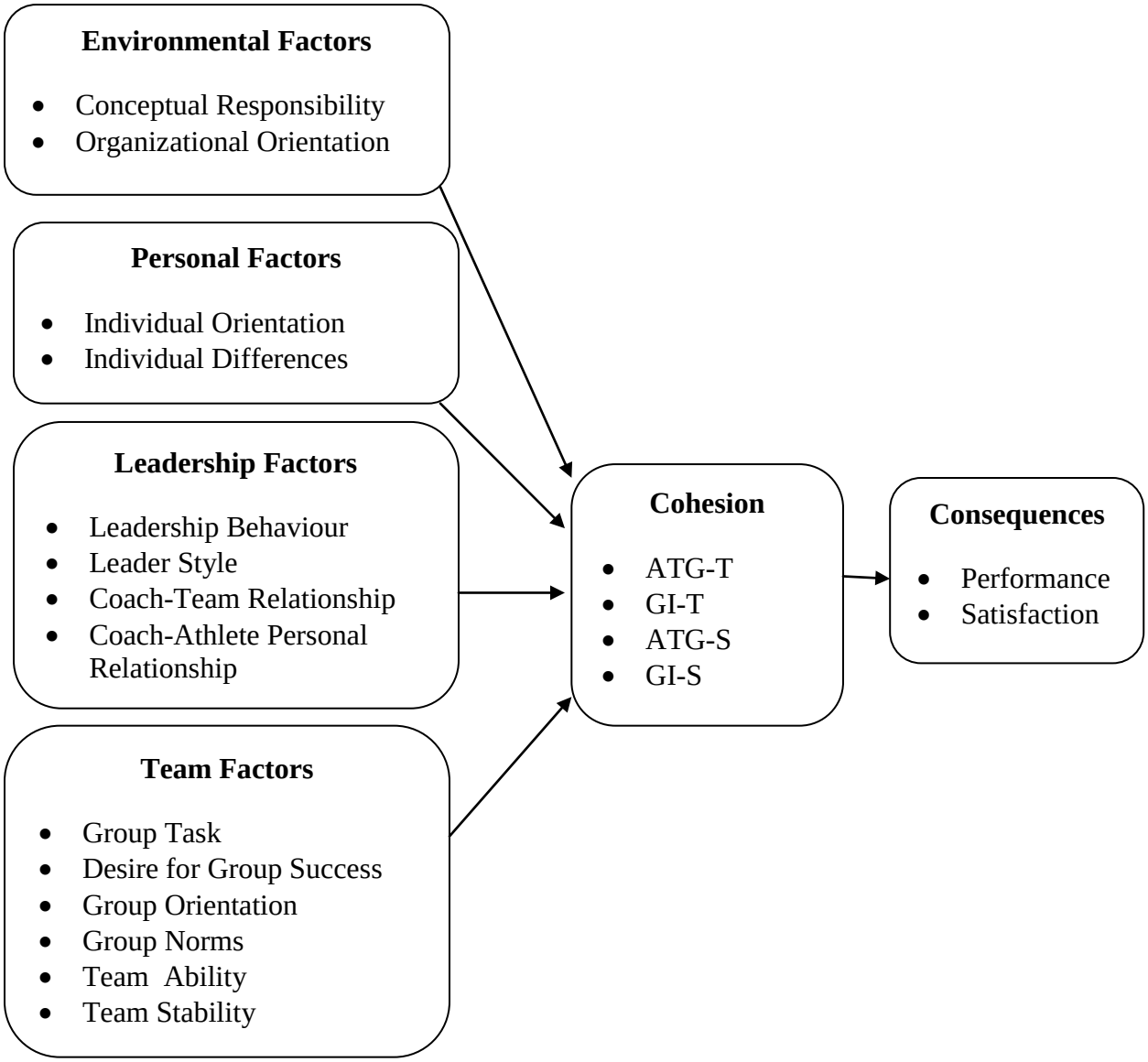
Figure Captions

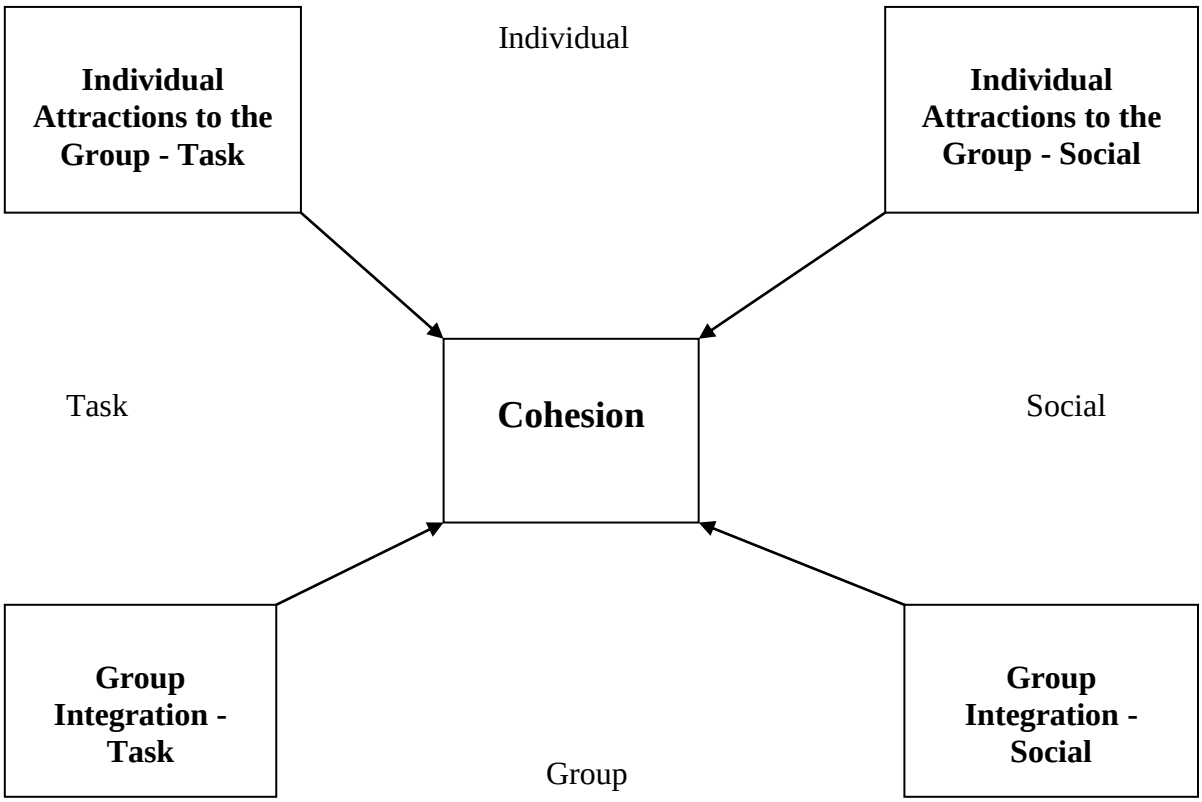
Figure 1. A Conceptual Framework for the Study of Cohesion in Sport (Carron, 1982)

