11-17-2011 12:00 AM

Development of a Cohesion Inventory for Children's Sport Teams

Luc J. Martin, *The University of Western Ontario*

Supervisor: Dr. Albert Carron, *The University of Western Ontario*

A thesis submitted in partial fulfillment of the requirements for the Doctor of Philosophy degree in Kinesiology

DEVELOPMENT OF A COHESION INVENTORY FOR CHILDREN'S SPORT TEAMS

(Spine title: Cohesion in Children's Sport)

(Thesis format: Integrated Article)

by

Luc J. Martin

Graduate Program in Kinesiology

A thesis submitted in partial fulfillment
of the requirements for the degree of
Doctor of Philosophy

The School of Graduate and Postdoctoral Studies
The University of Western Ontario
London, Ontario, Canada

THE UNIVERSITY OF WESTERN ONTARIO
School of Graduate and Postdoctoral Studies

CERTIFICATE OF EXAMINATION

Supervisor

Dr. Albert Carron

Supervisory Committee

Dr. Craig Hall

Dr. Harry Prapavessis

Examiners

Dr. Craig Hall

Dr. Karen Danylchuk

Dr. Jan Polgar

Dr. Kevin Spink

The thesis by

Luc Jacques Martin

entitled:

Development of a Cohesion Inventory for Children's Sport Teams

is accepted in partial fulfillment of the
requirements for the degree of
Doctor of Philosophy

Date

Chair of the Thesis Examination Board

ABSTRACT

The general purpose of this dissertation was to develop an inventory designed to measure cohesion in children's (ages 9-12) sport teams. To this end, three studies were conducted. In Study 1, children became active agents in the process of test construction. More specifically, children (N = 167) participated in focus groups and completed open-ended questionnaires in order to provide information on their perceptions of cohesion as well as motives for participating, continuing, and ceasing involvement on sport teams. Study 2 involved the use of the information obtained from Study 1 to develop potential items for the questionnaire. In addition, the questionnaires were distributed to child sport participants (N = 298) to determine factorial validity. Finally, the purpose of Study 3 was to establish construct validity for the Child Sport Cohesion Questionnaire (CSCQ) with a heterogeneous sample of children (N = 290). To accomplish this task, four separate tests of validity were assessed: convergent, discriminant, predictive, and factorial.

The results from Study 1 indicated that children as young as 9 years can understand the cohesion construct. They are able to identify (a) advantages relating to cohesive teams, (b) disadvantages relating to non-cohesive teams, and (c) methods for increasing cohesion within teams. Finally, in Study 1, children advanced motives for (a) joining, (b) maintaining, and (c) ceasing involvement on sport teams.

Study 2 resulted in the development of potential items for the questionnaire. The research team (N = 4) and age appropriate children (N = 8) provided content validity for the advanced items. Furthermore, factorial validity was demonstrated via confirmatory factor analysis (CFA). The resulting Child Sport Cohesion Questionnaire containing 16

items (task cohesion = 7, social cohesion = 7, negative spurious items = 2) and a 5-point Likert scale, demonstrated a strong model fit, good internal consistency values, and a moderate inter-factor correlation.

The findings from Study 3 revealed that the newly developed CSCQ possessed (a) convergent validity, (b) discriminant validity, and (c) factorial validity. In addition, partial support for predictive validity was established. Overall, the combination of the results from Study 3 provides support for the construct validity of the CSCQ.

KEY WORDS: measurement, group dynamics, cohesion, child, validation, sport, team

CO-AUTHORSHIP STATEMENT

The material contained within this document is my original work; however, I would like to acknowledge the roles of my co-investigators. Dr. Albert Carron, a Professor in the School of Kinesiology from The University of Western Ontario, Dr. Mark Eys, an Associate Professor in the Department of Kinesiology and Physical Education (CRC Tier II Chair) from Wilfrid Laurier University, and Dr. Todd Loughead, an Associate Professor in the Department of Kinesiology from the University of Windsor. Dr. Carron, Dr. Eys, and Dr. Loughead provided continuous guidance and insight for all three of the studies and have all contributed greatly to the following dissertation.

ACKNOWLEDGEMENTS

There are several individuals that I must acknowledge and thank for their contributions, support, and friendship throughout my tenure at Western. First, I would like to thank Dr. Mark Eys and Dr. Todd Loughead for their help throughout my dissertation. Their comments and suggestions were incredibly insightful and led to the completion of my dissertation for which I am very proud. I would also like to thank my parents for their continued support throughout my academic life at Western. Soon, you may have the opportunity to say your middle son has finally joined the working world. To my Fiance, Jenn Webber, I would like to thank you for always being there for me. Regardless of my stress level or mood, you have always been there to help me see the light at the end of the tunnel. I am extremely grateful for all you have done and am truly looking forward to our lives together, whatever adventures lay ahead. Finally, I would like to acknowledge Dr. Albert Carron. After completing my Masters Degree with Dr. Carron, I realized I had only a small glimpse of what I could learn from his tutelage. Other than my parents, Dr. Carron has had one of the greatest influences on my life and has helped me to accomplish something I never would have thought possible in my youth. For that, for all of your assistance and guidance, for your constant patience (with the odd slip up), and most of all for your friendship, I thank you.

TABLE OF CONTENTS

LIST OF TABLES

Page

LIST OF FIGURES

Page

STUDY 1

LIST OF APPENDICES

INTRODUCTION

If a group exists, regardless of its nature, some form of cohesion must be present (e.g., Carron, Martin, & Loughead, in press; Donnelly, Carron, & Chelladurai, 1978). This is evident from the numerous disciplines in which cohesion has been a topic of research. These include social, organizational, military, family, and sport psychology (e.g., Dion, 2000). With regard to sport psychology, researchers have developed a multidimensional conceptual model that clearly outlines the phenomenon. In 1985, Carron, Widmeyer, and Brawley suggested that cohesion has both task and social orientations, meaning that group members perceive the group as being united toward task related (e.g., performance) and socially related (e.g., friendship) outcomes. This suggestion paralleled those of previous group dynamics researchers who believed the majority of groups to have both task and social orientations (e.g., Fiedler, 1967; Hersey & Blanchard, 1969). In addition, Carron et al. stated that group members perceive cohesion from the standpoint of the group as a totality (i.e., group integration) and from a personal idiosyncratic perspective (i.e., attraction to the group). Therefore, the conceptual model of cohesion is comprised of the following four dimensions: *Group Integration-Task* (GI-T; e.g., the extent to which a group is united towards achieving its instrumental objectives), *Group Integration-Social* (GI-S; e.g., the extent to which a group is united towards developing social relationships and activities within the group), *Attractions to the Group-Task* (ATG-T; e.g., individual motivations toward the group's instrumental objectives), and *Attractions to the Group-Social* (ATG-S; e.g., individual motivations toward social relationships and activities within the group).

Based on this conceptual model, Carron, Brawley, and Widmeyer (1998) modified Carron's (1982) earlier definition of cohesion to advance one that is widely accepted today; "a dynamic process reflected in the tendency for a group to stick together and remain united in the pursuit of its instrumental objectives and/or for the satisfaction of member affective needs" (p.213). The strength of this definition comes from (1) its origin (i.e., the conceptual model) and (2) the fact that it clearly outlines the four major characteristics of cohesion. First, cohesion is *multidimensional*, meaning individuals join and maintain membership for a number of different reasons that vary between individuals and groups. Second, cohesion is *dynamic*, meaning that the multidimensional forces acting on individuals to join and remain involved change over time. Third, cohesion is *instrumental*, meaning that for a group to exist, it must have a purpose for its formation and therefore its actions, and finally, cohesion is *affective*, meaning that throughout a group's existence, positive or negative social relationships will develop.

A conceptual model and a definition provide individuals with a clear understanding of a construct; however, for continued research, some form of operational definition is necessary. To use the words of Sir Humphrey Davy (quoted in Hager, 1995), "nothing lends so much to the advancement of knowledge as the application of a new instrument" (p. 86). Lord Kelvin echoed these sentiments by suggesting, "to measure is to know" (Sir William Thomas, 2009, para. 7). Therefore, many different inventories have been advanced (e.g., Martens, Landers, & Loy, 1972; Yukelson, Weinberg, & Jackson, 1984). Amongst them, the Group Environment Questionnaire (GEQ; Carron et al., 1985) emerged as the most widely accepted in sport today (Carron, Eys, & Martin, in press).

The GEQ is an 18-item inventory based on a 9-point Likert scale that measures individual perceptions of a group's level of cohesion based on the above conceptual model (i.e., GI-T, GI-S, ATG-T, & ATG-S). Overall, as a measurement tool, the GEQ has consistently demonstrated content, concurrent, predictive, and factorial validity (cf. Carron et al., 1998). Unfortunately, in certain cases, researchers have questioned the validity of the inventory (e.g., Schutz, Eom, Smoll, & Smith, 1994; Sullivan, Short, & Cramer, 2002). In response to these findings, Carron, Brawley, and Widmeyer (2002) cautioned the use of the GEQ with populations dissimilar to the adult samples (ages 18-30) used for its development. With this in mind, several research projects have led to the development of population specific cohesion measures.

In 2000, Estabrooks and Carron found older adult exercisers were having difficulty with the original GEQ. Consequently, they developed the Physical Activity Group Environment Questionnaire (PAGEQ) for use in older adult physical activity groups. A comparable situation arose in 2002 when Heuzé and Fontayne attempted a direct French translation of the GEQ. They noted that cultural differences were present and a direct translation could not adequately assess cohesion in French sport groups. Thus, they developed the Questionnaire sur l'Ambiance du Groupe (QAG). Similarly, in 2009, Eys, Loughead, Bray, and Carron saw the importance of assessing cohesion in adolescents. They believed youth might perceive cohesion differently than adults and subsequently undertook a comprehensive research project to develop a cohesion inventory for a younger population (i.e., ages 13 to 17). The resulting inventory is the Youth Sport Environment Questionnaire (YSEQ).

The previous measures have all been developed based on (1) the importance of the cohesion construct—historically believed to be the most important small group variable (e.g., Golembiewski, 1962; Lott & Lott, 1965)—and (2) the need to assess its presence and magnitude within specific populations. Another population that would benefit from such an inventory is children ages 9 to 12.

It is well documented that sport participation can provide children with physiological and psychological benefits. Physiologically, involvement in sport can decrease chances of certain health problems such as some cancers, cardiovascular disease, and coronary heart disease (e.g., Bouchard, Shepard, Stephens, Sutton, & McPerson, 1990; Lox, Martin-Ginis, & Petruzello, 2006; Warburton, Nicol, & Bredin, 2006), as well as depression and anxiety (e.g., Dunn, Trivedi, & O'Neal, 2001; Warburton, Gledhill, & Quinney, 2001a; Warburton, Gledhill, & Quinney, 2001b). Psychologically, children who participate in sport are more confident, have higher social status, and are less shy than are non-sport participants (e.g., Chase & Dummer, 1992; Findlay & Coplan, 2008; McHale, Vinden, Bush, Richer, Shaw, & Smith, 2005). Therefore, the importance of sport for children is evident; however, not all children receive these benefits.

Research indicates children are becoming less active, leading to overweight and obesity problems. As an example, the prevalence of overweight youth (ages 17 and under) has doubled and obesity has tripled in the last 25 years (Statistics Canada, 2006). In addition, 1 in 4 Canadians aged 2 to 17 are considered either overweight or obese (Statistics Canada, 2006). These results are perhaps not surprising as only 7% of young

people aged 5 to 17 meet the recommended guidelines for daily physical activity (Statistics Canada, 2011). While overall inactivity may contribute to these alarming statistics, dropout rates are also detrimental. In fact, 1 in 3 individuals between the ages of 10 and 17 drop out of sport every year (Weinberg & Gould, 2003). Research suggests that sport participation peaks between the ages of 10 and 13 (Ewing & Seefeldt, 1996), thereby highlighting this population—children between 10 and 13 years—as an important target group insofar as continued participation in sport is concerned (e.g., Epstein, Colemen, & Myers, 1996).

For this reason, researchers have attempted to understand the reasons behind childhood inactivity by targeting motives for participation and adherence in sport. Some of the main reasons cited by children, such as “to play as part of a team”, “to make new friends”, and “for affiliation” (e.g., Ewing & Seefeldt, 1996; Weiss & Petchlichkoff, 1989) are social in nature, and a major strength associated with these findings is that children themselves, advanced these motives.

Subsequent research projects have been undertaken in order to highlight the significance of being with friends and the desire for affiliation in children. In a review analysing physical activity after-school interventions, Pate and O’Neill (2008) found positive results regardless of the success of the interventions. To elaborate, whether physical activity levels increased or not, children highlighted that the physical activity programs allowed them to have fun and be with their friends.

Similarly, in 1993, Duncan assessed the effect of relationships on friendship support, affect, and motivation behaviour in 12 to 14 year olds. Results indicated

individuals who reported greater amounts of companionship, esteem support, and positive affect in their relationships expressed higher expectancies for success and greater motivation for future participation.

In another example, Weiss and Smith (2002) were interested in the effects of friendship quality on motivation related variables. Using a sample of 191 junior tennis players (aged 10 to 18), they discovered that friendships consisting of characteristics such as things in common, the ability to resolve conflicts, pleasant play, and companionship were associated with higher levels of tennis enjoyment and commitment. Therefore, as perceptions of friendship quality increase, so do levels of enjoyment and the likelihood of continued involvement.

Finally, Ullrich-French and Smith (2009) found similar results with regard to perceptions of peer relationships. More specifically, in a sample of young (aged 10 to 14) soccer players, they found that children who perceived themselves as having high quality peer relationships were more likely to continue their involvement on the team. These studies demonstrate the importance for children of being with friends and being a member of a team. A cohesive group—one that fulfills the satisfaction of individual affective needs and the attainment of common group goals—can provide children with (1) the variables listed as motives for participation (e.g., "for affiliation", "to make new friends", etc.) and (2) the factors demonstrated through research to maintain participation and adherence rates (e.g., positive perceptions of peer relationships).

The belief that cohesion can provide such benefits is not novel. In fact, extensive research with older samples has demonstrated positive impacts relating to cohesive

groups. For example, high levels of cohesion have demonstrated positive relationships with participation, adherence, and return rates (Carron, Widmeyer, & Brawley, 1988; Study 2; Spink, 1995; Spink, Wilson, & Odnokon, 2010). Similarly, increased levels of cohesion have been found to increase satisfaction (Paradis & Loughead, 2011; Widmeyer & Williams, 1991), while also reducing anxiety (Eys, Hardy, Carron, & Beauchamp, 2003; Prapavessis & Carron, 1996), and depression (Terry, et al., 2000). These findings highlight the importance of cohesion for older samples and although they cannot be generalized to children, a common link suggests that different populations may share similar social and group related desires. The theorizing of Baumeister and Leary (1995) suggests that all human beings (i.e., children, youth, and adults) share the fundamental need to belong and the desire for interpersonal attachments. Therefore, a reasonable assumption is that children should benefit from many of the demonstrated cohesion correlates with older populations.

Unfortunately, as previously noted, a valid measure used to examine these assumptions is currently unavailable. The present cohesion measures for sport (i.e., GEQ and YSEQ) are not adequate for administration to children for conceptual and methodological reasons. Conceptually, depending on the development of an individual, perceptions of social constructs such as cohesion may change (e.g., Rubin, Bukowski, & Parker, 2006). For example, when discussing children's peer relationships, Berndt and McCandless (2009) stated, "friendships change dramatically with age, becoming closer and more distinctive as children grow older and move into adolescence" (p. 63). Further,

other conceptual models (e.g., anxiety) have been found to be inapplicable to younger populations (e.g., Smith, Smoll, & Barnett, 1995).

Operationally, the comprehensibility and readability of the items in the current inventories also are an issue. Specifically, it cannot be assumed that a child of 9 years can comprehend or read at the same level as an adolescent or an adult. In fact, Duda (1987) suggested that attempting to generalize adult operational definitions to younger populations is a major problem in research. In addition, because children are incapable of comprehending adult terminology and concepts, the reliability and validity of administering such a questionnaire to children would be suspect (Stadulis, MacCracken, Eidson, & Severance, 2002). Finally, researchers advocate the use of measures that reflect the cognitive stage, are in an appropriate language, and address concerns that are relevant to a specific sample (e.g., Brustad, 1998; Whaley, 2007).

Therefore, the overall purpose of this dissertation was to develop a valid age specific inventory to measure cohesion. To accomplish this task, three studies were undertaken. In the initial stages of inventory development, it was essential to determine the extent to which children perceived cohesion within their sport groups. Thus, the purpose of Study 1 was to determine the perceptions of cohesion in children aged 9 to 12 years. The two methodologies used in Study 1 were focus groups (used to assess individual perceptions of cohesion with regard to group integration) and open-ended questionnaires (used to assess individual perceptions of cohesion with regard to individual attractions to the group).

The purpose of Study 2 was to build on the results obtained from Study 1 to develop the age specific cohesion measure. Study 2 was comprised of 3 Phases. In Phase 1, the results from Study 1 (i.e., qualitative data from focus groups and open-ended questionnaires) were combined with information gathered from a literature review. Phase 2 involved the use of that information in the development of items and the assessment of their content validity. Finally, Phase 3 involved the administration of the preliminary questionnaire to a heterogeneous sample of child sport participants to establish factorial validity.

Although Study 2 demonstrated factorial validity for the Child Sport Cohesion Questionnaire (CSCQ), construct validity is an ongoing process. Therefore, the purpose of Study 3 was to test the overall validity of the CSCQ. More specifically, convergent, discriminant, predictive, and factorial validity were examined.

The Faculty of Graduate Studies at The University of Western Ontario allows dissertations to be in the integrated-article format. Therefore, the studies presented in this dissertation were prepared for submission as published manuscripts in refereed academic journals. As such, the information presented in the general introduction to the dissertation will be repetitious with the three manuscripts enclosed.

References

Baumeister, R. F., & Leary, M. R. (1995). The need to belong: Desire for interpersonal attachment as a fundamental human motivation. *Psychological Bulletin, 117,* 497-529.

Berndt, T. J., & McCandless, M. A. (2009). Methods for investigating children's relationships with friends. In K. H. Rubin, W. M. Bukowski, & B. Laursen (Ed.). *Handbook of peer interactions, relationships, and groups,* (pp. 63-81). New York, NY: Guilford Publications, Inc.

Bouchard, C., Shepard, R. J., Stephens, T., Sutton, J. R., & McPerson, D. B. (1990). *Exercise, Fitness and Health.* Champaign, IL: Human Kinetics.

Brustad, R. (1998). Developmental considerations in sport and exercise psychology measurement. In J. L. Duda (Ed.), *Advances in sport and exercise psychology measurement,* (pp. 461–470). Morgantown, WV: Fitness Information Technology Inc.

Carron, A. V. (1982). Cohesiveness in sport groups: Interpretations and considerations. *Journal of Sport Psychology, 4,*123-138.

Carron, A. V., Brawley, L. R., & Widmeyer, W. N. (1998). The measurement of cohesiveness in sport groups. In J. L. Duda (Ed.), *Advances in sport and exercise psychology measurement* (pp. 213-226). Morgantown, WV: Fitness Information Technology.

Carron, A. V., Brawley, L. R., & Widmeyer, W. N. (2002). The group environment questionnaire: Test manual. Morgantown, WV: Fitness Information Technology.

Carron, A. V., Eys, M. A., & Martin, L. J. (in press). Cohesion: Its nature and measurement. In Tenenbaum, G., Eklund, R., & Kamata, A. (Eds.), *Handbook of measurement in sport and exercise psychology.* Champaign, IL: Human Kinetics.

Carron, A. V., Martin, L. J., & Loughead, T. (in press). Teamwork and performance in sport and the workplace. In Murphy, S. (Eds.) *Handbook on Sport and Performance Psychology.* Champaign, IL: Human Kinetics.

Carron, A. V., Widmeyer, W.N., & Brawley, L. R. (1985). The development of an instrument to measure cohesion in sport teams: The Group Environment Questionnaire. *Journal of Sport Psychology, 7,* 244-266.

Carron, A. V., Widmeyer, W. N., & Brawley, L. R. (1988). Group cohesion and individual adherence to physical activity. *Journal of Sport & Exercise Psychology, 10,* 127-138.

Chase, M. A., & Dummer, G. M. (1992). The role of sports as a social status determinant for children. *Research Quarterly for Exercise and Sport, 63,* 418-424.

Dion, K. (2000). Group cohesion: From "field of forces" to multidimensional construct, *Group Dynamics: Theory, Research and Practice, 4,* 7-20.

Donnelly, P., Carron, A. V., & Chelladurai, P. (1978). *Group cohesion and sport.* Ottawa, ON: CAHPER Sociology of Sport Monograph Series.

Duda, J. L. (1987). Toward a developmental theory of children's motivation in sport. *Journal of Sport & Exercise Psychology in Sport, 9,* 130-145.