Figure 2. Conceptual Model for Cohesiveness in Sport (Carron, Widmeyer, & Brawley, 1985).

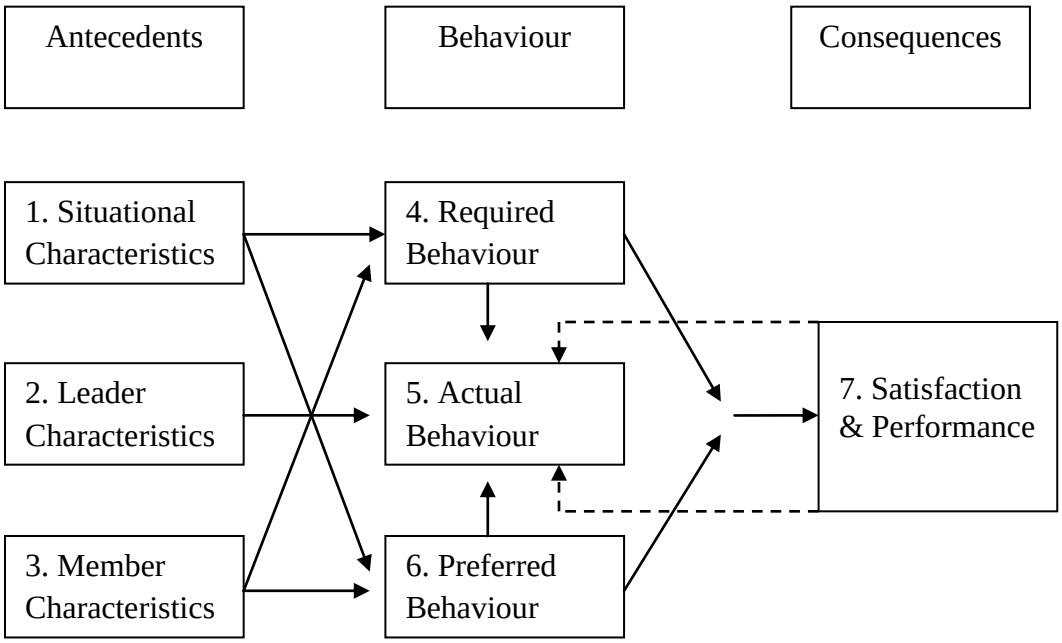
Figure 3. Multidimensional Model of Leadership (Chelladurai, 1978, 1993).