Duncan, S. C. (1993). The role of cognitive appraisal and friendships provisions in adolescents' affect and motivation toward activity in physical education. *Research Quarterly for Exercise and Sport, 64,* 314-323.

Dunn, A. L., Trivedi, M. H., & O'Neal, H. A. (2001). Physical activity dose-response effects on outcomes of depression and anxiety. *Medicine and Science in Sports and Exercise,* 33, 587-597.

Epstein, L. H., Coleman, K. J., & Myers, M. D. (1996). Exercise in treating obesity in children and adolescents. *Medicine & Science in Sports & Exercise, 28,* 428-435.

Estabrooks, P. A. & Carron, A. V. (2000). The Physical Activity Group Environment Questionnaire: An instrument for the assessment of cohesion in exercise classes. *Group Dynamics: Theory, Research and Practice, 4,* 230-243.

Ewing, M.E., & Seefeldt, V. (1996). Patterns of participation and attrition in American agency sponsored youth sports. In F.L. Smoll and R.E. Smith (Eds.), *Children and youth in sport: A biopsychosocial perspective* (pp.31-45). Dubuque, IA: Brown & Benchmark.

Eys, M. A., Hardy, J., Carron, A. V., & Beauchamp, M. R. (2003). The relationship between task cohesion and competitive state anxiety. *Journal of Sport & Exercise Psychology, 25,* 66-76.

Eys, M.A., Loughead, T. M., Bray, S. R., & Carron, A. V. (2009). Development of a cohesion questionnaire for youth: The Youth Sport Environment Questionnaire. *Journal of Sport & Exercise Psychology, 31,* 390-408.

Fiedler, F. E. (1967). *A theory of leadership effectiveness.* New York: McGraw-Hill.

Findlay, L. C., & Coplan, R. J. (2008). Come out and play: Shyness in childhood and the benefits of organized sports participation. *Canadian Journal of Behavioral Sciences, 40,* 153-161. doi:10.1037/0008-400X.40.3.153

Golembiewski, R. (1962). *The small group.* Chicago: University of Chicago Press.

Hager, T. (1995). *Force of nature*. New York: Simon & Schuster.

Hersey, P., & Blanchard, K. H. (1969). Lifestyle theory of leadership. *Training and Development Journal, 23,* 26-34.

Heuzé, J., & Fontayne, P. (2002). Questionnaire sur l'Ambiance du Groupe: A French-language instrument for measuring group cohesion. *Journal of Sport & Exercise Psychology, 24,* 42-67.

Kelvin, L. (Sir William Thomson) (2009). Quotations. Retrieved August 30, 2011 from http://zapatopi.net/kelvin/quotes/#meas.

Lott, A. J., & Lott, B. D. (1965). Group cohesiveness as interpersonal attraction: A review of relationships with antecedent and consequent variables. *Psychological Bulletin, 64,* 259-309.

Lox, C. L., Martin-Ginis, K. A., & Petruzzello, S. J. (2006). *The psychology of exercise: Integrating theory and practice* (2nd ed.). Scottsdale, AZ: Holcomb Hathaway Publishers, Inc.

Martens, R., Landers, D. M., & Loy, J. W. (1972). *Sport cohesiveness questionnaire.* Washington, DC: AAHPERD Publications.

McHale, J. P., Vinden, P. G., Bush, L., Richer, D., Shaw, D., & Smith, B. (2005). Patterns of personal and social adjustment among sport-involved

and non-involved middle-school children. *Sociology of Sport Journal, 22,* 119–136.

Paradis, K. F., & Loughead, T. M. (2011). Examining the mediating role of cohesion between athlete leadership and athlete satisfaction in youth sport. Manuscript Submitted for Publication.

Pate, R. R., & O'Neill. (2008). After-school interventions to increase physical activity among youth. *British Journal of Sports Medicine, 43,* 14-18.

Prapavessis, H., & Carron, A. V. (1996). The effect of group cohesion on competitive state anxiety. *Journal of Sport & Exercise Psychology, 18,* 64-74.

Rubin, K.H., Bukowski, W., & Parker, J. (2006). Peer interactions, relationships, and groups. In N. Eisenberg (Ed.), *Handbook of child psychology: Social, emotional, and personality development* (6th ed., pp. 571-645). New York: Wiley.

Schutz, R. W., Eom, H. J., Smoll, F. L., & Smith, R. E. (1994). Examination of the factorial validity of the Group Environment Questionnaire. *Research Quarterly for Exercise and Sport, 65,* 226-236.

Smith, R. E., Smoll, F. L., & Barnett, N. P. (1995). Reduction of children's sport performance anxiety through social support and stress-reduction training for coaches. *Journal of Applied Developmental Psychology, 16,* 125-142.

Spink, K. S. (1995). Cohesion and intention to participate of female sport team athletes. *Journal of Sport and Exercise Psychology, 17,* 416-427.

Spink, K. S., Wilson, K. S., & Odnokon, P. (2010). Examining the relationship between cohesion and return to team in elite athletes. *Psychology of Sport and Exercise, 11*, 6-11.

Stadulis, R. E., MacCracken, M. J., Eidson, T. A., & Severance, C. (2002). A children's form of the competitive state anxiety inventory: The CSAI-2C. *Measurement in Physical Education and Exercise Science*, *6*(3), 147–165. doi:10.1207/S15327841MPEE0603_1

Statistics Canada (2011). *Physical activity of Canadian children and youth: Accelerometer results from 2007 to 2009 Canadian health measures survey*. (Publication No. 82-003-X). Retrieved from http://www.statcan.gc.ca/pub/82-003-x/2011001/article/11397/ref-eng.htm#a11

Statistics Canada (2006). Overweight and obesity among children and youth. *Health Reports 2006;* August 17: 27-42.

Sullivan, P. J., Short, S. E., & Cramer, K. M. (2002). Confirmatory factor analysis of the group environment questionnaire with coacting sports. *Perceptual and Motor Skills, 94*, 341-347.

Terry, P. C., Carron, A. V., Pink, M. J., Lane, A. M., Jones, G. J. W., & Hall, M. P. (2000). Perceptions of group cohesion and mood in sport teams. *Group Dynamics, 4*, 244-253.

Ullrich-French, S., & Smith, A. L. (2009). Social and motivational predictors of continued youth sport participation. *Psychology of Sport and Exercise, 10*, 87-95. doi:10.1016/j.psychsport.2008.06.007

Warburton, D. E., Gledhill N., & Quinney, A. (2001a). A musculoskeletal fitness and health. *Canadian Journal of Applied Physiology, 26*, 217-237. doi:10.1139/h01-013

Warburton, D. E., Gledhill, N., & Quinney, A. (2001b). The effects of changes in musculoskeletal fitness on health. *Canadian Journal of Applied Physiology, 26*, 161-216. doi:10.1139/h01-012

Warburton, D. E., Nicol, C. W., & Bredin, S. D. (2006). Health benefits of physical activity: the evidence. *Canadian Medical Association Journal, 174 (6)*, 801-809.

Weinberg, R. S., & Gould, D. (2003). Children's psychological development through sport. In *Foundations of Sport and Exercise Psychology* (3rd ed.) (pp. 491-510). Champaign, IL: Human Kinetics.

Weiss, M. R., & Petlichkoff, L. (1989). Children's motivation for participation in and withdrawal from sport: Identifying missing links. *Pediatric Exercise Science, 1*, 195-211.

Weiss, M. R., & Smith, A. L. (2002). Friendship quality in youth sport: Relationship to age, gender, and motivation variables. *Journal of Sport and Exercise Psychology, 24*, 420-437.

Whaley, D. E. (2007). A life span developmental approach to studying sport and exercise behavior. In G. Tenenbaum & R. C. Eklund (Eds.), *Handbook of sport psychology* (3rd ed., pp. 645–661). Hoboken, NJ: John Wylie and Sons.

Widmeyer, W. N., & Williams, J. M. (1991). Predicting cohesion in a coacting sport. *Small Group Research, 22,* 548-570.

Yukelson, D., Weinberg, R., & Jackson, A. (1984). A multidimensional group cohesion instrument for intercollegiate basketball. *Journal of Sport Psychology, 6,* 103-117.

STUDY 1

CHILDREN'S PERCEPTIONS OF COHESION[1]

Sport, although seen by many as an enjoyable activity for children, is much more than that. As Fraser-Thomas and Côté (2006) pointed out, sport has the potential to accomplish four important objectives in a child's development: namely, to afford opportunities to learn life skills (e.g., discipline, leadership, and self-control), to increase psychosocial development (e.g., social skills involving peer interactions and co-operation), to acquire motor skills, and to obtain physical activity—an outcome that has taken on increasing importance in this millennium. A physically active lifestyle is associated with physiological benefits such as increased cardiovascular health, increased muscular strength, and reduced probability of type-2 diabetes (Curtis, McTeer, & White, 1999; Lox, Martin-Ginis, & Petruzzello, 2006). It is also associated with psychosocial benefits such as reductions in depression and anxiety (Camacho, Roberts, Lazarus, Kaplan, & Cohen, 1990; Lox, et al., 2006).

However, national surveys undertaken around the world indicate that children are becoming progressively less active thereby contributing to concerns about weight and obesity. For example, in Canada, 26% of children and adolescents (aged 2 to 17 years) met the criteria for being either obese or overweight (Statistics Canada, 2006). Further, the prevalence of overweight youth ages 17 and under has doubled in the last 25 years while obesity has tripled (Statistics Canada, 2006). One reason that may be contributing

[1] A version of this chapter is published in *Sport and Exercise Psychology Review, (2011), 7,* 11-25.

to these troubling statistics is the fact that 33% of individuals between the ages of 10 and 17 withdraw from sport every year (Weinberg & Gould, 2003).

One general approach undertaken in an attempt to understand why adherence in sport and physical activity is problematic has been to examine children's motives for joining, maintaining, and ceasing their involvement. Social factors play an important role in these motives. For example, Ewing and Seefeldt (1996) had 8,000 youth (49% male, 51% female) rate possible reasons for participation in sport on a Likert scale. The mean responses were then rank ordered with the top reasons being to have fun, to play as part of a team, to make new friends, and to get exercise. These results were consistent with Weiss and Petchlickoff's (1989) findings that the four major reasons for participation in youth sport were fun, affiliation, competence, and fitness.

As indicated above, to be with friends, to affiliate with others, and to be a part of a group or team is a recurring theme when children are queried about their involvement in sport and physical activity. For example, Pate and O'Neill (2008) carried out a review of after-school interventions aimed at increasing physical activity among youth. The authors stressed that independent of the success of the intervention, an important outcome from the children's perspective was that the physical activity programs allowed them to have fun and be with their friends.

As another example, Ullrich-French and Smith (2009) found youth soccer players' perceptions of peer relationships predicted continued involvement with the same team. Elite level soccer players (N = 148) aged 10 to 14 filled out questionnaires assessing perceived friendship quality and perceived peer acceptance. Soccer

continuation with the same team was assessed one year following the completion of the questionnaires. Results showed that positive perceptions of friendship quality and peer relationships reliably predicted continuation on the same soccer team.

A second general approach used to understand low adherence rates in sport and physical activity has been to examine individuals' perceptions of their connection (e.g., closeness, unity, cohesiveness) to their group or team. To date, the focus for this general approach has been mostly older sport participants. In one study with older youth (approximately 15 to 18 years old), Robinson and Carron (1982) examined perceptions of cohesion (using the Sport Cohesiveness Questionnaire) in high school North American football players who were categorized as starters (regular competitors), survivors (practiced but played less than 10% of the time), or dropouts (quit the team of their own volition). Robinson and Carron reported that starters possessed a stronger sense of belonging and expressed greater enjoyment than survivors who in turn were superior to the dropouts for both sense of belonging and enjoyment. Conversely, dropouts perceived the team as more close-knit than survivors who in turn held stronger perceptions than starters. The authors noted, "in short, the dropouts perceived the team to be a close unit, but considered themselves to be relatively excluded" (Robinson & Carron, 1982, p. 374).

Cohesion by its very nature suggests "sticking together", which is seen in its definition; "a dynamic process which is reflected in the tendency for a group to stick together and remain united in the pursuit of its goals and objectives" (Carron, Brawley, & Widmeyer, 1998, p. 213). Therefore, since cohesion aids in the development and maintenance of a group towards its goals, it is logical to suggest a relation to member

adherence. Considerable research with older populations (college age to mid-30s) has tested this relationship's generalizability. That body of research has consistently shown a positive association between cohesion and a variety of indicants of adherence such as punctuality and attendance (e.g., Loughead, Colman, & Carron, 2001; Spink & Carron, 1993), resistance to the effects of disruptive events (e.g., Brawley, Carron, & Widmeyer, 1988, Study 1), and work output (e.g., Prapavessis & Carron, 1997).

Affiliation—being with friends, being on a team or group, having a sense of unity or togetherness with others—is important to young people (Smith, 2007; Weiss & Petchlickoff, 1989). A fundamental manifestation of the degree to which these social constructs are present is perceptions of cohesiveness. Carron and his colleagues (Carron et al., 1998, 2002; Carron, Widmeyer, & Brawley, 1985) proposed a conceptual model to account for the nature of cohesion in sport teams. This conceptual model evolved from three assumptions. The first, based on research on social cognitions (cf. Bandura, 1986; Kenny & Lavoie, 1985; Levine & Moreland, 1991; Schlenker, 1975; Schlenker & Miller, 1977; Zander, 1971), is that cohesion (a group property) can be assessed through the perceptions of individuals. The second is that the social cognitions that individuals form about their groups are related to the *group as a totality* (referred to as group integration) and to the manner in which the *group satisfies personal needs and objectives* (referred to as individual attractions to the group). The final assumption is that the two fundamental focuses of an individual's perception of cohesion are the task and social relationships. The result was a four-factor model comprised of *individual attractions to the group task*

(ATG-T), *individual attractions to the group social* (ATG-S), *group integration-task* (GI-T), and *group integration-social* (GI-S).

Recent research with younger populations (ages 13-17) however, contributes to the suggestion that youth do not necessarily perceive cohesion in the same way as adults (Eys, Loughead, Bray, & Carron, 2009a; Eys, Loughead, Bray, & Carron, 2009b). Eys and colleagues found that although youth participants could easily understand and discuss aspects of cohesion, they did not perceive the four-factor structure advanced by Carron and his colleagues (Carron et al., 1998, 2002; Carron, et al., 1985). Instead, a two-factor structure emerged based solely on task and social aspects. The fact that youth did not perceive cohesion in the same fashion as adults is not surprising since researchers have long cautioned against attempting to generalize from adult operational definitions to younger populations (Duda, 1982; Duda, 1987).

Therefore, based on research that has highlighted (a) the importance of peer groups for children, (b) children's strong motivations to affiliate, (c) the importance of cohesion in older populations, and (d) the possible dissimilarity between adults and children in perceptions of cohesion, two studies were undertaken. The general objective of both was to examine perceptions of team cohesiveness in children aged 9 to 12 years.

Study 1

In Study 1, the focus was on examining individual perceptions of cohesion from the perspective of group integration—the group as a totality. A qualitative approach involving focus groups was used to determine young children's understanding of the factors present in cohesive and absent in non-cohesive teams as well as their

understanding of how cohesion develops. A qualitative approach was used on the premise that through proper guidance from the focus group leader, participants would describe in rich detail, the complex experiences and the reasoning behind their actions, beliefs, perceptions, and attitudes which other methods might not capture (Carey & Smith, 1994).

Method

Participants. The participants were 35 (n_{males} = 14, n_{females} = 21) children (M_{age} 10.7 ± 0.9; range = 9 to 12 years) from four elementary schools in the city of London, Ontario and its surrounding area. A heterogeneous sample was used to increase the generalizablity of the results (i.e., to ensure that the results were not gender-, sport-, or competition level- specific). To this end, the sample included male and female current and former sport participants. Both the current and former sport participants had engaged in a variety of sports including hockey, soccer, North American football, basketball, tennis, swimming, horseshoes, and baseball. Finally, the competitive level of the participants varied from community house league to area representative.

Procedure. Initially, principals and teachers from four elementary schools were approached to determine if they would be interested in allowing their students to participate in the study after institutional ethical approval was obtained. The research proposal was submitted to the lead author's university ethics board and the area's school board for approval. When approval was obtained from these adjudicating panels, a schedule for testing was set up with the teachers who had indicated a willingness to participate. The first author provided a verbal description of the study to children in the classroom. Those expressing interest in participating were given parental consent forms

and participant assent forms to take home. When both of these forms returned to the school, the focus group phase was initiated.

Although participants were randomly assigned to one of seven focus groups, attempts were made to ensure children were placed with others of the same age category. This approach is recommended when working with younger children. In particular, there should only be a 1–2 year age difference between participants due to factors such as ability, level of comprehension and abstraction (Kennedy, Kools, & Krueger, 2001). Another consideration concerns the size of the focus groups. When working with younger children, Gibson (2007) recommended a group size of four to six participants, which will allow for lively discussion and manageable activity. In the present study, focus groups were comprised of five participants. Each session lasted an average of 30 minutes and took place in a classroom. A trained researcher moderated each focus group using a semi-structured interview guide adapted from the one used by Eys et al. (2009a). The Flesch-Kincaid reading levels for the interview questions were grade 4 or lower. The interview guide contained four sections and was developed based on the recommendations of Krueger and Casey (2000) and Patton (1990). These included:

1. Introductory questions: The goal of these questions was to stimulate conversation between the moderator and participants and among participants (e.g., “Can you give me an example of when you have been a member of a sports team?”).

2. Transition questions: The purpose of these questions was to direct attention toward the participant’s teams (e.g., “How many people were on these teams?”, “How did you know them?”).

3. Key questions: The aim of these questions was to gather information on individuals' perceptions of the indicators of cohesive teams, the indicators of non-cohesive teams, as well as methods in which cohesion could be developed within teams (e.g., "Thinking back to your team, why do you believe your team was cohesive? What goes on in a cohesive group? What goes on in a non-cohesive group? How could you increase the cohesion in your group?"). It was assumed that having respondents focus on the team (cohesive, non-cohesive) would direct attention to group integration manifestations of cohesiveness from the Carron et al. (1985) model.

4. Concluding question: The goal of these questions was to terminate the session while also allowing for any final thoughts on the topic, (e.g., "That is the end of our discussion, is there anything you would like to add?").

Each focus group was audio taped and researchers transcribed the responses. Carey and Smith (1994) pointed out "to capture the richness of data which transcript cannot convey (tone, pace, inflection, nonverbal communication) and subsequent meaning (satire, humour, emotion, intensity), it is important to do immediate debriefing and recording of field notes" (p. 126). Both inductive and deductive approaches were utilized in the categorization of responses. These approaches have been used in qualitative research with youth and children (e.g., Eys et al., 2009a; Munroe-Chandler, Hall, Fishburne, & Strachan, 2007). More specifically, initially, the responses were categorized deductively using the Carron et al. (1985) and Eys et al. (2009b) conceptual models of cohesion for adults and youth; both of these models distinguished between task and social cohesion. Subsequent analyses involved inductive categorizations based on

two main operations suggested by Côté, Salmela, Baria, and Russell (1993). First, meaningful text segments were coded, second, general categories were created and again text segments were grouped together. In order to ensure trustworthiness and validity, two researchers worked as a coding team and achieved 100% agreement for item categorization (Sparkes, 1998).

Results

Figures 1, 2, and 3 provide an overview of the responses to each of the three key questions (i.e., indicators of cohesive teams, indicators of non-cohesive teams, and methods by which cohesion can be developed). All responses pertaining to the indicators of cohesive and non-cohesive teams (see Figures 1 and 2) fell within three categories: *task cohesion* (i.e., performance issues pertaining to unity at the personal or team level), s*ocial cohesion* (i.e., social issues pertaining to unity at the personal or team level), and *not categorized* (i.e., responses that were not possible to categorize because the context was indeterminate). In order for a response to be categorized, the context needed to be clear. For example, in the statement, "our team is cohesive because we all know each other's role on *the ice,*" there is no doubt that the frame of reference used is the task. Similarly, in the statement, "our team is cohesive because we don't leave anyone out at *team get-togethers,"* there is no doubt that the frame of reference is a social situation. Conversely, however, in the statement "our team is cohesive because we don't fight," it is unclear whether the frame of reference was a task or social situation; thus, the response was not categorized. As Figure 3 shows, suggestions for methods that could be used to develop cohesion on a team fell into two categories: task-related and social-related.

Indicators of cohesive teams. Overall, 65 meaning units were obtained. In terms of the meaning units associated with task cohesion, six themes emerged. These were "work together", "talk things out", "eliminate conflict", "show support", "share the blame", and "be unselfish." Six themes also emerged for social cohesion. These were "eliminate conflict", "interact away from sport", "have fun with each other", "leave no one out", "be good friends", and "get along well." Figure 1 contains a summary of the frequency with which each theme was stated. As indicated above, responses were not categorized when it was not possible to clearly discern whether the context was practice/competition or social situations. Some examples of uncategorized statements are "say nice things to each other", "we are close because of the sport", and "everyone thought it was cool to learn each other's names."