Note. From "Cohesiveness in Sport Groups: Interpretations and Considerations," by A. V. Carron, 1982, *Journal of Sport Psychology*, *4*, p. 131.



Note. 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*, p. 244-266.



Note. From "Leadership," (p. 647-671), by P. Chelladurai, 1993, In R. N. Singer, M. Murphy, and L. K. Tennant (Eds.), *Handbook on Research on Sport Psychology*. New York: McMillan.

Appendix A

Demographic Questionnaire

Age: _____ yrs.

What level of hockey are you participating in? (e.g., Jr. A, Jr. B):_____

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

How long have you been playing on your current team? _____yrs.

How many members of the current team have you previously played with?_____

Appendix B

Leadership Scale for Sports (LSS; Chelladurai and Saleh; 1978, 1980)

Formal Leader: An athlete that is selected by a team or coach to be in a leadership position, such as, a captain, co-captain, or assistant captain.

Informal Leader: An athlete who emerges into a leadership position through the interactions with the other team members, not formally appointed by the coach or team.

1	2	3	4	5
Never	**Seldom** 25% of the time	**Occasionally** 50% of the time	**Often** 75% of the time	**Always**

Using this scale as a guide, please circle a number from 1-5 to indicate your level of agreement with each of the following statements regarding your formal and informal athlete leaders. Please give a different score for both your formal and informal athlete leaders on your team as defined.

The formal and informal athlete leader(s) on my team…

1. See to it that every team member is working to his capacity

Formal Leader(s)…1 2 3 4 5 Informal Leader(s)…1 2 3 4 5

2. Explain to team members the techniques and tactics of the sport

Formal Leader(s)…1 2 3 4 5 Informal Leader(s)…1 2 3 4 5

3. Pay attention to correcting team members' mistakes

Formal Leader(s)…1 2 3 4 5 Informal Leader(s)…1 2 3 4 5

4. Make sure that team members role on the team are understood

Formal Leader(s)…1 2 3 4 5 Informal Leader(s)…1 2 3 4 5

5. Instruct team members individually in the skills of the sport

Formal Leader(s)…1 2 3 4 5 Informal Leader(s)…1 2 3 4 5

1	2	3	4	5
Never	**Seldom** 25% of the time	**Occasionally** 50% of the time	**Often** 75% of the time	**Always**

The formal and informal athlete leader(s) on my team…

6. Figure ahead on what should be done

Formal Leader(s)…1 2 3 4 5 Informal Leader(s)…1 2 3 4 5

7. Explain to team members what they should and what they should not do

Formal Leader(s)…1 2 3 4 5 Informal Leader(s)…1 2 3 4 5

8. Expect team members to carry out their assignment to the last detail

Formal Leader(s)…1 2 3 4 5 Informal Leader(s)…1 2 3 4 5

9. Point out team members' strengths and weaknesses

Formal Leader(s)…1 2 3 4 5 Informal Leader(s)…1 2 3 4 5

10. Gives specific instructions to team members as to what they should do in every situation

Formal Leader(s)…1 2 3 4 5 Informal Leader(s)…1 2 3 4 5

11. See to it that the efforts are coordinated

Formal Leader(s)…1 2 3 4 5 Informal Leader(s)…1 2 3 4 5

12. Explain how team members' contributions fit into the total picture

Formal Leader(s)…1 2 3 4 5 Informal Leader(s)…1 2 3 4 5

13. Specify in detail what is expected of team members

Formal Leader(s)…1 2 3 4 5 Informal Leader(s)…1 2 3 4 5

14. Ask for the opinion of team members on strategies for specific competitions

Formal Leader(s)…1 2 3 4 5 Informal Leader(s)…1 2 3 4 5

1	2	3	4	5
Never	**Seldom** 25% of the time	**Occasionally** 50% of the time	**Often** 75% of the time	**Always**

The formal and informal athlete leader(s) on my team…

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. Let fellow team members share in decision making