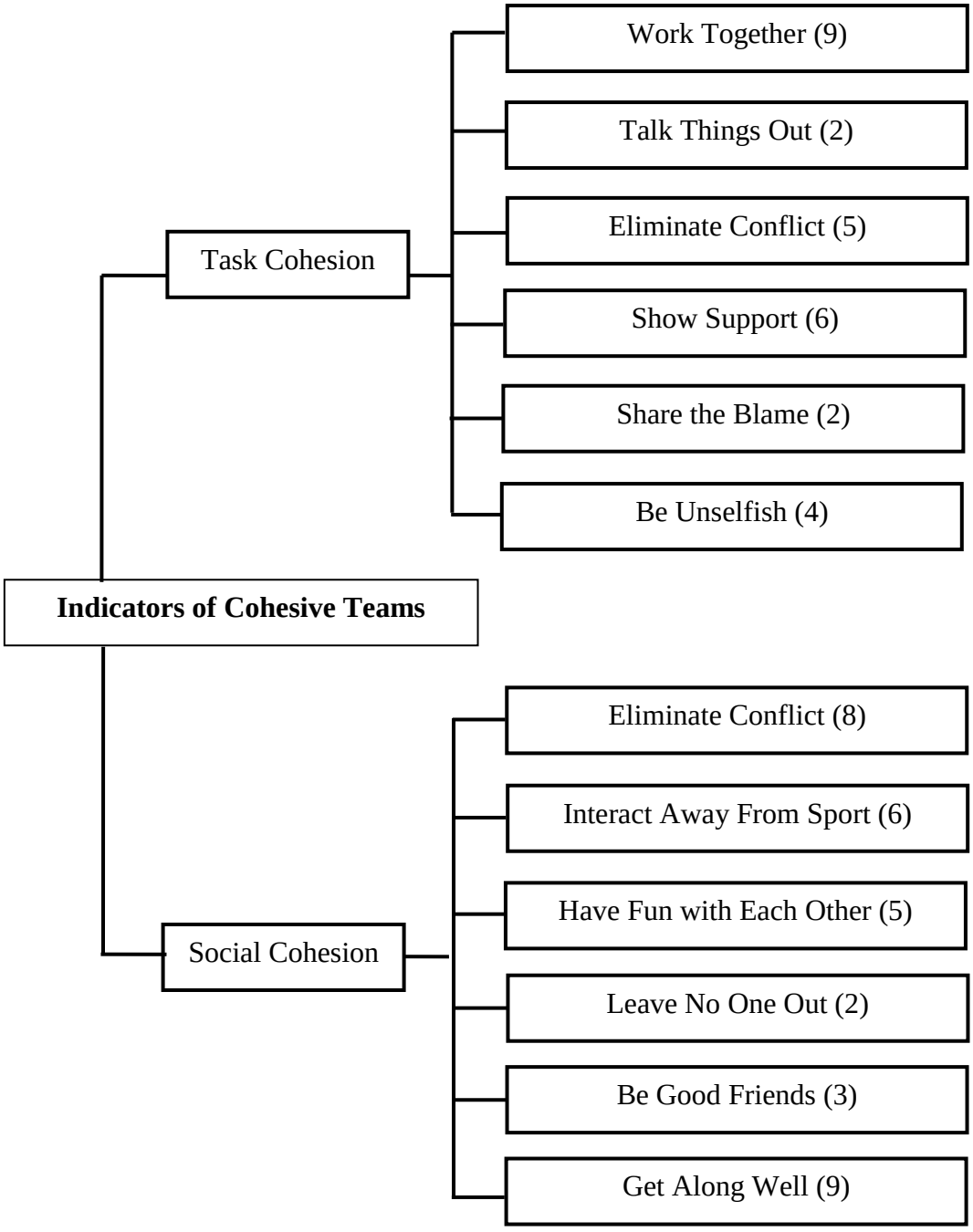
Indicators of non-cohesive teams. In response to the query about the indicators of non-cohesive teams, 57 meaning units emerged. For task cohesion, the four themes were; "do not work together", "presence of conflict", "do not share the blame", and "selfishness is present." As for social cohesion, the three themes were "presence of conflict", "leave people out", and "do not get along well." The frequency with which each theme was stated is indicated in Figure 2. The responses that could not be categorized were "we argue", "we fight", and "people set bad examples."

Methods to create or increase cohesion. The seven themes resulting from questions concerning general procedures for increasing task cohesion were "communication", "be positive", "put the team first", "work together", "punish bad/reward good behaviour", "be open to change", and "be a good teammate." The three

themes emerging from questions pertaining to how to develop social cohesion were “have team events”, “treat everyone equally”, and “make new friendships.” Perhaps due to the directness or nature of the questions, the researchers were able to categorize all 60 responses provided by participants. That is, for all of the responses, the individuals made clear whether they were discussing task or social cohesion. Again, for the frequencies of responses, refer to Figure 3.

Figure 1

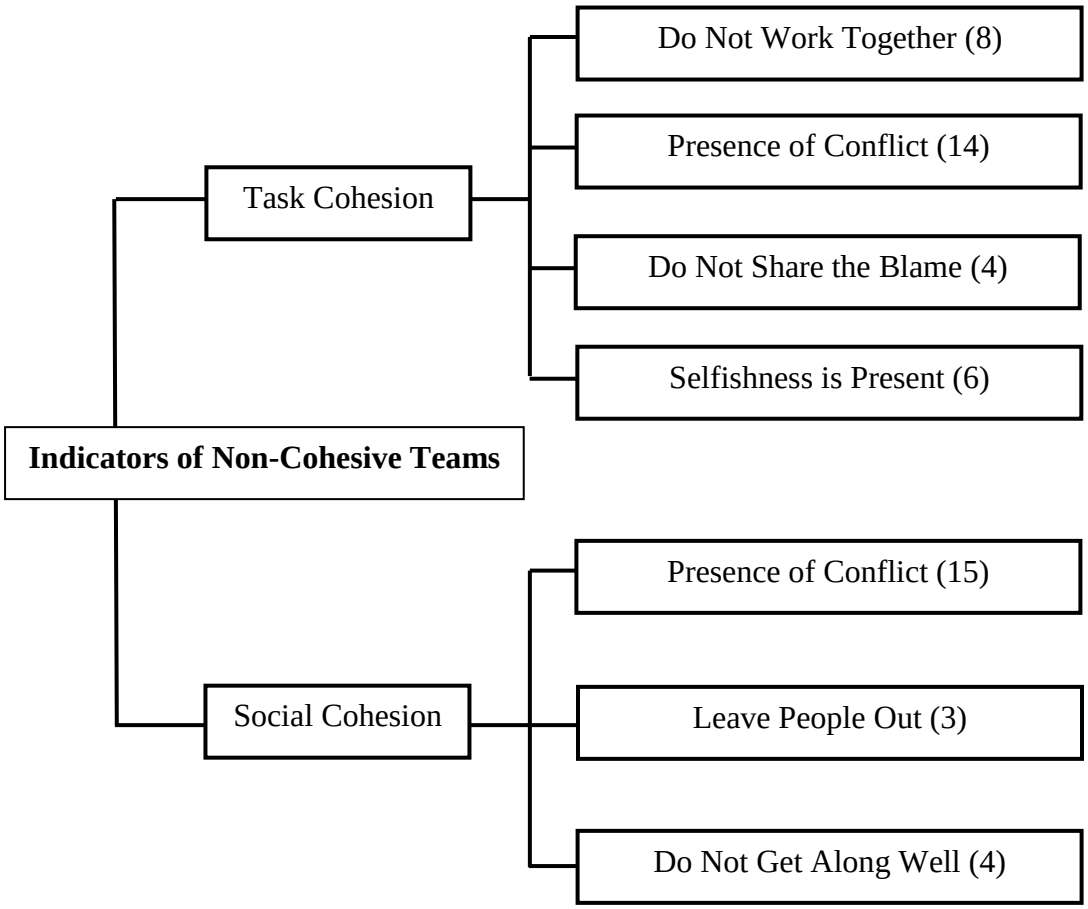
Responses for Cohesive Teams (number of meaning units in parentheses)



Note: Four responses could not be categorized resulting in a total of 65.

Figure 2

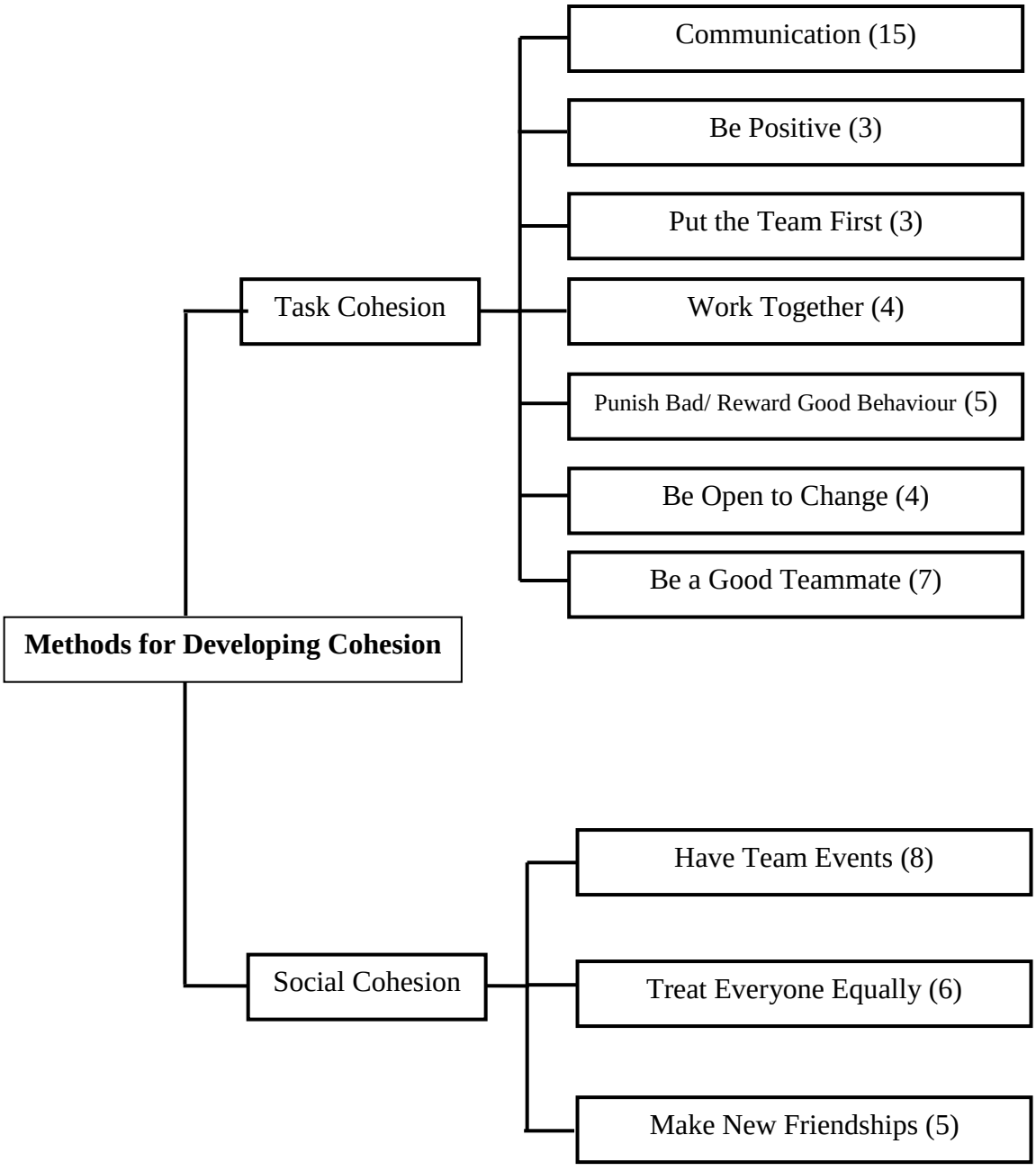
Responses for Non-Cohesive Teams (number of meaning units in parentheses)



Note: Three responses could not be categorized resulting in a total of 57.

Figure 3

Methods for Developing Cohesion (number of meaning units in parentheses)



Study 2

It was pointed out above that the Carron et al. (1985) conceptual model for cohesion is founded on three assumptions: a group's cohesiveness is apparent to its individual members; individual members process information about cohesion from the perspective of the group as a totality and as a forum in which personal needs and motives are satisfied; and, that information is typically of a task or social nature. The results from Study 1 provided information consistent with aspects of the Carron et al. conceptual model. That is, when young children (ages 9 to 12) considered cohesion from the perspective of the group as a totality (i.e., group integration), the manifestations were almost exclusively task or social in nature.

In order to gain insight into the generalizability of the findings, two modifications were made for Study 2. One was to alter the focus. That is, in Study 2, the focus was on examining young children's (ages 9 to 12) perceptions of cohesion from the perspective of individual attractions to the group—the personal needs and motives underlying group membership. The second was to alter the information-gathering protocol using an open-ended questionnaire. Compared to the focus group protocol, the open-ended questionnaires offered the children a better opportunity to provide in-depth information about their attitudes and feelings concerning the factors that personally attracted them to sport teams.

Method

Participants. The sample consisted of 132 children ($n_{\text{males}} = 63$, $n_{\text{females}} = 69$) between the ages of 9-12 years (*Mage* = 11.3 ± .99) from four elementary schools in

London, Ontario and the surrounding area. Similar to Study 1, a heterogeneous sample (with respect to gender, sport, and competitive level) was recruited.

Procedure. The protocol used to secure school board approval, ethical approval from the lead author's institution, the cooperation of elementary school principals and teachers, and to recruit participants and obtain their and their parent's approval was identical to that used in Study 1. After the successive levels of consent and assent were obtained, the open-ended questionnaires were distributed to the individuals during their lunch break at school.

The questionnaires took approximately 10-15 minutes to complete. Participants were asked to answer three questions in order to fully explore individual attractions to the group: (1) Why individuals join sport groups, e.g., "Please indicate why you *joined* your current sport team"; (2) Why individuals stay with sport groups, e.g., "Please indicate why you are *staying as* a member of your current sport team", and (3) Why individuals withdraw from sport groups, e.g., "Why might you *stop participating* with your sport team." These questions were adapted slightly from ones used by Eys et al. (2009); the adaptation was undertaken in order to lower the average Flesch-Kincaid reading level to grade 4 or lower. Participants who had previously dropped out of their sports team, were asked to hypothetically answer the questions (i.e., why *would* you join a sports team or why *would* you have stayed a member of your sports team).

Study 2 utilized the identical inductive and deductive protocols as Study 1 for data analysis (Côté et al., 1993; Eys et al., 2009a; Munroe-Chandler et al., 2007; Sparkes,

1998). Similar to the process used for Study 1, 100% agreement by the first two authors was required for the items to be included in the categories established.

Results

Figure 4 provides an outline of the reasons (i.e., interpersonal attractions) given for joining, maintaining membership, and dropping out of sport teams, as well as the frequencies with which they appeared.

Reasons for joining. In total, 185 reasons for joining sports teams were cited by the participants (e.g., "I wanted to have fun", "I wanted to try something new", "I wanted to stay fit and active", "I wanted to be with my friends who were playing", etc.). These reasons were categorized into 12 larger themes: to have fun, to get in shape and get exercise, to go along with family pressure, to do something I like, to be with friends, to meet new people, to improve and learn new skills, to play as part of a team, to experience competition, to do something I am good at, to reduce stress, and to move to a higher level. Figure 4 provides an outline of these categories in order of prevalence.

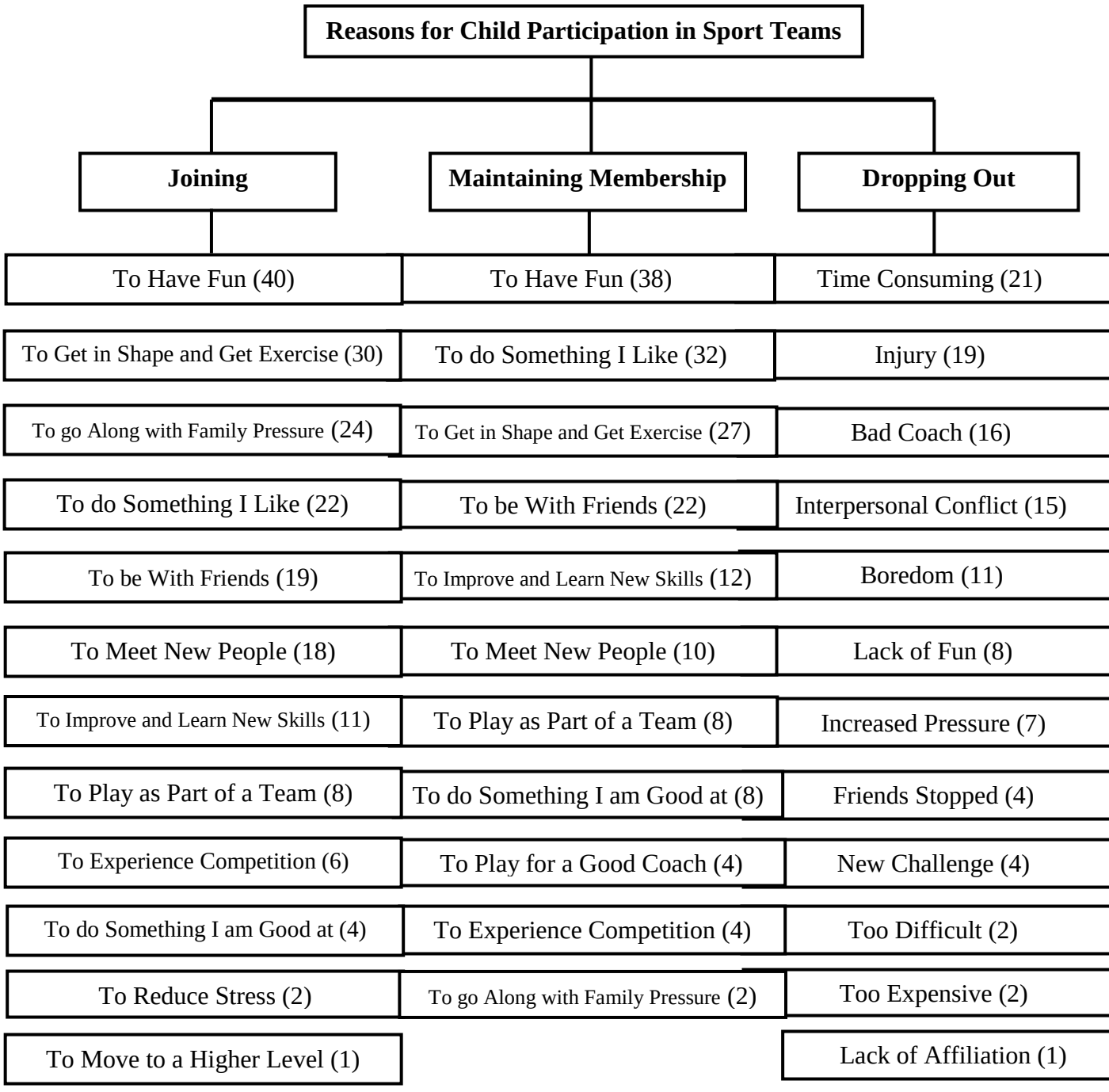
Reasons for maintaining membership. Overall, 167 reasons for maintaining membership in sports teams were cited by the participants. Some examples from the list include, "because I'm having so much fun", "because I am getting better", "because it is exciting", "because I want to stay healthy and live long", "because my mom and dad made me", and "because I like the coach." A total of 11 general themes emerged: to have fun, to do something I like, to get in shape and get exercise, to be with friends, to improve and learn new skills, to meet new people, to play as part of a team, to do something I am

good at, to play for a good coach, to experience competition, and to go along with family pressure. The themes are provided in Figure 4.

Reasons for stopping. There were 110 reasons cited for why individuals stopped or would stop participating on their sports teams. Some examples of the responses were; “I didn’t fit in with the team”, “I stopped having fun”, “it became too competitive”, “I didn’t like the coach”, and “my team didn’t have cohesion.” After the analysis, the reasons were placed into 12 themes by the researchers: time consuming, injury, bad coach, interpersonal conflict, boredom, lack of fun, increased pressure, friends stopped, new challenge, too difficult, too expensive, and lack of affiliation. These categories as well as the prevalence with which they appeared can be found in Figure 4.

Figure 4

Reasons for Joining, Maintaining Membership, and Dropping Out of Sport Teams (number of meaning units in parentheses)



Discussion

The general purpose of the two studies reported here was to examine perceptions of team cohesiveness in children aged 9 to 12 years. In Study 1, focus groups were used to examine individual perceptions of cohesion from the perspective of group integration—the group as a totality. In Study 2, open-ended questionnaires were used to examine individual perceptions of cohesion from the perspective of individual attractions to the group. Four general findings merit discussion.

The first pertains to young children's understanding of the concept of cohesion. Developmentally, children begin to understand complex constructs and differentiate among them at different stages. Thus, for example, Roberts (1993) found that the ability to distinguish between ability and effort as contributors to performance outcomes is not present until the age of 12 years. As another example, Passer (1996) reported that by the age of seven, children develop a distinct interest in social comparison with their peers. Our results demonstrate that children as young as 9 years understand the phenomenon known as cohesion. They can discuss the group as a totality and describe the characteristics of cohesive and non-cohesive teams. Further, consistent with the results from previous research, individual factors attracting children to sport teams (and, therefore contributing to cohesion) include being with friends, and being affiliated with others (Ewing & Seefeldt, 1996; Weiss & Petchlickoff, 1989).

A second related point is that young children possess the ability to distinguish between task and social cohesiveness. One of the assumptions established by Carron et al., (1985, 1998) in their conceptual model of cohesion was that both the individual- and

the group-oriented perceptions have a task or a social orientation. Our results suggest that children of this age (9 -12 years) can in fact differentiate between task and social cohesiveness (e.g., “our team works well together during games” and “our team gets along well at parties”).

These results are in agreement with the findings of Eys et al. (2009) who examined the meaning attached to group cohesion in a *youth* population (ages 13 to 17). Their results also highlighted the ability of youth sport participants to distinguish between task and social cohesion. This is an important finding; it suggests that children are not only attracted to the social aspect of their teams, but also understand and enjoy the closeness of a task-oriented group. Sport practitioners and coaches may be able to use such information in the creation of practice and game plans with an overall goal of maintaining sport participation.

A third finding that warrants discussion pertains to the individual perceptions of cohesion based on the individuals attractions to the group; namely affiliation, being with friends, meeting new people, and being a member of a team. These personal sources of attraction to the group are social in nature, and are consistent with the theorizing from Baumeister and Leary (1995) who provided comprehensive support for their proposition that the need to belong and the desire for interpersonal attachments is a fundamental human motivation. Research that focuses on children’s reasons for participation in sport in general has also shown consistency with our findings for teams specifically (Weiss & Ferrer-Caja, 2002; Weiss, Kimmel, & Smith, 2001; Weiss & Petchlickoff, 1989). These results show support for the importance of cohesion in child sport, in that our findings

from Study 2 (with a focus on individual attractions to the group) do in fact parallel those from other researchers who examined children's reasons for participation. Again, this provides support for the suggestion that cohesion plays a major role in child sports team or group involvement.

The fourth point, one closely related to the third, evolves from the depth of information gained from the questions asked in Study 2. These questions enabled us to gain insight into the reasons why children join, why they continue to participate, and finally why they might leave their groups. Thus, for example, insofar as discontinuation is concerned, interpersonal conflict was the first group-related construct listed (i.e., following 'too time consuming', 'injury', and 'bad coach').

The importance attached to conflict is consistent with previous research that has discussed interpersonal conflict as a source of stress and burnout for athletes (Smith, 2007) and fits well with the overall topic of Study 1. As indicated above, participants in Study 1 described characteristics of cohesive and non-cohesive teams. Many of the examples given for non-cohesive teams (e.g., the presence of conflict, not getting along very well, leaving people out) are closely related to interpersonal conflict. Thus, it would seem reasonable to assume that a more cohesive group would have decreased levels of interpersonal conflict. In fact, Sullivan and Feltz (2001) provided support for this assumption in their work with hockey players (ages 21 to 39). Specifically, they found that task and social cohesion were negatively related to disruptive styles of interpersonal conflict. The question that remains is whether this information is generalizable to a younger population.

Study 1 demonstrated that children as young as nine years understand the concept of cohesion along with the advantages associated with its presence and the disadvantages associated with its absence. Also, Study 2 provided insight into individuals' attractions to the group. Overall, the two studies highlight the importance of the group for children. What remains a challenge for the future is the development of some method to assess the degree to which children experience a sense of "groupness" (i.e., cohesion). As Lord Kelvin pointed out, "if you cannot measure it, you cannot improve it" (Sir William Thomas, 2009, para. 1). Therefore, a necessary next step is to develop a cohesion inventory specifically tailored for this young population.

References

Baumeister, R. F., & Leary, M. R. (1995). The need to belong: Desire for interpersonal attachment as a fundamental human motivation. *Psychological Bulletin, 117,* 497-529.

Brawley, L. R., Carron, A. V. & Widmeyer, W. N. (1988). Exploring the relationship between cohesion and group resistance to disruption. *Journal of Sport & Exercise Psychology, 10,* 199-213.

Camacho, T. C., Roberts, R. E., Lazarus, N. B., Kaplan, G. A., & Cohen, R. D. (1990). Physical activity and depression: Evidence from the Alameda County Study. *American Journal of Epidemiology, 134,* 220-231.

Carey, M. A., & Smith, M. W. (1994). Capturing the group effect in focus groups: A special concern in analysis. *Qualitative Health Research, 4,* 123-127.

Carron, A. V., Brawley, L. R., & Widmeyer, W. N. (1998). The measurement of cohesiveness in sport groups. In J. L. Duda (Ed.), *Advances in sport and exercise psychology measurement* (pp. 213-226). Morgantown, WV: Fitness Information Technology.

Carron, A. V., Widmeyer, W.N., & Brawley, L. R. (1985). The development of an instrument to measure cohesion in sport teams: The Group Environment Questionnaire. *Journal of Sport Psychology, 7***,** 244-266.

Carron, A. V., Widmeyer, W. N., & Brawley, L. R. (1988). Group cohesion and individual adherence to physical activity. *Journal of Sport and Exercise Psychology, 10,* 127-138.

Côté, J., Salmela, J. H., Baria, A., & Russell, S. J. (1993). Organizing and interpreting unstructured qualitative data. *The Sport Psychologist, 7,* 127-137.

Curtis, J., McTeer, W., & White, P. (1999). Exploring effects of school sport experiences on sport participation in later life. *Sociology of Sport Journal, 16,* 348-365.

Duda, J.L. (1982). Toward a phenomenology of children in sport: New directions in sport psychology research. In L.L. Gedvilas (Ed.), *NAPEHE Proceedings* (p. 38-47). Champaign, IL: Human Kinetics.

Duda, J. L. (1987). Toward a developmental theory of children's motivation in sport. *Journal of Sport and Exercise Psychology in Sport, 9,* 130-145.

Ewing, M.E., & Seefeldt, V. (1996). Patterns of participation and attrition in American agency sponsored youth sports. In F.L. Smoll and R.E. Smith (Eds.), *Children and youth in sport: A biopsychosocial perspective* (pp.31-45). Dubuque, IA: Brown & Benchmark.

Eys, M. A., Loughead, T. M., Bray, S. R., & Carron, A. V. (2009a). Perceptions of cohesion by youth sport participants. *The Sport Psychologist, 23,* 330-345.

Eys, M. A., Loughead, T. M., Bray, S. R., & Carron, A. V. (2009b). Development of a cohesion questionnaire for youth: The Youth Sport Environment Questionnaire. *Journal of Sport & Exercise Psychology, 31,* 390-408.

Findlay, L. C., & Coplan, R. J. (2008). Come out and play: Shyness in childhood and the benefits of organized sports participation. *Canadian Journal of Behavioral Sciences, 40,* 153-161.

Fraser-Thomas, J., & Côté, J. (2006). Youth sports: Implementing findings and moving forward with research. *Athletic Insight, 8,* 12-27.

Gibson, F. (2007). Conducting focus groups with children and young people: Strategies for success. *Journal of Nursing Research, 12,* 473-483.

Gould, D. (1987). Understanding attrition in children's sport. In D. Gould, & M. R. Weiss (Eds.). *Advances in pediatric sport sciences: Behavioral issues* (pp. 61-85). Champaign, IL: Human Kinetics.

Kelvin, L. (Sir William Thomson) (2009). Quotations. Retrieved April 13, 2010 from http://zapatopi.net/kelvin/quotes/#meas.

Kennedy, C., Kools, S., Krueger, R. (2001) Methodological considerations in children's focus groups. *Nursing Research, 50,* 184–187.

Kenny, D. A., & Lavoie, L. (1985). Separating individual and group effects. *Journal of Personality and Social Psychology, 48,* 339-348.

Krueger, R. A., & Casey, M. A. (2000). *Focus group: A practical guide for applied research.* Thousand Oaks, CA: Sage.

Levine, J. M., & Moreland, R. L. (1991). Culture and socialization in work groups. In L. B. Resnick, J. M. Levine, & S. D. Teasley (Eds.), *Perspectives on socially shared cognitions* (pp. 257-282). Washington, DC, American. Psychological Association.

Loughead, T. M., Colman, M. M., & Carron, A. V. (2001). The effects of leadership and class cohesion on the adherence of older adult exercisers. *Small Group Research, 32,* 558-575.

Lowther, J., & Lane, A. (2006). Relationships between mood, cohesion and satisfaction with performance among soccer players. *Athletic Insight: The Online Journal of Sport Psychology*. *http://www.athleticinsight.com/Vol4Iss3/MoodandPerformance.htm*.

Lox, C. L., Martin-Ginis, K. A., & Petruzzello, S. J. (2006). *The Psychology of Exercise: Integrating Theory and Practice* (2nd ed.). Scottsdale, AZ: Holcomb Hathaway, Publishers, Inc.

Munroe-Chandler, K. J., Hall, C. R., Fishburne, G. J., & Strachan, L. (2007). Where, when, and why young athletes use imagery: An examination of developmental differences. *Research Quarterly for Exercise and Sport, 78,* 103-116.

Passer, M. W. (1996). At what age are children ready to compete? Some psychological considerations. In F. L. Smoll, & R. E. Smith (Eds.), *Children and youth in sport: A biopsychosocial perspective* (pp. 73-86). Madison, WI: Brown & Benchmark.

Pate, R. R., & O'Neill. (2008). After-school interventions to increase physical activity among youth. *British Journal of Sports Medicine, 43,* 14-18.

Patton, M. Q. (1990). *Qualitative evaluation and research methods* (2nd ed.). Newbury Park, CA: Sage.

Prapavessis, H., & Carron, A. V. (1997). Sacrifice, cohesion, and conformity to norms in sport teams. *Group Dynamics: Theory, Research, and Practice, 1,* 231-240.

Roberts, G. (1993). Motivation in sport: Understanding and enhancing the motivation and achievement of children. In R. N. Singer, M. Murphey, & L. K. Tennant (Eds.), *Handbook of research on sport psychology* (pp. 405-420). New York: MacMillan.

Robinson, T. T., & Carron, A. V. (1982). Personal and situational factors associated with dropping out versus maintaining participation in competitive sport. *Journal of Sport Psychology, 4,* 364-378.

Schlenker, B. R. (1975). Group members attributions of responsibility for prior performance. *Representative Research in Social Psychology, 6,* 96-108.

Schlenker, B. R., & Miller, R. S. (1977). Egocentricism in groups: Self-serving bias or logical information processing. *Journal of Personality and Social Psychology, 35,* 755-764.

Smith, A. L. (2003). Peer relationships in physical activity contexts: a road less traveled in youth sport and exercise psychology research. *Psychology of Sport and Exercise, 4,* 25-39.

Smith, A. L. (2007). Youth peer relationships in sport. In S. Jowett & D. Lavallee (Eds.), *Social psychology in sport* (pp.41-54). Champaign, IL: Human Kinetics.

Smith, R. E. (2007). Toward a cognitive-affective model of athletic burnout. In D. Smith, & M. Bar-Eli (Eds.) *Essential readings in sport and exercise psychology* (pp. 317-324). Champaign, IL: Human Kinetics.

Sparkes, A. C. (1998). Validity in Qualitative Inquiry and the Problem of Criteria: Implications for Sport Psychology. *The Sport Psychologist, 12*, 363-386.

Statistics Canada. Overweight and obesity among children and youth. *Health Reports 2006;* August 17: 27-42.

Sullivan, P. J., & Feltz, D. L. (2001). The relationship between intrateam conflict and cohesion within hockey teams. *Small Group Research, 32,* 342-355.

Ullrich-French, S., & Smith, A. L. (2009). Social and motivational predictors of continued youth sport participation. *Psychology of Sport and Exercise, 10*, 87-95.

Weinberg, R. S., & Gould, D. (2003). Children's psychological development through sport. In *Foundations of Sport and Exercise Psychology* (3rd ed.) (pp. 491-510). Champaign, IL: Human Kinetics.

Weiss, M. R., & Ferrer-Caja, E. (2002). Motivational orientations and sport behaviour. In T. S. Horn (Eds.), *Advances in sport psychology* (2nd ed.) (pp. 101-183). Champaign, IL: Human Kinetics.

Weiss, M. R., Kimmel, L. A., & Smith, A. L. (2001). Determinants of sport commitment among junior tennis players: Enjoyment as a mediating variable. *Pediatric Exercise Science, 13,* 131-144.

Weiss, M. R., & Petlichkoff, L. (1989). Children's motivation for participation in and withdrawal from sport: Identifying missing links. *Pediatric Exercise Sciences, 1,*

Weiss, M. R., & Smith, A.L. (2002). Friendship Quality in Youth Sport: Relationship to Age, Gender, and Motivation Variables. *Journal of Sport & Exercise Psychology, 24*, 420-437.

Widmeyer, W. N., & Williams, J. M. (1991). Predicting cohesion in a coacting sport. *Small Group Research, 22,* 548-570.

Williams, J. M., & Hacker, C. M. (1982). Causal relationships among cohesion, satisfaction and performance in women's intercollegiate field hockey teams. *Journal of Sport Psychology, 4,* 324-337.

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

STUDY 2

DEVELOPMENT OF A COHESION INVENTORY FOR CHILDREN'S SPORT TEAMS[2]

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 for the satisfaction of member affective needs" (Carron, Brawley, & Widmeyer, 1998, p. 213). A considerable amount of research has been dedicated to this phenomenon in many different areas of study including sociology, social psychology, business and industry, the military, education, and the psychology of sport and exercise (e.g., Dion, 2000). Not surprisingly, given the breadth of interest in cohesion, some social scientists have described it as the most important small group variable (Golembiewski, 1962; Lott & Lott, 1965).

Carron, Widmeyer, and Brawley (1985) proposed that a group's level of cohesiveness could be assessed through individual members' perceptions. Consistent with this suggestion, they advanced five assumptions: (1) the group has observable properties, (2) individuals are socialized and integrated into the group and develop beliefs about the group, (3) individuals' beliefs are based on the information gathered about the group, (4) individuals' beliefs are reflections of the common values throughout the group, and (5) individuals' perceptions of the cohesiveness of their group can be assessed through paper and pencil questionnaires.

[2] A version of this chapter is in print with *Group Dynamics: Theory, Research, and Practice*.

Based on these assumptions, a conceptual model of cohesion was developed (Carron et al., 1985). The foundation of this conceptual model is the proposition that cohesion results from an individual's perceptions of both his/her attractions to the group and the group's integration. Furthermore, it was proposed that these two factors possess either a task or social orientation. The result is a four dimensional model of cohesion comprised of: (a) Individual Attractions to the Group-Social (i.e., perceptions by the individual about his/her involvement in the group's social activities; ATG-S), (b) Individual Attractions to the Group-Task (i.e., perceptions by the individual about his/her involvement in the group based on the task; ATG-T), (c) Group Integration-Social (i.e., perceptions by the individual about the group's unity toward social aspects; GI-S), and (d) Group Integration-Task (i.e., perceptions by the individual about the group's unity toward task aspects; GI-T).

Based on this conceptualization, Carron et al. (1985) developed the Group Environment Questionnaire (GEQ) in order to measure individual perceptions of a group's level of cohesion. The GEQ is the most widely accepted measure of cohesion for sport (Carron, Eys, & Martin, in press); however, it is restricted in its potential usage in that the items were developed for athletes between the ages of 18 and 30. Due to this restriction, researchers subsequently developed other cohesion inventories better suited to specific target populations. For example, Estabrooks and Carron (2000) developed the Physical Activity Group Environment Questionnaire (PAGEQ) to assess cohesiveness in older adult (greater than 60 years) physical activity groups. Additionally, Eys, Loughead, Bray, and Carron (2009a) developed the Youth Sport Environment Questionnaire

(YSEQ) in order to assess cohesion in adolescent (ages 13-18) sport teams. Extending the work of Estabrooks and Carron and Eys et al., the focus of the present study was to develop a questionnaire to assess cohesion in children's (ages 9-12) sport teams.

Sport provides children with an opportunity for both physiological and psychological benefits. From a physiological perspective, lack of involvement in sport and physical activity over a life span is associated with numerous health problems including cardiovascular disease, coronary heart disease, and some cancers (Bouchard, Shepard, Stephens, Sutton, & McPerson, 1990; Lox, Martin-Ginis, & Petruzello, 2006; Warburton, Nicol, & Bredin, 2006). In addition, decreased activity levels have also been related to increased levels of depression and anxiety (Dunn, Trivedi, & O'Neal, 2001; Warburton, Gledhill, & Quinney, 2001a; Warburton, Gledhill, & Quinney, 2001b). Research also demonstrates that children involved in sport have higher levels of self-esteem and social status, along with lower levels of shyness (Chase & Dummer, 1992; Findlay & Coplan, 2008; McHale, Vinden, Bush, Richer, Shaw, & Smith, 2005) compared to their non-sport counterparts. Therefore, the importance of sport for this age group is apparent. Unfortunately, research indicates that participation and adherence rates in physical activities (including sport) are decreasing while obesity and overweight levels in industrialized nations such as Canada are increasing (Statistics Canada, 2006).

Given the physical and psychological benefits associated with sport and physical activity, there is a need to develop protocols aimed at increasing sport participation rates. Xiaobei Chen's (2003) gardening metaphor (in which childhood is considered a *strategic time in life*--a period during which a person, like a tender plant, can be easily and

permanently influenced more than at any other time) emphasises the importance of targeting this age group. Children between the ages of 9 and 12 are in an impressionable period, and the fact that sport participation peaks between the ages of 10 and 13 (Ewing & Seefeldt, 1996) makes this population a perfect target for attempting to increase long term sport participation and adherence rates (Epstein, Colemen, & Myers, 1996).

A logical first step for increasing participation and adherence rates for this population is to understand the reasons for entering into and remaining involved in sport. Some of the major reasons children have cited as motives for their participation are "to play as part of a team", "to make new friends", and "for affiliation" (Ewing & Seefeldt, 1996; Weiss & Petchlickoff, 1989). These motives are consistent with the theorizing of Baumeister and Leary (1995), who suggested that the need to belong (the desire for interpersonal attachments) is a fundamental human motivation. Essentially, the group phenomenon of "cohesion" is a direct measure of perceptions of belonging and affiliation—it represents coherence and sticking together. In adult populations, a considerable amount of research has tested the relationship between cohesion and participant adherence. Consistent findings suggest cohesion has a positive association with several adherence-related outcomes including punctuality and attendance (e.g., Carron, Widmeyer, & Brawley, 1988; Study 2), resistance to the effects of disruptive events (e.g., Brawley, Carron, & Widmeyer, 1988, Study 2), and work output (Prapavessis & Carron, 1997).

Beyond improving participation and adherence rates, cohesion also has the ability to enrich the sporting experience for individuals who choose to become and remain

involved in sport. For instance, cohesion is positively related to important outcomes in youth and adult populations such as increased willingness to accept responsibility for negative results (Brawley, Carron, & Widmeyer, 1987), decreased use of self-handicapping strategies (Hausenblas & Carron, 1996), increased satisfaction (Paradis & Loughead, 2011; Widmeyer & Williams, 1991), reduced anxiety (Eys, Hardy, Carron, & Beauchamp, 2003; Prapavessis & Carron, 1996), and reduced depression (Terry et al., 2000).

In addition to these important outcomes for youth and adults involved in sport, cohesion has also been identified as a key factor in impacting health behaviours in children and youth in social contexts such as neighbourhoods and families (e.g., Barber & Buehler, 1996; Bray, Adams, Getz, & Baer, 2001; van der Linden, Drukker, Gunther, Feron, & van Os, 2003). More specifically, lower levels of family cohesion have been related to increased adolescent problems such as delinquency, anxiety, depression (Barber & Buehler, 1996), and alcohol abuse (Bray et al., 2001).

Therefore, the potential importance of the cohesion construct in the child sport setting is apparent; however, in order to determine whether cohesion could increase participation and adherence rates, while also enriching the overall sport experience, a psychometrically sound measurement tool is necessary. Current cohesion inventories cannot be used with children; neither the items nor the response scales are appropriate. For example, a child who is in grade 4 (age 9) cannot be expected to read at the same level as an adolescent in grade 12 (age 17). As another example, an item that queries attendance at team parties is likely irrelevant to most children in grade 4. In fact, a major

limitation identified in research is the attempt to generalize adult operational definitions to younger populations (Duda, 1987). In this regard, Stadulis, MacCracken, Eidson, and Severance (2002) commented that the "reliability and validity of administering the adult version to children would be suspect due to the child's inability to comprehend terminology and concepts" (p. 148). Finally, researchers engaged in developmental research (e.g., Brustad, 1998; Whaley, 2007) also noted that measures should reflect the cognitive stage of a sample, be written in a language and format appropriate for that sample, and address concerns that are relevant to that sample.