    Formal Leader(s)…1 2 3 4 5 Informal Leader(s)…1 2 3 4 5

17. Encourage team members 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. Let the team members share in discussion about goals for the team as a whole (e.g., the number of wins over the following month)

    Formal Leader(s)…1 2 3 4 5 Informal Leader(s)…1 2 3 4 5

19. Let team members 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. Ask for the opinion of team members on important team matters

    Formal Leader(s)…1 2 3 4 5 Informal Leader(s)…1 2 3 4 5

21. Let team members work at their own speed

    Formal Leader(s)…1 2 3 4 5 Informal Leader(s)…1 2 3 4 5

22. Let team members decide on the plays to be used in a game

    Formal Leader(s)…1 2 3 4 5 Informal Leader(s)…1 2 3 4 5

23. Work relatively independent of the other team members

    Formal Leader(s)…1 2 3 4 5 Informal Leader(s)…1 2 3 4 5

1	2	3	4	5
Never	**Seldom** 25% of the time	**Occasionally** 50% of the time	**Often** 75% of the time	**Always**

The formal and informal athlete leader(s) on my team…

24. Not explain his/their action(s)

Formal Leader(s)…1 2 3 4 5 Informal Leader(s)…1 2 3 4 5

25. Refuse to compromise a point

Formal Leader(s)…1 2 3 4 5 Informal Leader(s)…1 2 3 4 5

26. Keep to himself/themselves

Formal Leader(s)…1 2 3 4 5 Informal Leader(s)…1 2 3 4 5

27. Speak in a manner not to be questioned

Formal Leader(s)…1 2 3 4 5 Informal Leader(s)…1 2 3 4 5

28. Help team members with their personal problems

Formal Leader(s)…1 2 3 4 5 Informal Leader(s)…1 2 3 4 5

29. Help team members settle their conflicts

Formal Leader(s)…1 2 3 4 5 Informal Leader(s)…1 2 3 4 5

30. Look out for the personal welfare of team members

Formal Leader(s)…1 2 3 4 5 Informal Leader(s)…1 2 3 4 5

31. Do favours for team members

Formal Leader(s)…1 2 3 4 5 Informal Leader(s)…1 2 3 4 5

32. Express care for other team members

Formal Leader(s)…1 2 3 4 5 Informal Leader(s)…1 2 3 4 5

1	2	3	4	5
Never	**Seldom** 25% of the time	**Occasionally** 50% of the time	**Often** 75% of the time	**Always**

The formal and informal athlete leader(s) on my team…

33. Encourage team members to confide in him/them

Formal Leader(s)…1 2 3 4 5 Informal Leader(s)…1 2 3 4 5

34. Encourage close and informal relations with team members

Formal Leader(s)…1 2 3 4 5 Informal Leader(s)…1 2 3 4 5

35. Invite team members to his/their home(s)

Formal Leader(s)…1 2 3 4 5 Informal Leader(s)…1 2 3 4 5

36. Compliment a team member for his performance in front of others

Formal Leader(s)…1 2 3 4 5 Informal Leader(s)…1 2 3 4 5

37. Tell a team member when he does a particularly good job

Formal Leader(s)…1 2 3 4 5 Informal Leader(s)…1 2 3 4 5

38. See that a team member is rewarded for a good performance

Formal Leader(s)…1 2 3 4 5 Informal Leader(s)…1 2 3 4 5

39. Express appreciation when a team member 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

Group Environment Questionnaire (GEQ; Carron, Widmeyer, & Brawley, 1985; Eys, Carron, Bray, & Brawley, 2007)

This questionnaire is designed to assess your perceptions of your team. There are no wrong or right answers, so please give your immediate reaction. Some of the questions may seem repetitive, but please answer ALL questions. Your personal responses will be kept anonymous.

The following statements are designed to assess your feelings about YOUR PERSONAL INVOLVEMENT with this team. Please CIRCLE a number from 1 to 9 to indicate your level of agreement with each of these statements.

1. I do enjoy being a part of the social activities of this team

1	2	3	4	5	6	7	8	9
Strongly Disagree								Strongly Agree

2. I'm happy with the amount of playing time I get

1	2	3	4	5	6	7	8	9
Strongly Disagree								Strongly Agree

3. I am going to miss the members of this team when the season ends

1	2	3	4	5	6	7	8	9
Strongly Disagree								Strongly Agree

4. I'm happy with my team's level of desire to win

1	2	3	4	5	6	7	8	9
Strongly Disagree								Strongly Agree

5. Some of my best friends are on this team

1	2	3	4	5	6	7	8	9
Strongly Disagree								Strongly Agree

The following statements are designed to assess your perceptions of YOUR TEAM AS A WHOLE. Please CIRCLE a number from 1 to 9 to indicate your level of agreement with each of these statements.