As indicated above, the general purpose of the program of research summarized in the present report was to develop a cohesion inventory for use in children's (ages 9-12) sport teams. Based on the belief that the utility and long-term viability of any instrument emanates from the use of psychometrically sound principles to guide its development (Carron et al., 1985; Estabrooks & Carron, 2000; Eys et al., 2009a), three phases incorporating both qualitative and quantitative methodologies were undertaken. In Phase 1, children's perceptions about the nature, antecedents, and consequences of cohesive and non-cohesive groups were examined using qualitative protocols. The results from that phase have been published, but a brief reiteration is necessary here to clearly understand the protocol we undertook (Martin, Carron, Eys, & Loughead, 2011). In Phase 2, we used the information gathered in Phase 1 to generate items and assess their content validity. Finally, in Phase 3, a heterogeneous sample of child sport participants completed the questionnaire in order to test its factorial validity.

Method

Phase 1: Children's Perceptions of Cohesion

The overall objective of Phase 1 was to gain an understanding of the concept of cohesion as it pertains to children. As Carron et al. (1985) pointed out, an important process in the development of any questionnaire is the use of participants as active-agents in expressing the meaning of the construct because "the actual representation … (i.e., the semantics and the descriptors used) might be more clearly expressed by the actual subjects than by the investigators" (p. 249). To this end, two projects in Phase 1 involved the use of qualitative methodologies to explore children's understanding of the general nature of cohesion in sport teams to obtain a pool of descriptors (phrased in their terminology) that reflected group cohesion. As indicated above, the two projects—one using focus groups and the other using open-ended questionnaires—are discussed in detail elsewhere (Martin et al., 2011) and therefore, are not repeated in detail here. Suffice to say that a rich collection of terms/descriptors reflecting the antecedents, consequences, and nature of cohesion in children's sport teams was obtained.

Also, a literature search focusing on sport and exercise participation in children was used to complement the results gathered from the two qualitative studies. It was believed that the analysis of previously conducted studies examining children and youth sport (e.g., Eys et al., 2009a; Eys, Loughead, Bray, & Carron, 2009b; Findlay & Coplan, 2008; McCarthy, Jones, & Clark-Carter, 2008; Ulrich-French & Smith, 2009; Weiss & Smith, 2002) would help in item generation.

Phase 2: Item Generation and Content Validity

The overall objective of Phase 2 was to develop items for the cohesion inventory using the information obtained from Phase 1. From the Martin et al. (2011) study, 172 potential items were generated and placed into categories (e.g., all items dealing with sense of belonging were categorized together, all items dealing with unity of task purpose were categorized together, etc.). Once the items were categorized into groupings containing similar or identical content, the researchers were able to continue the trimming process. As a result, the 172 potential items were reduced in number to 64. The items were then examined for readability, comprehensibility, and relevance to the cohesion construct. At the same time, also considered as a source of items were (a) the general results from previous research on children's sport and (b) the specific items used to measure cohesion in the Eys et al. (2009a) Youth Sport Environment Questionnaire (YSEQ).

Preliminary analyses revealed that a majority of the remaining 64 items generated from the qualitative studies and the literature search were similar (in some cases were identical) to the items used in the YSEQ. Thus, our research team used those items generated for the present project and items contained in the YSEQ as a basis to produce a 16-item questionnaire assessing task and social cohesion. The following provides a general overview:

a) seven task and seven social cohesion items were included with no distinction made between the "individual attractions to the group" and "group integration" dimensions from the Carron et al. (1985) conceptual model,

b) five of the 14 items were taken verbatim from the YSEQ,

c) in addition, six of the 14 items were taken from the YSEQ but modified for reading and comprehension levels (using the Flesch Kincaid assessment of readability; Kincaid, Fishburne, Rogers, & Chissom, 1975),

d) three of the 14 items were taken from the data obtained in our initial qualitative studies (Martin et al., 2011), and

e) two negatively worded items were added to the fourteen items to aid in the identification of response acquiescence (e.g., "Our team does not work well together" and "I do not get along with my teammates").

A 5-point Likert scale anchored at the extremes by strongly disagree (1) and strongly agree (5) was used in the response format. The scale was oriented so that higher scores reflect stronger perceptions of cohesion. Parenthetically, it should be noted that other cohesion inventories for sport and physical activity use 9-point response scales (Carron et al., 1985; Estabrooks & Carron, 2000; Eys et al., 2009a). During the review process, we were asked to provide a rationale for our decision to use a 5-point scale. Initially, it should be noted that considerable research has been undertaken to determine the optimal rating scale; a definite conclusion has not been reached (Preston & Colman, 2000). This fact notwithstanding, we chose a 5-point Likert scale for three reasons. First, researchers have suggested that most Likert type scales used in recent practice are either 5- or 7-point (e.g., Bearden, Netmeyer, & Mobley, 1993; Peter, 1979). Second, in some cases, 5-point Likert scales have actually demonstrated higher reliability scores (e.g., Jenkins & Taber, 1977; Mckelvie, 1978). Finally, and most importantly, it has been

suggested that 5-point scales are more practical for a younger age group (e.g., Hall, Munroe-Chandler, Fishburne, & Hall, 2009; Pajares, Hartley, & Valiante, 2001).

Three reasons led to the use of the two-factor model advanced by Eys et al. (2009a) rather than the original Carron et al. (1985) four-factor model. The first is that the responses obtained from the qualitative studies in Phase 1 indicated that children discussed cohesion with regard to task and social aspects. The second pertains to the similarity of our results to those found by Eys et al. (2009b) in their qualitative studies on cohesion in a youth sport population. The third and final reason was based on the results found by Eys et al. (2009a). Although their qualitative studies suggested the presence of a two-factor model based solely on task and social cohesion, they nonetheless tested the four-factor model advanced by Carron et al. (1985). Due to the poor four-factor model fit, and the subsequent strong two-factor model fit, they concluded that adolescents (ages 13-17) perceive cohesion exclusively from a task and social orientation. Given the above, we felt that it would be unreasonable to support a conclusion that—from a developmental standpoint—children (ages 9-12) perceive cohesion from the perspective of a four-factor model, regress to a two-factor model in adolescence (ages 13-18), and re-adopt the four-factor model in adulthood. As a consequence, the items were written from the perspective of a two-factor model of cohesion (i.e., task versus social with no consideration for perceptions of individual attraction to the group versus group integration).

The content validity of the new questionnaire was assessed by the research team (n = 4), and then eight children (n_{males} = 4, n_{females} = 4, *Mage* = 11.1 ± .89) representing

various team sports. Each child received a copy of the questionnaire and a request to indicate whether any question was too difficult to answer or understand. Considering that our target population was Grades 4 to 7 (i.e., children aged 9 to 12), we ensured that no items yielded a readability score higher than Grade 4 and possessed an overall average of Grade 1.9. The children indicated that none of the items were problematic. The resulting Child Sport Cohesion Questionnaire (CSCQ) contained 16-items: 7 assessing task cohesion, 7 assessing social cohesion, and 2 spurious items.

Phase 3: Factorial Validity

The purpose of Phase 3 was to conduct a confirmatory factor analysis (CFA) on the 16-item version of the CSCQ to examine its factorial validity. The results of our qualitative studies (Martin et al., 2011), as well as those of Eys et al. (2009a) with the YSEQ, served as the rationale for using a CFA rather than an exploratory factor analysis (EFA). A maximum likelihood method of measurement was used through AMOS 18 (Arbuckle, 2009).

Participants. Two hundred and ninety-eight child sport participants completed the 16-item version of the questionnaire. Based on suggestions from Tabachnick and Fidell (2001) that "it is comforting to have at least 300 cases for factor analysis" (p.588), the sample size was judged to be sufficient for our purpose. In fact, Tabachnick and Fidell conceded that a sample size as small as 150 is adequate.

The participants were 174 males and 124 females ranging in age from 9 to 12 years (M_{age} = 11.09 ± 1.02). Participants represented 22 sports (e.g., hockey, basketball, soccer, baseball, volleyball, synchronized swimming, gymnastics, etc.) and the number of

participants playing a certain sport ranged in number from 1 to 50 (least amount in golf and greatest amount in hockey). No intact teams were tested.

Measure. The newly developed 16-item CSCQ was used to assess cohesion. As indicated above, two dimensions of cohesion are assessed—task (7 items) and social (7 items)—with the inclusion of two negatively worded spurious items. The participants provided responses on a 5-point Likert scale with 1 = *Strongly Disagree* and 5 = *Strongly Agree*. Higher scores reflected stronger perceptions of cohesion.

Procedure and analysis. Ethical approval was obtained from both the lead author's institution and the local school board's research ethics committees. Five elementary schools participated in the study. Parental and participant consent and assent forms were obtained prior to the administration of the questionnaires. Participants were asked to respond to the questions based on their current or most recent teams. They completed the CSCQ during their lunch period to ensure that no class time was missed. Once the questionnaire was completed, the student returned it to the lead researcher. The questionnaires took approximately 10 to 15 minutes to complete.

Results. Table 1 provides the descriptive statistics and standardized factor loadings for all items. The chi-squared test was statistically significant, χ^2 (76) = 148.81, $p < .001$. However, obtaining a significant chi-square result is highly likely with large sample sizes. When assessing model fit, acceptable values for the comparative fit index (CFI) and Tucker-Lewis index (TLI) were above the recommended cut-off value of .90 (Bentler, 1990; Kenny, 2010). The root mean square error of approximation (RMSEA) should be below .10 and the standardized root mean square residual (SRMR) below .08

(Browne & Cudeck, 1993; Kenny, 2008). The factor analysis provided a strong model fit, CFI = .958, TLI = .950, RMSEA = .058, SRMR = .049. Finally, the inter-factor correlation was moderate (r = .61) and the internal consistency values (Cronbach's α; Cronbach, 1951) were high for both the task (α = .86) and social (α = .90) dimensions. A copy of the CSCQ is attached as an Appendix.

Two questions that arose during the review process pertained to whether there were differences between sport type and/or gender in levels of cohesion. Thus, two post-hoc analyses were carried out. A one-way MANOVA with gender as the independent variable and cohesion as the dependent variable showed males and females did not differ significantly (p> .05) in either task or social cohesion. Similarly, a one-way MANOVA was computed with interactive and independent teams as independent variables and cohesion again as the dependent variable. There was no significant difference (p> .05) between interactive and independent sport athletes in perceptions of task cohesion. However, interactive sport athletes did report significantly (p< .05) higher levels of social cohesion (M = 3.77 ±.79) than did independent sport athletes (M = 3.15 ±.87).

Table 1

Descriptive Statistics and Standardized Factor Loadings for Confirmatory Factor Analysis

Factor	Item #	Loading	Mean	SD
Task	1	.51	3.74	.96
	3	.52	3.56	1.07
	5	.76	4.17	.90
	8	.73	3.96	.89
	10	.68	4.17	.85
	15	.74	4.17	.87
	16	.66	4.25	.91
Social	2	.63	3.70	.97
	4	.69	3.86	1.17
	7	.73	3.59	1.07
	9	.74	3.41	1.09
	11	.79	4.04	.98
	13	.79	3.76	1.13
	14	.76	3.53	1.06

Note. SD = standard deviation. Item scores were obtained on a 5-point scale where higher values reflected stronger perceptions of cohesion.

Discussion

The purpose of the present project was to develop a psychometrically sound instrument to assess cohesion in children's (ages 9-12) sport teams. The overall process followed the developmental protocols used by Carron et al. (1985) and Eys et al. (2009a). That is, three phases were undertaken involving both qualitative and quantitative methodologies. The result, the Child Sport Cohesion Questionnaire (CSCQ), contains 16 items measured on a 5-point Likert scale. Seven items pertain to task cohesion, seven to social cohesion, and two are negatively worded spurious items. The program of research undertaken and the questionnaire that resulted warrant four general points of discussion. The first pertains to the psychometric properties of the CSCQ for its use with child sport teams. The second relates to the support for the two-factor model of cohesion advanced by Eys et al. (2009a). The third is associated with the practical implications of a cohesion measure for this age group (ages 9-12), and finally the fourth, provides a brief discussion on the readability of the items and provides rationale for the addition of two negatively worded spurious items.

The results from the present study provided evidence that the CSCQ has good psychometric properties. Both the task and social subscales demonstrated greater internal consistency values (task $\alpha = .86$ and social $\alpha = .90$) than what is typically recommended (i.e., .70). Our values also were similar to those reported by Eys et al. (2009a) (task $\alpha = .89$ and social $\alpha = .94$) for their Youth Sport Environment Questionnaire that targets youth 13 to 18 years. Also, the moderate inter-factor correlation of .61 indicates that although a relationship is present between the factors, children were able to discern

between the task and social items. More specifically, as Carron et al, (1985) noted for the Group Environment Questionnaire, since the relation did not exceed .80, the factors differed enough to state with confidence that they are analysing different constructs. Finally, confirmatory factor analysis provided support for the factorial validity of the CSCQ. Analyses showed a strong model fit with high factor loadings. Specifically, all four fit indices met the recommended cut-offs (CFI and TLI > .90; RMSEA < .10, and SRMR < .08), while twelve of the fourteen cohesion items exceeded the factor loading cut offs of .63 (very good) and .70 (excellent) (Comrey & Lee, 1992). The remaining two items were greater than .45 (fair); however, note that they were closer to the .55 (good) mark (e.g., item 1 = .51 and item 3 = .52). Therefore, by all indications, the CSCQ is a psychometrically sound measure for use in future research with child populations.

The second point that warrants discussion relates to the fact that children seemingly begin to understand complex constructs at young ages (e.g., Hall et al., 2009; Passer, 1996; Scanlan, Babkes, & Scanlan, 2005). The present results contribute to a suggestion that by the age of nine, children understand the concept of cohesion as it relates to their sport teams (Martin et al., 2011). In addition to understanding the concept, our results suggest that children have the cognitive ability to distinguish between task and social aspects of cohesion. This finding parallels those of Eys et al. (2009a) in their research with an adolescent population (ages 13-18) and builds on two assumptions. The first is that cohesion differs across the developmental life span (i.e., children aged 9 to 18 conceptualize cohesion solely as task and social). The second is that the distinction

between task and social concerns supports a number of previous group dynamics researchers who have suggested that these are the two primary orientations for the vast majority of groups (e.g., Carron et al., 1985; Fiedler, 1967, Hersey & Blanchard, 1969).

The third point relates to the *importance* of the fact that children do understand the complex construct of cohesion. It was pointed out in the introduction that childhood is an especially important age for sport participation and adherence. Over 50% of North American children have their first organized sporting experience by the age of 8 or 9; however, by the ages of 12 to 13 dropout rates increase consistently (Ewing & Seefeldt, 1989; Malina, Bouchard, & Bar-Or, 2004). Understanding that children perceive cohesion as being both task and social in nature has practical implications. Socially related variables such as friendship, affiliation, peer acceptance, and social support, and task related variables such as teamwork have all been associated with children's participation and adherence rates as well as their enjoyment in sport (e.g., Allen, 2003; Bruner & Spink, 2010; Findlay & Coplan, 2008; Scanlan & Lewthwaite, 1986; Ullrich-French & Smith, 2009; Weiss & Ferrer-Caja, 2002; Weiss & Smith, 2002). In short, coaches who work to build social cohesion contribute to the satisfaction of the child's needs to affiliate, to belong, to experience peer acceptance. Similarly, coaches who work to build task cohesion contribute to the child's desire to experience teamwork.

The final issues worth noting relate to item readability and response acquiescence. Item readability is determined by the grade level in which most children are able to successfully read and understand an item (Cumming et al., 2008). An item's readability score can be determined by applying the Flesch-Kincaid assessment of readability

(Kincaid et al., 1975). The five items (e.g., items 2, 4, 5, 8, 15) retained from the YSEQ (Eys et al., 2009a) exhibited scores lower than Grade 4 (youngest grade for our population). The rest of the items were either modified or new, and the resulting readability levels for the CSCQ ranged between 0 and 3.9. These readability scores provide further support for the appropriateness of the CSCQ for children.

As Eys, Carron, Bray, and Brawley (2007) pointed out, mixed items (i.e., negative and positive wording) can identify response acquiescence; i.e., agreement tendency (Block, 1965; Nunnally, 1978). Conversely, however, they can also cause confusion and misinterpretation of items (Spector, 1992), thereby decreasing internal reliability (Eys et al., 2007). Therefore, our reason for including two negatively worded spurious items was based on the suggestions made by Eys et al. (2009a) with the YSEQ. They believed that adding two negative items not included in the analysis, would make it possible to (a) identify response acquiescence without (b) decreasing the internal reliability of the scales. Consistent with these beliefs, in the present study, the researchers were able to identify response acquiescence from three participants. This resulted in the removal of their questionnaires from the analysis.

The importance of participating in children's sport was demonstrated by McCarthy and colleagues (2008) when they stated, "clearly, team sports for children in the sampling and specializing years of sport participation offer a unique blend of enjoyment sources that would benefit all children" (p. 152). They went on to discuss the tendency for children involved in team sports to report significantly greater enjoyment, competitive excitement, and affiliation with peers. Through sport, children also develop

important characteristics such as leadership, perseverance, self-control, and the ability to co-operate (e.g., Côté & Fraser-Thomas, 2007; Fraser-Thomas & Côté, 2006). It is our belief that this cohesion inventory will have both practical and theoretical implications. Practically, youth sport coaches can use results from the CSCQ to foster and promote cohesion in their sport teams in order to maximize the level of satisfaction and self-efficacy while minimizing the chance that their athletes experience competitive state anxiety. Theoretically, the information gained with regard to cohesion and sport will serve to compliment the research indicating the benefits children obtain from cohesive environments in other social settings such as the family (e.g., Barber & Bueler, 1996; Bray et al., 2001; van der Linden et al., 2003). This insight into the dynamics of children's sport may lead to enriched sport experiences as well as a smooth transition from childhood to adolescence.

The present study provides support for the validity of the CSCQ. However, construct validity is an ongoing process and future research should continue to test the psychometric properties of the questionnaire in child sport populations.

References

Allen, J. B. (2003). Social motivation in youth sport. *Journal of Sport & Exercise Psychology, 25,* 551-567.

Arbuckle, J. L. (2009). *Amos 18 user's guide.* Chicago, IL: SPSS Inc.

Barber, B. K., & Buehler, C. (1996). Family cohesion and enmeshment: Different constructs, different effects. *Journal of Marriage and the Family, 58,* 433-441.

Baumeister, R. F., & Leary, M. R. (1995). The need to belong: Desire for interpersonal attachment as a fundamental human motivation. *Psychological Bulletin, 117,* 497-529.

Bentler, P. M. (1990). Comparative fit indexes in structural models. *Psychological Bulletin, 107,* 238-246.

Block, J. (1965). *The challenge of response sets: Unconfounding meaning, acquiescence, and social desirability in the MMPI.* New York: Meredith Publishing Company.

Bouchard, C., Shepard, R. J., Stephens, T., Sutton, J. R., & McPerson, D. B. (1990). *Exercise, Fitness and Health.* Champaign, IL: Human Kinetics.

Brawley, L. R., Carron, A. V., & Widmeyer, W. N. (1987). Assessing the cohesion of teams: Validity of the Group Environment Questionnaire. *Journal of Sport Psychology,* 9, 275-294.

Brawley, L. R., Carron, A. V., & Widmeyer, W. N. (1988). Exploring the relationship between cohesion and group resistance to disruption. *Journal of Sport & Exercise Psychology, 10,* 199-213.

Bray, J. H., Gerald, A., J., Getz, J. G., & Baer, P. E. (2001). Developmental, family, and ethnic influences on adolescent usage: A growth curve approach. *Journal of Family Psychology, 15,* 301-314. doi:10.1037//0893-3200.15.2.301

Browne, M. W., & Cudeck, R. (1993). Alternative ways of assessing model fit. In K. A. Bollen & J. S. Long (Eds.), *Testing structural equation models* (pp. 136-162). Newbury Park, CA: Sage.

Bruner, M. W., & Spink, K. S. (2010). Evaluating a team building intervention in a Youth Exercise Setting. *Group Dynamics: Theory, Research, and Practice, 14,* 304-317. doi: 10.1037/a0018296

Brustad, R. (1998). Developmental considerations in sport and exercise psychology measurement. In J. L. Duda (Ed.), *Advances in sport and exercise psychology measurement,* (pp. 461–470). Morgantown, WV: Fitness Information Technology Inc.

Carron, A. V., Brawley, L. R., & Widmeyer, W. N. (1998). The measurement of cohesiveness in sport groups. In J. L. Duda (Ed.), *Advances in sport and exercise psychology measurement* (pp. 213-226). Morgantown, WV: Fitness Information Technology.

Carron, A. V., Eys, M. A., & Martin, L. J. (in press). Cohesion: Its nature and measurement. In Tenenbaum, G., Eklund, R., & Kamata, A. (Eds.), *Handbook of measurement in sport and exercise psychology.* Champaign, IL: Human Kinetics.

Carron, A. V., Widmeyer, W.N., & Brawley, L. R. (1985). The development of an instrument to measure cohesion in sport teams: The Group Environment Questionnaire. *Journal of Sport Psychology, 7*, 244-266.

Carron, A. V., Widmeyer, W. N., & Brawley, L. R. (1988). Group cohesion and individual adherence to physical activity. *Journal of Sport & Exercise Psychology, 10,* 127-138.

Chase, M. A., & Dummer, G. M. (1992). The role of sports as a social status determinant for children. *Research Quarterly for Exercise and Sport, 63,* 418-424.

Chen, X. (2003). "Cultivating children as you would valuable plants:" The gardening governmentality of chid saving. *Journal of Historical Sociology, 16,* 460-486.

Comrey, A. L., & Lee, H. B. (1992). *A first course in factor analysis* (2nd ed.). Hillsdale, NJ: Erlbaum.

Côté, J., & Fraser-Thomas, J. (2007). 'Youth involvement in sport', in P. Crocker (ed.), *Sport Psychology: A Canadian Perspective*, pp. 270-298. Toronto, ON: Pearson.

Cronbach, L. (1951). Coefficient alpha and the internal structure of tests. *Psychometrika, 16,* 297-334.

Cumming, S. P., Smith, R. E., Smoll, F. L., Standage, M., & Grossbard, J. R. (2008). Development and validation of the Achievement Goal Scale for Youth Sports. *Psychology of Sport and Exercise*, 9, 686-703. doi:10.1016/j.psychsport.2007.09.003

Dion, K. (2000). Group cohesion: From "field of forces" to multidimensional construct, *Group Dynamics: Theory, Research and Practice, 4,* 7-20.

Duda, J. L. (1987). Toward a developmental theory of children's motivation in sport. *Journal of Sport & Exercise Psychology in Sport, 9,* 130-145.

Dunn, A. L., Trivedi, M. H., & O'Neal, H. A. (2001). Physical activity dose-response effects on outcomes of depression and anxiety. *Medicine and Science in Sports and Exercise*, 33, 587-597.

Epstein, L. H., Coleman, K. J., & Myers, M. D. (1996). Exercise in treating obesity in children and adolescents. *Medicine & Science in Sports & Exercise, 28,* 428-435.

Estabrooks, P. A. & Carron, A. V. (2000). The Physical Activity Group Environment Questionnaire: An instrument for the assessment of cohesion in exercise classes. *Group Dynamics: Theory, Research and Practice, 4,* 230-243.

Ewing, M. E., & Seefeldt, V. (1996). Patterns of participation and attrition in American agency sponsored youth sports. In F. L. Smoll and R. E. Smith (Eds.), *Children and youth in sport: A biopsychosocial perspective* (pp.31-45). Dubuque, IA: Brown & Benchmark.

Eys, M.A., Carron, A.V., Bray, S.R., & Brawley, L.R. (2007). Item wording and internal consistency of a measure of cohesion: The Group Environment Questionnaire. *Journal of Sport & Exercise Psychology, 29,* 395-402.

Eys, M. A., Hardy, J., Carron, A. V., & Beauchamp, M. R. (2003). The relationship between task cohesion and competitive state anxiety. *Journal of Sport & Exercise Psychology, 25,* 66-76.

Eys, M. A., Loughead, T. M., Bray, S. R., & Carron, A. V. (2009a). Development of a cohesion questionnaire for youth: The Youth Sport Environment Questionnaire. *Journal of Sport & Exercise Psychology, 31,* 390-408.

Eys, M. A., Loughead, T. M., Bray, S. R., & Carron, A. V. (2009b). Perceptions of cohesion by youth sport participants. *The Sport Psychologist, 23,* 330-345.

Fiedler, F. E. (1967). *A theory of leadership effectiveness.* New York: McGraw-Hill.

Findlay, L. C., & Coplan, R. J. (2008). Come out and play: Shyness in childhood and the benefits of organized sports participation. *Canadian Journal of Behavioral Sciences, 40,* 153-161. doi:10.1037/0008-400X.40.3.153

Fraser-Thomas, J. & Cote, J. (2006). Youth sports: Implementing findings and moving forward with research. *Athletic Insight, 8,* 12–27.

Golembiewski, R. (1962). *The small group.* Chicago, IL: University of Chicago.

Hall, C. R., Munroe-Chandler, K. J., Fishburne, G. J., & Hall, N. D. (2009). The sport imagery questionnaire for children (SIQ-C). *Measurement in Physical Education and Exercise Science, 13,* 93- 107. doi:10.1080/10913670902812713

Hausenblas, H. A., & Carron, A. V. (1996). Group cohesion and self-handicapping in female and male athletes. *Journal of Sport & Exercise Psychology, 18,* 132-143.

Hersey, P., & Blanchard, K. H. (1969). Lifestyle theory of leadership. *Training and Development Journal, 23,* 26-34.

Horn, T. S., & Harris, A. (2002). Perceived competence in young athletes: research findings and recommendations for coaches and parents. In F. L. Smoll, & R. E.

Smith (Eds.), *Children and youth in sport: A biopsychosocial perspective* (2nd ed.) (pp. 435–464). Dubuque, IA: Kendall/Hunt.

Kenny, D. A. (2010, January 22). *Measuring model fit*. Retrieved December 30, 2010 from http://davidakenny.net/cm/fit.htm.

Kincaid J. P., Fishburne, R. P., Rogers, R. L., & Chissom, B. S. (1975). *Derivation of new readability formulas (Automated Readability Index, Fog Count and Flesch Reading Ease Formula) for navy enlisted personnel*. Millington, Tenn: Naval Air Station Memphis.

Lott, A. J., & Lott, B. E. (1965). Group cohesiveness as interpersonal attraction: A review of relationships with antecedent and consequent variables. *Psychological Bulletin, 64,* 259-309.

Lox, C. L., Martin-Ginis, K. A., & Petruzzello, S. J. (2006). *The psychology of exercise: Integrating theory and practice* (2nd ed.). Scottsdale, AZ: Holcomb Hathaway Publishers, Inc.

Malina, R. M., Bouchard, C., & Bar-Or, O. (2004). *Growth, maturation, and physical activity* (2nd ed.). Champaign, IL: Human Kinetics, P.O.

Mandigo, J. L., & Couture, R T. (1996). An overview of components of fun in physical education, organised sport and physical activity programs. *Avante, 2,* 56-72.

Martin, L. J., Carron, A. V., Eys, M. A., & Loughead, T. M. (2011). Children's perceptions of cohesion. *Sport and Exercise Psychology Review, 7,* 11-25.

McCarthy, P. J., Jones, M. V., & Clark-Carter, D. (2008). Understanding enjoyment in youth sport: A developmental perspective. *Psychology of Sport and Exercise, 9,* 142-156. doi:10.1016/j.psychsport.2007.01.005

McHale, J. P., Vinden, P. G., Bush, L., Richer, D., Shaw, D., & Smith, B. (2005). Patterns of personal and social adjustment among sport-involved and non-involved middle-school children. *Sociology of Sport Journal, 22,* 119–136.

Paffenbarger, R. S., & Hyde, R. T. (1988). Exercise adherence, coronary heart disease, and longevity. In R.K. Dishman (Ed.), *Exercise adherence: Its impact on public health* (pp. 41-73). Champaign, IL: Human Kinetics.

Pajares, F., Hartley, J., & Valiante, G. (2001). Response format in writing self-efficacy assessments. Greater discrimination increases prediction. *Measurement and Evaluation in Counseling and Development, 33,* 214–221.

Paradis, K. F., & Loughead, T. M. (2011). *Examining the mediating role of cohesion between athlete leadership and athlete satisfaction in youth sport.* Manuscript submitted for publication.

Passer, M. W. (1996). At what age are children ready to compete? Some psychological considerations. In F. L. Smoll, & R. E. Smith (Eds.), *Children and youth in sport: A biopsychosocial perspective* (pp. 73–86). Madison, WI: Brown & Benchmark.

Prapavessis, H., & Carron, A. V. (1996). The effect of group cohesion on competitive state anxiety. *Journal of Sport & Exercise Psychology, 18,* 64-74.

Prapavessis, H., & Carron, A. V. (1997). Sacrifice, cohesion, and conformity to norms in sport teams. *Group Dynamics: Theory, Research, and Practice, 1,* 231-240.

Sallis, J. F., Prochaska, J. J., Taylor, W. C., Hill, J. O., & Geraci, J. C. (1999). Correlates of physical activity in a national sample of girls and boys in grades 4 through 12. *Health Psychology, 18,* 410–415.

Scanlan, T. K., Babkes, M. L., & Scanlan, L. A. (2005). Participation in sport: A developmental glimpse at emotion. In J. L. Mahoney, R. W. Larson, & J. S. Eccles (Eds.), *Organized activities as contexts of development: Extracurricular activities, after-school and community programmes* (pp. 275–309). Mahwah, NJ: Lawrence Erlbaum Associates, Publishers.

Scanlan, T. K., & Lewthwaite, R. (1986). Social psychological aspects of competition for male youth sport participants: IV. Predictors of enjoyment. *Journal of Sport Psychology, 8,* 325–335.

Spector, P. E. (1992). *Summated rating scale construction: An introduction.* (Sage University Paper series on Quantitative Applications in the Social Sciences, series no. 07-082). Newbury Park, CA: Sage.

Stadulis, R. E., MacCracken, M. J., Eidson, T. A., & Severance, C. (2002). A children's form of the competitive state anxiety inventory: The CSAI-2C. *Measurement in Physical Education and Exercise Science*, *6*(3), 147–165. doi:10.1207/S15327841MPEE0603_1

Statistics Canada (2006). Overweight and obesity among children and youth. *Health Reports 2006;* August 17: 27-42.

Tabachnick, B. G., & Fidell, L. S. (2001). *Using multivariate statistics* (4th ed.). Boston, MA: Allyn & Bacon.

Terry, P. C., Carron, A. V., Pink, M. J., Lane, A. M., Jones, G. J. W., & Hall, M. P. (2000). Perceptions of group cohesion and mood in sport teams. *Group Dynamics, 4,* 244-253.

Ullrich-French, S., & Smith, A. L. (2009). Social and motivational predictors of continued youth sport participation. *Psychology of Sport and Exercise, 10*, 87-95. doi:10.1016/j.psychsport.2008.06.007

Van der Linden, J., Drukker, M., Gunther, N., Feron, F., & van Os, J. (2003). Children's mental health service use, neighbourhood socioeconomic deprivation, and social capital. *Social Psychiatry and Psychiatric Epidemiology, 38,* 507-554. doi:10.1007/s00127-003-0665-9

Warburton, D. E., Gledhill N., & Quinney, A. (2001a). A musculoskeletal fitness and health. *Canadian Journal of Applied Physiology, 26,* 217-237. doi:10.1139/h01-013

Warburton, D. E., Gledhill, N., & Quinney, A. (2001b). The effects of changes in musculoskeletal fitness on health. *Canadian Journal of Applied Physiology, 26,* 161-216. doi:10.1139/h01-012

Warburton, D. E., Nicol, C. W., & Bredin, S. D. (2006). Health benefits of physical activity: the evidence. *Canadian Medical Association Journal, 174 (6),* 801-809.

Weiss, M. R., & Ferrer-Caja, E. (2002). Motivational orientations and sport behavior. In T. S. Horn (Ed.), *Advances in sport psychology* (2nd ed.) (pp. 101–183). Champaign, IL: Human Kinetics.

Weiss, M. R., & Petlichkoff, L. (1989). Children's motivation for participation in and withdrawal from sport: Identifying missing links. *Pediatric Exercise Science, 1*, 195-211.

Weiss, M. R., & Smith, A.L. (2002) Friendship quality in youth sport: Relationship to age, gender, and motivation variables. *Journal of Sport & Exercise Psychology, 24*, 420-437.

Whaley, D. E. (2007). A life span developmental approach to studying sport and exercise behavior. In G. Tenenbaum & R. C. Eklund (Eds.), *Handbook of sport psychology* (3rd ed., pp. 645–661). Hoboken, NJ: John Wylie and Sons.

Widmeyer, W. N., & Williams, J. M. (1991). Predicting cohesion in a coacting sport. *Small Group Research, 22,* 548-570.

Wiersma, L. D. (2001). Conceptualization and development of the sources of enjoyment in youth sport questionnaire. *Measurement in Physical Education and Exercise Science, 5,* 153-177.

STUDY 3

VALIDATION OF THE CHILD SPORT COHESION QUESTIONNAIRE (CSCQ)[3]

Within the sport and exercise psychology domain, a great deal of research has focused on cohesion, which 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 for the satisfaction of member affective needs" (Carron, Brawley, & Widmeyer, 1998, p. 213). Cohesion plays an important role in the dynamics of all groups, so much so that some social scientists have described it as the most important small group variable (Golembiewski, 1962; Lott & Lott, 1965). Results from research with adult populations examining the correlates of cohesion highlight this importance. For example, researchers have found cohesion to have a positive relationship with collective efficacy (Kozub & McDonnell, 2000), athlete satisfaction (Widmeyer & Williams, 1991), and adherence (Prapavessis & Carron, 1997), and a negative (i.e., beneficial) relationship with both state anxiety (Prapavessis & Carron, 1996) and depression (Terry et al., 2000).

The examination of these cohesion correlates was facilitated by the development of the Group Environment Questionnaire (GEQ; Carron, Widmeyer, & Brawley, 1985). However, the GEQ was originally developed to measure perceptions of cohesion with athletes between the ages of 18 and 30 years. Due to the importance of cohesion in sport and exercise groups, researchers have developed specific measures for different populations. In 2000, Estabrooks and Carron developed the Physical Activity Group

[3] A version of this chapter has been submitted for publication.

Environment Questionnaire (PAGEQ) for use in exercise and physical activity classes containing older adults (60 years or greater). More recently, Eys, Loughead, Bray, and Carron (2009) developed the Youth Sport Environment Questionnaire (YSEQ) for adolescent sport populations (ages 13-17). Finally, and of most relevance to the present study, Martin, Carron, Eys, and Loughead (in press) developed the Child Sport Cohesion Questionnaire (CSCQ)—an inventory used to assess cohesion in children's (ages 9-12) sport teams.

The CSCQ is a 16-item inventory measuring perceptions of cohesion on a 5-point Likert scale. Seven items measure task cohesion (i.e., the extent to which a team is united during competition and collectively works toward the attainment of team goals) and seven items measure social cohesion (i.e., the extent to which individuals on a team get along and stick together away from the sport). The remaining two items are negatively worded spurious items used to detect participant response acquiescence. This newly created questionnaire demonstrated strong model fit with good inter-factor correlations and internal consistency values (Martin et al., in press). Although these initial results are promising, establishing construct validity is an ongoing process. Therefore, the purpose of the present study was to further examine the CSCQ for four manifestations of validity—convergent, discriminant, predictive, and factorial validity.

Convergent validity is demonstrated when constructs that are theoretically related are in fact shown to be related (e.g., Smith, Cumming, & Smoll, 2008; Trochim, 2006). Athlete satisfaction has been found to be positively related to cohesion in adult populations (e.g., Aoyagi, Cox, & McGuire, 2008; Martens & Peterson, 1971; Spink,

Nickel, Wilson, & Odnokon, 2005; Widmeyer & Williams, 1991). For example, Widmeyer and Williams (1991) found athlete satisfaction to be highly correlated to perceptions of team cohesion in 85 NCAA Division 1 female golfers. Similarly, Spink et al. (2005) found a comparable relationship between the constructs of satisfaction and cohesion in a sample of 194 competitive male ice hockey players. Therefore, for the present study, it was hypothesized that children perceiving higher amounts of task and social cohesion in their teams would also express greater amounts of satisfaction with their sporting experience.

Another construct included to test convergent validity for the CSCQ was competitive state anxiety. Prapavessis and Carron (1996) found that athletes on teams with higher levels of task cohesion experienced lower levels of pre-competition state anxiety. Building on these findings, Eys, Hardy, Carron, and Beauchamp (2003) examined whether athletes perceived their competition anxiety as facilitative or debilitative. They found athletes who perceived their cognitive and somatic anxiety as being debilitative had lower levels of task cohesion. Therefore, consistent with this general pattern of results, it was hypothesized that individuals perceiving greater levels of cohesion in their teams would experience lower levels of competitive state somatic and cognitive anxiety.

Discriminant validity is considered to be present when constructs that should not be theoretically related are in fact not related to one another (e.g., Smith et al., 2008; Trochim, 2006). Perceptions of cohesion in children have been found to have task and social orientations (Martin et al., in press; Martin, Carron, Eys, & Loughead, 2011). Task

cohesion is concerned with team goals and objectives while social cohesion is concerned with friendships and affiliative needs (Carron, Hausenblas, & Eys, 2005). Self-efficacy is defined as an individual's perceptions of his/her ability to perform a task successfully (Bandura, 1977). Given the task focus of self-efficacy, its relationship to task and social cohesion could be expected to differ. Lent, Schmidt, and Schmidt (2006) found a small relationship between self-efficacy and cohesion; however, this small albeit significant ($p < .05$) relationship is perhaps not surprising considering the subscales were combined. Thus, it is predicted that task cohesion, which assesses a group's closeness and unity towards completing a task or objective, should be more correlated with an individual's level of self-efficacy than social cohesion. This prediction formed the basis for our hypothesis; namely, that self-efficacy would have a stronger correlation with task cohesion than social cohesion.

Predictive validity is demonstrated by a questionnaire's ability to predict an outcome that is theoretically plausible (e.g., Trochim, 2006; Walling, Duda, & Chi, 1993). When Carron et al. (1985) validated the GEQ and Heuzé and Fontayne (2002) validated their French-language cohesion inventory (Questionnaire sur l'Ambiance du Groupe), they used both sport type and team tenure to test predictive validity. Insofar as sport type was concerned, Carron et al. and Heuzé and Fontayne predicted (and found) that task and social cohesion would be stronger in participants from interactive (e.g., volleyball) versus independent (e.g., track and field) sports. With regard to team tenure, they predicted that both task and social cohesion would be stronger in longstanding team members compared to newly recruited team members. Therefore, we hypothesized that

both task and social cohesion would be greater among members of interactive teams versus those of independent teams and among longstanding members compared to relatively new members.

Finally, confirmatory factor analysis (CFA) was used to test the factorial validity of the CSCQ. In an initial study with 298 child sport participants, Martin et al. (in press) demonstrated a strong model fit for the CSCQ. However, as Tabachnick and Fidell (2007) pointed out, "cross-validation with another sample is performed whenever possible" (p. 682). Thus, it was hypothesized that analyses undertaken with the sample in the present study would again provide evidence for the factorial validity of the CSCQ.

Method

Participants

A heterogeneous sample of 290 children (n = 131 males, n = 159 females) ranging in age from 9 – 12 years ($Mage$ = 10.73 ± 1.13) volunteered for the present study. The child sport participants represented a variety of different sports including, but not limited to hockey, basketball, soccer, baseball, volleyball, swimming, track and field, and gymnastics.

The reasoning behind the sample size chosen for the current study was based on the two types of analyses undertaken. First, for Pearson-product moment correlations, Tabachnick and Fidell (2007) have suggested that "for variables in the social sciences where reliability is often around .80, about 10 cases are needed for every variable" (p. 570). The four questionnaires administered in the study had a combined seven variables; therefore, based on these suggestions a minimum of 70 subjects would be required.

Second, there are no fixed prescriptions in sample sizes for confirmatory factor analysis (CFA), just guidelines. Tabachnick and Fidell (2007) suggested it "is comforting to have at least 300 cases", but acknowledged that, "solutions that have several high loading marker variables (> .80) do not require such large sample sizes (about 150 cases should be sufficient)" (p.613). Therefore, the sample size (N = 290) for the present study was deemed more than acceptable.

Measures

Cohesion. The 16-item CSCQ (Martin et al., in press) was employed to assess cohesion. As indicated above, of the 16 questions, 14 relate to task (n = 7) and social (n = 7) cohesion and two are spurious items included to assess response acquiescence. Responses are obtained on a 5-point Likert scale anchored at the extremes by *Strongly Disagree* (1) and *Strongly Agree* (5). Thus, higher scores reflect stronger perceptions of cohesion.

Satisfaction. Participant satisfaction was measured using items generated by Duda and Nicholls (1992) to assess satisfaction in sport. These items belonged to two sub-scales (satisfaction and boredom). For the present study, only the subscale containing five items targeting satisfaction (e.g., "I usually find playing sport interesting") was incorporated. Responses were obtained on a 5-point Likert response scale anchored at the extremes with *Strongly Disagree* (1) and *Strongly Agree* (5). Thus, higher scores reflect greater satisfaction. These items were originally used with an adolescent population (*Mage* = 15.10 years), and demonstrated an alpha value of .94 (Cronbach, 1951). Although previously used with an older sample, all but one of the items had Flesch-

Kincaid readability grade levels of 2.4 to 7.6. Note that while one item was higher than a grade 7 reading level, the potential for readability-produced measurement error was considered low enough to maintain the item.