6. This team gives me enough opportunities to improve my personal performance

1	2	3	4	5	6	7	8	9
Strongly Disagree								Strongly Agree

7. I enjoy team parties more than other parties

1	2	3	4	5	6	7	8	9
Strongly Disagree								Strongly Agree

8. I do like the style of play on this team

1	2	3	4	5	6	7	8	9
Strongly Disagree								Strongly Agree

9. For me this team is one of the most important social groups to which I belong

1	2	3	4	5	6	7	8	9
Strongly Disagree								Strongly Agree

10. Our team is united in trying to reach its goals for performance

1	2	3	4	5	6	7	8	9
Strongly Disagree								Strongly Agree

11. Members of our team would rather go out together as a team than on their own

1	2	3	4	5	6	7	8	9
Strongly Disagree								Strongly Agree

12. We all take responsibility for any loss or poor performance by our team

1	2	3	4	5	6	7	8	9
Strongly Disagree								Strongly Agree

The following statements are designed to assess your perceptions of YOUR TEAM AS A WHOLE. Please CIRCLE a number from 1 to 9 to indicate your level of agreement with each of these statements.

13. Our team members often party together

1	2	3	4	5	6	7	8	9
Strongly Disagree								Strongly Agree

14. Our team members have similar aspirations for the team's performance

1	2	3	4	5	6	7	8	9
Strongly Disagree								Strongly Agree

15. Our team would like to spend time together in the off season

1	2	3	4	5	6	7	8	9
Strongly Disagree								Strongly Agree

16. If members of our team have problems in practice, everyone wants to help them so we can get back together again

1	2	3	4	5	6	7	8	9
Strongly Disagree								Strongly Agree

17. Members of our team stick together outside of practices and games

1	2	3	4	5	6	7	8	9
Strongly Disagree								Strongly Agree

18. Our team members communicate freely about each athlete's responsibilities during competition or practice

1	2	3	4	5	6	7	8	9
Strongly Disagree								Strongly Agree

Appendix D

Hockey Confidence Survey (Feltz & Lirgg, 1998)

For the next 8 items, please rate your confidence in your team's performance against your upcoming opponent. Indicate your degree of confidence by circling the appropriate number to the right of each item.

	Can not do at all					Moderately certain can do				Certain can do
1. Rate your confidence right now that your team can BEAT your opponents:	0	1	2	3	4	5	6	7	8	9	10
2. Rate your confidence right now that your team can OUTSKATE your opponents:	0	1	2	3	4	5	6	7	8	9	10
3. Rate your confidence right now that your team can OUTCHECK your opponents:	0	1	2	3	4	5	6	7	8	9	10
4. Rate your confidence right now that your team's GOALTENDER can OUTPERFORM your opponents' GOALTENDER:	0	1	2	3	4	5	6	7	8	9	10
5. Rate your confidence right now that your team can FORCE MORE TURNOVERS than your opponents:	0	1	2	3	4	5	6	7	8	9	10
6. Rate your confidence right now in your team's ability to BOUNCE BACK from performing poorly (come from behind, not give up) and be successful against your opponents:	0	1	2	3	4	5	6	7	8	9	10
7. Rate your confidence right now in your team's ability to score POWER PLAY GOALS against your opponents:	0	1	2	3	4	5	6	7	8	9	10
8. Rate your confidence right now in your team's ability to successfully KILL PENALTIES against your opponents:	0	1	2	3	4	5	6	7	8	9	10

Appendix E
Participant Letter of Consent

LETTER OF INFORMATION FOR CONSENT TO PARTICIPATE IN RESEARCH

An Examination of the Hockey Environment

You are asked to participate in a research study conducted by Amanda Bakker (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. Amanda Bakker 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 collective efficacy.

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 collective efficacy. 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. The questionnaire is anonymous. If you fill out a ballot for the MP3 player draw, your contact information is on it and thus identifiable, however it is the draw ticket that is identifiable and not the questionnaire itself.

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

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

Appendix F

Sample Ballot

~WIN A $50 Gift Certificate to SportChek~

To be entered to win a $50 gift certificate, please indicate your name, phone number, and email address

Name:_____

Phone:_____

Email:_____

VITA AUCTORIS

NAME:	Amanda Bakker
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