Competitive state anxiety. The Competitive State Anxiety Inventory—2 Children (CSAI-2C; Stadulis, MacCracken, Eidson, & Severance, 2002) was administered in order to assess competitive state anxiety. The original inventory allows for the inclusion of words to indicate the desired activity; therefore, words relating to sport were inserted (e.g., "concerned that I may not ***play*** as well as I can today"). For the purpose of the present study, small adaptations to the CSAI-2C were implemented. First, the CSAI-2C contains three subscales; somatic anxiety, cognitive anxiety, and confidence. All items pertaining to confidence were omitted. Second, the CSAI-2C is based on a 4-point Likert scale. In the present study, a 5-point Likert response scale anchored at the extremes with *Strongly Disagree* (1) and *Strongly Agree* (5) was used in order to ensure consistency of format throughout the questionnaire package. Higher scores reflected greater levels of anxiety. The CSAI-2C has demonstrated good model fit indices (e.g., GFI = .959, AGFI = .943, RMSR = .042) and Cronbach's alpha values (α = .78, somatic anxiety and .75, cognitive anxiety) with a child population (N = 623) ranging in age from 8 to 12 years.

Self-efficacy. Self-efficacy was measured using the modified version of the Self-Efficacy Questionnaire—Soccer (SEQ-S) used by Hall, Munro-Chandler, Fishburne, and Hall (2009). The questionnaire is composed of five items (e.g., I am confident I can work through difficult situations) and responses are obtained on a 0-100% rating scale designed

to represent degree of efficacy. Again, however, in order to maintain consistency in the format throughout the total questionnaire package, responses were obtained on a 5-point Likert scale anchored at the extremes with *Strongly Disagree* (1) and *Strongly Agree* (5). Higher scores reflected greater perceptions of self-efficacy. This questionnaire has previously been used with a similar child population (*Mage* = 11.53) (Hall et al., 2009).

Procedures and Analysis

Once ethical approval was obtained from the lead author's non-medical research ethics board, the researchers contacted the local school board's research ethics committee for permission to enter elementary schools. Six elementary schools agreed to participate in the study. The lead researcher entered classrooms in order to provide a brief description of the study to the children and distribute parental and participant consent/assent forms. Once parental consent and participant assent forms were returned to the teacher, the lead researcher returned to the school to distribute questionnaires to the eligible participants. The questionnaires were administered in the school library at the beginning of the lunch hour to ensure that class time was not disrupted. Participants were asked to relate the questions to their current sport team and to pretend they were getting ready to play a game or perform their sport. The questionnaires took approximately 15 to 20 minutes to complete.

Convergent and discriminant validity were assessed using Pearson's product-moment correlations to determine the relationships between cohesion, satisfaction, competitive state anxiety, and self-efficacy. Predictive validity was assessed using a 2 x 2 factorial MANOVA with sport type (interactive and independent) and team tenure (1 year

and 2 years) as the independent variables and task and social cohesion as the dependent variables. For the purpose of the analysis, any sport that required interaction among team members during play was classified as interactive (e.g., volleyball, hockey, basketball, soccer), and any sport that was performed independently was classified as independent (e.g., track and field, wrestling, cross-country, swimming). There were 243 interactive and 47 independent sport athletes. With regard to team tenure, only 191 participants provided responses. These were either participants who had been on a team for 1 year or less (n = 106) or participants who had been on a team for 2 years (n = 85). The 2 x 2 MANOVA was limited to the 191 participants who provided information for team tenure. In order to determine whether this population represented the total sample, a separate one way MANOVA was also conducted specific to sport type (the independent variable) and cohesion (task and social; dependent variables). Factorial validity was determined by conducting a confirmatory factor analysis (CFA) on the CSCQ using the statistical software package AMOS 18 (Arbuckle, 2009).

Results

Descriptive Statistics

Means, standard deviations, and Cronbach's (1951) alpha values for the six sub-scales analyzed in the study are provided in Table 1. In general, participants indicated high levels of cohesion (task and social), satisfaction, and self-efficacy, and lower levels of competitive state anxiety. The internal consistency values for all of the sub-scales were above the desired .70 threshold (Nunnally & Bernstein, 1994).

Validity Analyses

Convergent validity. The first test of convergent validity involved cohesion (task and social) and satisfaction. Convergent validity could be assumed to be present if task and social cohesion demonstrated moderate relationships with satisfaction. The results indicated that both task and social cohesion were positively and significantly ($p <$ .01) correlated (r = .68 and .52, respectively) with satisfaction (see Table 2). Therefore, the hypothesis that cohesion and satisfaction would be related was supported.

The second test for convergent validity involved an examination of the relationships among task and social cohesion and somatic and cognitive anxiety. Convergent validity could be assumed if the two cohesion measures demonstrated moderate negative correlations with the two competitive state anxiety measures. The findings from Table 2 indicated that task cohesion had significant ($p <$ .01) negative correlations with cognitive (r = -.49) and somatic anxiety (r = -.49). Social cohesion was also negatively correlated with both cognitive (r = -.36) and somatic (r = -.32) anxiety. Thus, our a priori hypothesis was supported.

Discriminant validity. Discriminant validity was determined by assessing the relationship between cohesion (task and social) and self-efficacy. It was hypothesized that social cohesion would have a weaker correlation with self-efficacy. The results (see Table 2) showed a large significant ($p <$ .01) correlation to be present between task cohesion and self-efficacy (r = .73) and, although a significant ($p <$ .01) correlation was found between social cohesion and self-efficacy (r = .46), it was much weaker. A test of

these correlations (Chen & Popovich, 2002) confirmed that they were statistically different, $t(287) = 8.00$, $p < .01$. Therefore, the hypothesis was supported.

Predictive validity. The first test of predictive validity involved a 2 x 2 factorial MANOVA with sport type and team tenure as the independent variables and task and social cohesion as the dependent variables. First, there was no interaction effect found between sport type and team tenure $F(9, 181) = 1.72$ $p > .05$. Second, with respect to main effects, it was hypothesized that athletes participating in interactive sports would have stronger perceptions of both types of cohesion compared to athletes from independent sports. However, there were no significant differences ($p > .05$) between sport type and perceptions of cohesion (see Table 3). Thus, the hypothesis was not supported.

The second test of predictive validity involved a comparison of perceptions of cohesion for athletes differing in length of tenure with their teams. It was hypothesized that athletes with longer tenure would have stronger perceptions of both types of cohesion. A significant difference ($p < .05$) for social cohesion, $F(1, 187) = 4.61$, $p < .05$ and a difference nearing significance for task cohesion $F(1, 187) = 3.393$, p .06 were found. More specifically, athletes on a team for 2 years perceived significantly higher levels of social cohesion (see Table 3 again) than athletes with only 1 year of tenure. Thus, partial support for the hypothesis was present.

The sample for the 2 x 2 factorial MANONA was restricted to 191 participants due to responses regarding team tenure. Therefore, an additional one way MANOVA was conducted with the total sample for sport type (interactive vs. independent) and cohesion

(task and social). No significant differences ($p > .05$) were found $F(3, 287) = 2.01$, $p > .05$ with the total sample ($N = 290$), therefore, supporting the findings from the overall 2 x 2 factorial MANOVA.

Factorial validity. Finally, a confirmatory factor analysis (CFA) was conducted to test the hypothesis that the CSCQ possessed factorial validity. Table 4 contains the descriptive statistics and the standardized factor loadings. A statistically significant ($p < .001$) chi-squared test $\chi^2 (76) = 174.531$ was found. However, note that it is highly likely to obtain a significant chi-square result with large sample sizes. The Comparative Fit Index (CFI), Tucker-Lewis Index (TLI), Root Mean Square Error of Approximation (RMSEA), and Standardized Root Mean Square Residual (SRMR) were chosen to demonstrate model fit. Cut-off values for good model fit are greater than .90 for the CFI and TLI (Bentler, 1990; Kenny, 2010), below .10 for the RMSEA, and below .08 for the SRMR (Browne & Cudeck, 1993; Kenny, 2010). Based on these guidelines, results indicated a strong model fit (CFI = .96, TLI = .95, RMSEA = .07, and SRMR = .04). The internal consistency values (Cronbach, 1951) were .90 for both the task and social dimensions, and finally, the inter-factor correlation was moderate ($r = .53$). Thus, the a priori hypothesis was supported.

Table 1

Descriptive Statistics

Factor	Mean	SD	α
1. Task Cohesion	4.06	.73	.90
2. Social Cohesion	3.75	.80	.90
3. Satisfaction	4.41	.76	.89
4. Cognitive Anxiety	2.39	.83	.80
5. Somatic Anxiety	2.41	.91	.85
6. Self-Efficacy	4.04	.82	.89

Note. Mean scores for all factors were measured on a 5 point Likert scale with higher scores reflecting higher perceptions of that particular construct. SD = standard deviation and α = Cronbach's alpha coefficient

Table 2

Pearson Correlations between the Subscales from the Child Sport Cohesion Questionnaire and the Sport Satisfaction Questionnaire, Competitive State Anxiety Inventory-2 Children, and Self-Efficacy Questionnaire

Factor	1. Task Cohesion	2. Social Cohesion
1. Task Cohesion	---	.53*
2. Social Cohesion	.53*	---
3. Satisfaction	.68*	.52*
4. Cognitive Anxiety	-.49*	-.37*
5. Somatic Anxiety	-.49*	-.32*
6. Self-Efficacy	.73*	.46*

Note. $*p < .01$

Table 3

Means and Standard Deviations for 2 x 2 Factorial MANOVA with Sport Type and Team Tenure

Factor	Sport Type	Team Tenure	Mean	SD
1. Task Cohesion	Interactive	1 year	4.07	.77
		2 years	4.16	.73
	Independent	1 year	3.66	.94
		2 years	4.14	.62
2. Social Cohesion	Interactive	1 year	3.55	.91
		2 years	3.91	.65
	Independent	1 year	3.56	.98
		2 years	3.90	.77

Note. Mean scores for cohesion were measured on a 5 point Likert scale (1= low cohesion and 5= high cohesion). Std. Error = Standard Error

Table 4

Descriptive Statistics and Standardized Factor Loadings for Confirmatory Factor Analysis

Subscale Individual Items	Loading	Mean	SD
1. Task			
Our team members all share the same goals	.67	3.83	.90
We have the same beliefs	.62	3.58	1.06
I like the way we work together as a team	.79	4.34	.88
As a team, we are united	.77	4.02	.91
My team gives me the chance to improve my skills	.74	4.18	.92
We like the way we work together as a team	.87	4.25	.88
In games, we all get along well	.81	4.23	.90
2. Social			
I invite my teammates to do things with me	.75	3.76	.97
Some of my best friends are on this team	.76	3.92	1.08
We get together with each other a lot	.70	3.60	.98
I call or message my teammates a lot	.74	3.42	1.06
I like to spend time with my teammates	.78	4.13	.94
I will keep talking to my teammates when the season ends	.82	3.82	1.00
We stick together outside of our sport	.81	3.62	1.01

Note. Mean scores for cohesion were measured on a 5 point Likert scale (1= low cohesion and 5= high cohesion). SD = standard deviation.

Discussion

The purpose of the study was to examine the construct validity of the Child Sport Cohesion Questionnaire (CSCQ). To carry out this purpose, four types of validity were tested—convergent, discriminant, predictive, and factorial. Two general issues associated with our findings warrant discussion.

The first involves the *validity of the CSCQ*. Insofar as convergent validity is concerned, we tested two relationships: cohesion-satisfaction and cohesion-pre-competition anxiety. Results from both sets of analyses provided support for convergent validity. As indicated above, a cohesion-satisfaction link has been established previously in adult (e.g., Aoyagi et al., 2008; Spink et al., 2005; Widmeyer & Williams, 1991) and adolescent (e.g., Paradis & Loughead, 2011) populations. Therefore, the presence of this relationship in children is probably not surprising. However, it does indicate the potential importance of cohesion for children involved in sport. More specifically, not only is team cohesion related to satisfaction in children, but cohesive environments are also likely to facilitate many of the reasons children have cited for joining and maintaining membership in sport: to have fun, to improve their skills, and to develop friendships (Weiss & Petlichkoff, 1989). Our results also have practical implications for this age group. By targeting and increasing the levels of task and social cohesion in children's sport teams, coaches and practitioners could increase the likelihood that young athletes would be more satisfied with their sport experience, and therefore be more likely to continue participation.

The inverse relationships found between cohesion (task and social) and pre-competition anxiety (i.e., cognitive and somatic) are also consistent with results obtained with an adult sample (e.g., Prapavessis & Carron, 1996). The presence of these relationships in children has important implications. Research shows that anxiety can decrease enjoyment in children (e.g., Gould & Krane, 1992; Scanlan & Lewthwaite, 1986) and cause them to avoid organized sport (Passer, 1988; Pierce, 1980). Children with high levels of competitive anxiety are concerned with the possibility that others will evaluate their performance negatively (e.g., Brustrad, 1988; Passer, 1993). It is possible that anxiety may be reduced when cohesion is increased because members feel closer to their teammates and believe them to be more supportive (as opposed to threatening). In fact, it could be argued that a cohesive group shares many similarities with a 'caring climate', which has been defined as an environment that is "interpersonally inviting, safe, supportive, and able to provide the experience of being valued and respected" (Newton et al, 2007, p. 70), which is proposed to evoke less anxiety in children (Fry, 2010).

Support was obtained for the discriminant validity of the CSCQ. As was pointed out above, it was hypothesized that social and task cohesion would have significantly different relationships, respectively, with self-efficacy. Although a significant difference was present, both manifestations of cohesion were positively associated with self-efficacy. One possible explanation for the social cohesion-self-efficacy relationship may relate to the importance of the social environment for children. The social environment has constantly been cited as a major motivating factor for child participation in sport (e.g., Martin et al, 2011; Ullrich-French & Smith, 2009). Satisfying these social desires

may translate to children feeling more competent with themselves in their sport settings. In fact, children who participate in sport have been found to have higher levels of self-efficacy and perceptions of competence/ability (Weiss & Ferrer-Caja, 2002).

A 2 x 2 factorial MANOVA was conducted to determine predictive validity. The variables investigated, sport type and team tenure have been used to test predictive validity in adult populations (e.g., Brawley, Carron, Widmeyer, 1987; Heuzé & Fontayne, 2002). No interaction effect was found between the two independent variables. Also, there were no significant differences between interactive and independent sport athletes with regard to perceptions of cohesion (both task and social). Therefore, for this test, predictive validity was not supported. This is an interesting finding for two reasons. First, as discussed previously, research with older populations (e.g., Brawley et al., 1987; Heuzé & Fontayne, 2002) has found differences in perceptions of cohesion to be present depending on sport type. This serves to highlight the importance of a cohesion inventory for children. Although this age group can identify cohesion and understand the benefits of a cohesive group, some of the implications relating to the phenomenon may differ compared to older populations. Second, after the completion of this study (i.e., Study 3), a journal reviewer of the second study (i.e., Study 2) suggested that we examine differences between sport type and perceptions of cohesion. A one-way MANOVA—interactive and independent teams as independent variables and task and social cohesion as dependent variables—with that sample indicated that with regard to perceptions of task cohesion, no significant differences ($p > .05$) were present. Interestingly, interactive sport athletes had significantly greater ($p < .05$) perceptions of social cohesion than

independent sport athletes. The difference between the findings from these two studies indicates that additional research with different samples is needed to determine whether perceptions of cohesion do differ with regard to sport type in this population.

With regard to team tenure, only partial support was present for our hypothesis. Social cohesion was significantly greater in athletes who had participated on their current team for 2 years versus first year participants. Task cohesion did not differ between the two categories of tenure. A potential reason for this finding may relate to the age of the children involved in this study (i.e., 9 to 12 years). Perhaps at this age, children are still too young to have established roles as veterans and rookies on their teams. In fact, it is common in many sports for children to change teams with each passing year. A possible avenue to better test predictive validity with this age group in the future may be to assess adherence (e.g., attendance at games or practices) or intention to return to the sport (e.g., Bruner & Spink, 2007). That is, it can be predicted that athletes who perceive their teams as highly cohesive will be more likely to adhere and return to the sport the following season.

Finally, our study demonstrated factorial validity for the CSCQ. As previously discussed, factorial validity also was supported in an earlier study with a different sample (Martin et al., in press). The fit indices for the present study were as strong (some identical) as those in the previous study. A proposed model is suggested to be valid when: (1) items targeting a specific factor have high factor loadings for that factor, and (2) the correlations between the factors are not excessively high (Kline, 2011). All of the factor loadings (see Table 4) with the exception of two task items (r = .67, .62) were above the

recommended .70, and the inter-factor correlation (r = .53) was well below the recommended .90 (Kline, 2011). Therefore, the CSCQ has demonstrated factorial validity with two independent samples.

The second general point that warrants discussion relates to *future directions*. Overall, the present study has demonstrated that the CSCQ possesses adequate construct validity. Thus, it can now be used with confidence to better understand the impact cohesion has on many different aspects of child sport. For example, the present study showed that cohesion is correlated with a number of important constructs—satisfaction, anxiety, and self-efficacy. Future research could examine the causal nature of these relationships. Also, as another example, one could argue that cohesion and adherence are to some extent tautological (i.e., both reflect, to varying degrees, how well the group sticks together). Thus, causal relationships between task and social cohesion and adherence measures such as dropout behaviour, absenteeism, and intention to return should be examined (e.g., Estabrooks, 2000; Loughead, Colman, & Carron, 2001; Spink, 1995).

Finally, research in the area of child sport has consistently emphasized the importance of social factors for children's enjoyment, adherence, feelings of self-worth, and competence (e.g., Page, Frey, Talbert, & Falk, 1992; Smith, 2007; Ullrich-French & Smith, 2009; Weiss & Smith, 2002). The CSCQ enables researchers to quantify the degree to which children perceive the social (and task) bonds within their sport teams. Our study demonstrates that children feel both a task and social unity in their teams; therefore, with this information, and a valid measurement tool, researchers are presented

with fertile grounds to continue to determine the positive influences that a cohesive environment can provide for participating children.

References

Aoyagi, M. W., Cox, R. H., & McGuire, R. T. (2008). Organizational citizenship behaviour in sport: Relationships with leadership, team cohesion, and athlete satisfaction. *Journal of Applied Sport Psychology, 20,* 25-41.

Arbuckle, J. L. (2009). *Amos 18 user's guide.* Chicago, IL: SPSS Inc.

Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioural change. *Psychological Review, 84, 191-215.*

Bentler, P. M. (1990). Comparative fit indexes in structural models. *Psychological Bulletin, 107,* 238-246.

Browne, M. W., & Cudeck, R. (1993). Alternative ways of assessing model fit. In K. A. Bollen & J. S. Long (Eds.), *Testing structural equation models* (pp. 136-162). Newbury Park, CA: Sage.

Bruner, M. W., & Spink, K. S. (2007). The effects of team building on the adherence patterns of youth exercise participants. *Journal of Sport & Exercise Psychology, 29,* S149.

Brustad, R. J. (1988). Affective outcomes in competitive youth sport: The influence of intrapersonal and socialization factors. *Journal of Sport and Exercise Psychology, 10,* 307-321.

Carron, A. V., Brawley, L. R., & Widmeyer, W. N. (1998). The measurement of cohesiveness in sport groups. In J. L. Duda (Ed.), *Advances in sport and exercise psychology measurement* (pp. 213-226). Morgantown, WV: Fitness Information Technology.

Carron, A. V., Hausenblas, H. A., & Eys, M. A. (2005). *Group dynamics in sport* (3rd ed.). Morgantown, WV: Fitness Information Technology, Inc.

Carron, A. V., Widmeyer, W.N., & Brawley, L. R. (1985). The development of an instrument to measure cohesion in sport teams: The Group Environment Questionnaire. *Journal of Sport Psychology, 7*, 244-266.

Chen, P. Y., & Popovich, P. M. (2002). *Correlation: Parametric and non-parametric measures.* Thousand Oaks, CA: Sage.

Cronbach, L. (1951). Coefficient alpha and the internal structure of tests. *Psychometrika, 16,* 297-334.

Duda, J. L., & Nicholls, J. G. (1992). Dimensions of achievement motivation in schoolwork and sport. *Journal of Educational Psychology, 84,* 290-299.

Estabrooks, P. A. (2000). Sustaining exercise participation through group cohesion. *Exercise and Sport Sciences Reviews, 28,* 63-67.

Estabrooks, P. A. & Carron, A. V. (2000). The Physical Activity Group Environment Questionnaire: An instrument for the assessment of cohesion in exercise classes. *Group Dynamics: Theory, Research and Practice, 4,* 230-243.

Eys, M. A., Hardy, J., Carron, A. V., & Beauchamp, M. R. (2003). The relationship between task cohesion and competitive state anxiety. *Journal of Sport & Exercise Psychology, 25,* 66-76.

Eys, M. A., Loughead, T. M., Bray, S. R., & Carron, A. V. (2009). Development of a cohesion questionnaire for youth: The Youth Sport Environment Questionnaire. *Journal of Sport & Exercise Psychology, 31,* 390-408.

Fry, M. D. (2010). Creating a positive climate for young athletes from day 1. *Journal of Sport Psychology in Action, 1,* 33-41.

Golembiewski, R. (1962). *The small group.* Chicago, IL: University of Chicago.

Gould, D. & Krane, V. (1992). The arousal-athletic performance relationship: Current status and future directions. In T. S. Horn (Ed.), *Advances in sport psychology* (pp. 119-142). Champaign, IL, England: Human Kinetics.

Hall, C. R., Munroe-Chandler, K. J., Fishburne, G. J., & Hall, N. D. (2009). The sport imagery questionnaire for children (SIQ-C). *Measurement in Physical Education and Exercise Science, 13,* 93-107.

Heuzé, J.P., & Fontayne, P. (2002). Questionnaire sur l'Ambiance du Groupe: A French-language instrument for measuring group cohesion. *Journal of Sport & Exercise Psychology*, *24*, 42-67.

Kenny, D. A. (2010, January 22). *Measuring model fit*. Retrieved December 30, 2010 from http://davidakenny.net/cm/fit.htm.

Kline, R. B. (2011). *Principles and practice of structural equation modeling* (3rd ed.). New York, NY: Guilford Publications, Inc.

Kozub, S. A., & McDonnell, J. F. (2000). Exploring the relationship between cohesion and collective efficacy in rugby teams. *Journal of Sport Behavior, 23,* 120-129.

Lent, R. W., Schmidt, J., & Schmidt, J. (2006). Collective efficacy in student work teams: Relation to self-efficacy, cohesion, and performance. *Journal of Vocational Behavior, 68,* 73-84.

Lott, A. J., & Lott, B. E. (1965). Group cohesiveness as interpersonal attraction: A review of relationships with antecedent and consequent variables. *Psychological Bulletin, 64,* 259-309.

Loughead, T. M., Colman, M. M., & Carron, A. V. (2001). Investigating the meditational relationship of leadership, class cohesion, and adherence in an exercise setting. *Small Group Research, 32,* 558-575.

Martens, R., & Peterson, J. A. (1971). Group cohesiveness as a determinant of success and member satisfaction in team performance. *International Review for the Sociology of Sport, 6,* 49-61.

Martin, L. J., Carron, A. V., Eys, M. A., & Loughead, T. M. (in press). Development of a cohesion inventory for children's sport teams. *Group Dynamics: Theory, Research, & Practice.*

Martin, L. J., Carron, A. V., Eys, M. A., & Loughead, T. M. (2011). Children's perceptions of cohesion. *The Sport and Exercise Psychology Review.7,* 11-25.

Munroe-Chandler, K. J., & Hall, C. R. (2004). Enhancing the collective efficacy of a soccer team through motivational general-mastery imagery. *Imagination, Cognition and Personality, 24,* 51-67.

Newton, M., Fry, M., Watson, D., Gano-Overway, L., Kim, M., Magyar, M., & Guivernau, M. (2007). Psychometric properties of the caring climate scale in a physical activity setting. *Revista de Psiocologia del Deporte, 16,* 67-84.

Nunnally, J. C., & Bernstein, I. H. (1994). *Psychometric theory* (3rd ed.). New York: McGraw-Hill.

Page, R. M., Frey, J., Talbert, R., Falk, C. (1992). Children's feelings of loneliness and social dissatisfaction: Relationship to measures of physical fitness and activity. *Journal of Teaching in Physical Education, 11*, 211-219.

Paradis, K. F., & Loughead, T. M. (2011). *Examining the mediating role of cohesion between athlete leadership and athlete satisfaction in youth sport.* Manuscript submitted for publication.

Passer, M. W. (1988). Determinants and consequences of children's competitive stress. In F. L. Smoll, R. A. Magill, & M. J. Ash (Eds.), *Children in sport* (3rd ed., pp. 203-227). Champaign, IL: Human Kinetics.

Passer, M. W. (1993). Psychological perspectives. In B. R. Cahill & A. J. Pearl (Eds.). *Intensive participation in children's sport.* Champaign, IL: Human Kinetics.

Pierce, W. J. (1980). *Psychological perspectives of youth sport participants and non-participants.* Unpublished doctoral dissertation. Virginia Polytechnic Institute and State University, Blacksburg.

Prapavessis, H., & Carron, A. V. (1996). The effect of group cohesion on competitive state anxiety. *Journal of Sport & Exercise Psychology, 18,* 64-74.

Prapavessis, H., & Carron, A. V. (1997). Sacrifice, cohesion, and conformity to norms in sport teams. *Group Dynamics: Theory, Research, and Practice, 1,* 231-240.

Scanlan, T. K., & Lewthwaite, R. (1986). Social psychological aspects of competition for male youth sport participants: IV. Predictors of enjoyment. *Journal of Sport Psychology, 8,* 325-335.

Smith, A. L. (2007). Youth peer relationships in sport. In S. Jowett & D. Lavallee (Eds.), *Social psychology in sport* (pp. 41-54). Champaign, IL: Human Kinetics.

Smith, R. E., Cumming, S. P., & Smoll, F. L. (2008). Development and validation of the motivational climate scale for youth sports. *Journal of Applied Sport Pscyhology, 20,* 116-135.

Spink, K. S. (1995). Cohesion and intention to participate of female sport team athletes. *Journal of Sport & Exercise Psychology, 17,* 416-427.

Spink, K. S., Nickel, D., Wilson, K., & Odnokon, P. (2005). Using a multilevel approach to examine the relationship between task cohesion and team task satisfaction in elite ice hockey players. *Small Group Research, 36,* 539-554.

Stadulis, R. E., MacCracken, M. J., Eidson, T. A., & Severance, C. (2002). A children's form of the competitive state anxiety inventory: The CSAI-2C. *Measurement in Physical Education and Exercise Science, 6,* 147–165.

Tabachnick, B. G., & Fidell, L. S. (2007). *Using multivariate statistics* (5th ed.). Boston, MA: Allyn & Bacon.

Terry, P. C., Carron, A. V., Pink, M. J., Lane, A. M., Jones, G. J. W., & Hall, M. P. (2000). Perceptions of group cohesion and mood in sport teams. *Group Dynamics, 4,* 244-253.

Trochim, W. (2006). *Convergent and discriminant validity.* Retrieved February 21, 2011, from http://www.socialresearchmethods.net/kb/convdisc.php.

Ullrich-French, S., & Smith, A. L. (2009). Social and motivational predictors of continued youth sport participation. *Psychology of Sport and Exercise, 10,* 87-95.

Walling, M. D., Duda, J. L., & Chi, L. (1993). The perceived motivational climate in sport questionnaire: Construct and predictive validity. *Journal of Sport and Exercise Psychology, 15,* 172-183.

Weiss, M.R. & Ferrer-Caja, E. (2002). Motivational orientations and sport behaviour. In T.S. Horn (Eds.), *Advances in sport psychology* (2nd ed., pp.101–183). Champaign, IL: Human Kinetics.

Weiss, M. R., & Petlichkoff, L. (1989). Children's motivation for participation in and withdrawal from sport: Identifying missing links. *Pediatric Exercise Sciences, 1,* 195-211.

Weiss, M. R., & Smith, A.L. (2002) Friendship Quality in Youth Sport: Relationship to Age, Gender, and Motivation Variables. *Journal of Sport & Exercise Psychology, 24,* 420-437.

Widmeyer, W. N., & Williams, J. M. (1991). Predicting cohesion in a coacting sport. *Small Group Research, 22,* 548-570.

SUMMARY, FUTURE DIRECTIONS, AND PRACTICAL APPLICATIONS

The general purpose of this dissertation was to develop an inventory to measure cohesion in children's (ages 9 to 12) sport teams. In order to achieve this purpose, three studies were undertaken. The results from Study 1 demonstrated that children as young as 9 years are aware of the group construct cohesion. They are able to identify (a) advantages that result from cohesive groups, (b) disadvantages pertaining to non-cohesive groups, and (c) potential methods for creating or improving levels of cohesion within groups. In addition, children's responses clearly had task and social orientations. Finally, in Study 1, children also advanced reasons that would motivate them to (a) join a sport team, (b) maintain involvement on a sport team, and (c) cease involvement on a sport team.

The information gathered with respect to children's perceptions of cohesion and their motives for sport team involvement set the stage for the subsequent studies. The purpose of Study 2 was to develop a measure to assess team cohesion in children's sport teams. To this end, a three-phase questionnaire development protocol was employed. Content validity was established for the potential items. Furthermore, data obtained from a heterogeneous sample of child sport participants provided preliminary evidence for the factorial validity of the questionnaire. A strong model fit, good internal consistency values, and a moderate inter-factor correlation were all established. The final version of the questionnaire consists of 16-items measured on a 5-point Likert scale. Seven items pertain to task cohesion, seven to social cohesion, and two are negatively worded spurious items.

Finally, “the cornerstone of any measurement instrument lies in its validity” (Carron, Brawley, & Widmeyer, 1998, p. 217), therefore, the purpose of Study 3 was to assess the construct validity of the Child Sport Cohesion Questionnaire (CSCQ). To carry out this purpose, four types of validity were tested—convergent, discriminant, predictive, and factorial. Convergent validity was established because cohesion (task and social) was found to be positively related to satisfaction and negatively related to competitive state anxiety (cognitive and somatic). Discriminant validity was also established. It was hypothesized that task cohesion would have a stronger correlation to self-efficacy than would social cohesion—this was the case. Two tests were used to test predictive validity. One failed to provide evidence for predictive validity in that no significant differences in perceptions of cohesion between interactive and independent sport athletes were present. The second showed partial support for predictive validity as athletes who had been on a team for 2 years had significantly higher perceptions of social cohesion than athletes that had been on a team for 1 year; however, there were no differences for task cohesion. Finally, Study 3 demonstrated the factorial validity of the CSCQ with a different heterogeneous sample (i.e., results from Study 2). Overall, the results from Study 3 provide support for the construct validity of the CSCQ.

Taken as a totality, the results allow for several generalizations. First, children as young as 9 years understand the concept of cohesion and can advance positive and negative aspects relating to cohesive and non-cohesive teams. They can also distinguish between task and social manifestations. Second, the results indicate that the CSCQ possesses adequate psychometric properties, has demonstrated construct validity, and is

at the appropriate reading and comprehension level for use with children. In addition, the results indicate positive correlations between children's perceptions of cohesion with satisfaction and self-efficacy, and a negative correlation with competitive state anxiety. These results come from three studies, each of which involved different heterogeneous samples of child sport participants, therefore, the generalizations advanced are deemed accurate for this population.

Although the results from this dissertation represent noteworthy contributions to the group dynamics in sport literature, the development of this questionnaire and preliminary results highlight the need to pursue research in several avenues. First, the preliminary correlations established with cohesion in children are circular in nature. More specifically, we are uncertain as to whether high levels of cohesion lead to greater satisfaction, or whether greater satisfaction leads to higher levels of cohesion. Carron, Hausenblas, and Eys (2005) cautioned, "while it is often convenient to discuss the relationship between cohesion and other variables in a causal fashion, it is important to bear in mind the dynamic, circular nature of group dynamics" (p.242). Therefore, future research should aim to determine causation with cohesion and important correlates for this age group. Determining causation would provide researchers with the information needed to develop interventions geared to either improving cohesion, or using cohesion to improve other related variables.

A second closely related suggestion for future research stems from the general framework for the correlates of cohesion (Carron et al., 1998). The variables used in the present dissertation (i.e., satisfaction, self-efficacy, and competitive state anxiety) all can

be considered personal factors. Given that there is a breadth of research in older populations and that a framework exists, researchers should expand analyses to the other three factors. For example, assessing the relationship between cohesion and environmental (e.g., level of competition, group size, proximity), team (e.g., athlete status, team norms, collective efficacy), and leadership (e.g., leader behaviour, decision style, formal and informal leaders) factors. This would provide a more complete understanding of the importance of cohesion for this younger population.

Third, beyond examining the correlates of cohesion, research should focus on the alarming statistics suggesting the lack of participation and adherence resulting in increased levels of overweight and obese children (e.g., Statistics Canada, 2006; Weinberg & Gould, 2003). A cohesive team can provide children with many of the advantages that they indicate as motives for participation in sport. In adult and youth populations, researchers have provided clear evidence that athletes on more cohesive teams have higher intentions to return and actual return rates (e.g., Spink, 1995; Spink, Wilson, & Odnokon, 2010). Research should aim to determine whether cohesive teams have the same impact in child sport.

Fourth, researchers should extend their analyses to determine the differences present between task and social orientations. For example, based on the group dynamics literature on group development, Carron et al (1998) suggested that in task-oriented groups such as sport teams, a reasonable assumption is that task cohesion develops first. Consequently, through this common task orientation and the necessary social interactions present in groups, social cohesion eventually develops. In children, this may not be the

case as many of the motives listed for joining teams are socially oriented (e.g., to be with friends, to meet new people, to have fun). Therefore, it would be interesting to determine whether differences exist in the effect that task and social cohesion play on the participation and adherence rates in children.

Finally, another possible future direction is to undertake intervention studies with this population. For example, team building is an effective way to improve cohesion (e.g., Bloom, Stevens, & Wickwire, 2003). Researchers should consider the conceptual framework advanced by Carron and Spink (1993) for implementing team building interventions in sport. The use of this framework has translated into positive results with improving cohesion for adult (e.g., Stevens & Bloom, 2003) and youth (e.g., Bruner & Spink, 2010; Newin, Bloom, & Loughead, 2008) populations. Historically, no attempts have been made to improve cohesion in children. Two factors have hindered this endeavour: 1) the uncertainty relating to children's perceptions of cohesion and 2) the lack of a suitable measurement tool. Therefore, the development of the CSCQ provides researchers with the ability to measure the effectiveness of interventions in this age group.

The previous discussion involved a summary of the three studies encompassing the dissertation, as well as the description of certain avenues for which this age specific cohesion inventory could be used to advance the group dynamics literature in this population. Although both are pertinent to the present research, neither provides any guidance as to potential practical applications. Note that, this is not considered to be a limitation of the dissertation because the written content reflects the nature of our

research—the development of a questionnaire. Regardless, it has been suggested that, "there is nothing so practical as a good theory" (Lewin, 1951, p. 169). Therefore, although it is difficult to advance guidelines for practical use when research with this population generally and this questionnaire specifically are in their infancy, we can advance some helpful suggestions for developing cohesion in children's sport teams. The established relationships between cohesion and other important psychological variables such as increased satisfaction and self-efficacy, and decreased competitive state anxiety render this a worthwhile endeavour for any coach.

The team building conceptual model advanced by Carron and Spink (1993) provides coaches with a good framework from which to build cohesion. They suggested that inputs and throughputs lead to outputs. The output in this instance is cohesion. Within the model, there are two inputs, *group structure* and *group environment* and one throughput, *group processes*. Consequently, these should be the focus when the desired outcome is to develop cohesion. Therefore, for *group structure*, coaches should target group norms. By incorporating the leaders on the team in the process, the coach should ensure that all athletes (i.e., children) are treated equally. This will instil a norm for equality upon which children (1) will be less likely to bully one another and (2) can monitor themselves, thereby creating a sense of unity (i.e., cohesion). For *group environment*, coaches should promote group distinctiveness and togetherness. For group distinctiveness, children should wear similar attire (i.e., team uniforms or tracksuits) to games and practices to develop a "we versus they" mentality within the group. For group togetherness, carpooling and traveling together increases interaction and proximity

between the children. Finally, for *group processes*, coaches should include the children in the development of group goals (e.g., practice twice a week, take 20 shots a game, or make the playoffs). This will give the group a sense of ownership and will direct their attention towards a common objective. By following these simple suggestions, coaches will aid in the development of cohesion within their teams and in doing so, will increase the likelihood that their athletes will benefit from the previously discussed positive relationships.

Overall, this dissertation provided insight into children's perceptions of cohesion. In addition, the development of this psychometrically sound instrument to assess cohesion in children's sport teams has led to positive preliminary findings. Perhaps most importantly, the questionnaire provides researchers with the means for continued investigation in this area.

References

Bloom, G. A., Stevens, D. E., & Wickwire, T. L. (2003). Expert coaches perceptions of team building. *Journal of Applied Sport Psychology, 15,* 129-143.

Bruner, M. W., & Spink, K. S. (2010). Evaluating a team building intervention in a youth exercise setting. *Group Dynamics: Theory, Research, and Practice, 14,* 304-317.

Carron, A. V., Brawley, L. R., & Widmeyer, W. N. (1998). The measurement of cohesiveness in sport groups. In J. L. Duda (Ed.), *Advances in sport and exercise psychology measurement* (pp. 213-226). Morgantown, WV: Fitness Information Technology.

Carron, A. V., Hausenblas, H. A., & Eys, M. A. (2005*). Group Dynamics is Sport* (3rd ed.). Morgantown, WV. Fitness Information Technology.

Carron, A. V., & Spink, K. S. (1993). Team building in an exercise setting. *The Sport Psychologist, 7,* 8-18.

Lewin, K. (1951). *Field Theory in Social Science*. New-York: Harper.

Newin, J., Bloom, G. A., & Loughead, T. M. (2008). Youth ice hockey coaches' perceptions of a team building intervention program. *The Sport Psychologist, 22,* 54-72.

Spink, K. S. (1995). Cohesion and intention to participate of female sport team athletes. *Journal of Sport & Exercise Psychology, 17,* 416-427.

Spink, K. S., Wilson, K. S., & Odnokon, P. (2010). Examining the relationship between cohesion and return to team in elite athletes. *Psychology of Sport and Exercise, 11,* 6-11.

Statistics Canada. Overweight and obesity among children and youth. *Health Reports 2006;* August 17: 27-42.

Stevens, D.E. & Bloom, G.A. (2003). The effect of team building on cohesion. *Avante, 9,* 43–54.

Weinberg, R. S., & Gould, D. (2003). Children's psychological development through sport. In *Foundations of Sport and Exercise Psychology* (3rd ed.) (pp. 491-510). Champaign, IL: Human Kinetics

APPENDIX A

Copyright Releases

Sport and Exercise Psychology Review

Dear Luc,

The BPS has no problem with you using the SEPR article in this way as long as you acknowledge that it was first published in the SEPR and date it in the usual fashion (see the BPS response below). I hope this is clear and enables you to use the manuscript in your PhD. All the best for your PhD studies.

Hi Iain.
No problem. Luc may use his manuscript as long as he mentions that it was first published in Sport & Exercise Psychology Review, and date it. We get a lot of these requests and the Society has no problem with them at all.

Martin

Best wishes
Iain
Dr Iain Greenlees CPsychol.
Reader in Sport Psychology
Department of Sport & Exercise Sciences
University of Chichester
College Lane
Chichester
West Sussex
PO19 6PE
Tel: 01243 816437

From: Luc Martin
Sent: 22 August 2011 15:42
To: Iain Greenlees
Subject: Publication in Sport and Exercise Psychology Review

Dear Dr. Greenlees,

My name is Luc Martin, I am the first author on a publication in the Sport and Exercise Psychology Review entitled "Children's perceptions of cohesion" by myself, Dr. Albert Carron, Dr. Mark Eys, and Dr. Todd Loughead. I am completing my Ph.D. dissertation at The University of Western Ontario and would like to request permission to reproduce a version of the manuscript in my dissertation. Please let me know if any further information is required. Thank you very much for your time and assistance. I look forward to hearing from you,

Luc

Group Dynamics: Theory, Research, and Practice

Luc,

See below from Skip Maier at APA.—Craig

From: Maier, Skip
Sent: Monday, August 22, 2011 10:49 AM
To: Parks, Craig
Subject: RE: Publication in Group Dynamics: Theory, Research, and Practice

Craig-

This is not a problem, as long as he properly attributes the version as copyrighted by APA and published in Group Dynamics.

Best,
Skip
From: Parks, Craig
Sent: Monday, August 22, 2011 1:22 PM
To: Maier, Skip
Subject: FW: Publication in Group Dynamics: Theory, Research, and Practice

Skip,

See below. Is there anything we need to do to accommodate this, or is his request impossible?

Craig

From: Luc Martin
Sent: Monday, August 22, 2011 7:51 AM
To: Parks, Craig
Subject: Publication in Group Dynamics: Theory, Research, and Practice

Dear Dr. Parks,

My name is Luc Martin, I am the first author on a publication in Group Dynamics: Theory, Research, and Practice (in press) entitled "Development of a cohesion inventory for children's sport teams" by myself, Dr. Albert Carron, Dr. Mark Eys, and Dr. Todd Loughead. I am completing my Ph.D. dissertation at The University of Western Ontario and would like to request permission to reproduce a version of the manuscript in my dissertation. Please let me know if any further information is required. Thank you very much for your time and assistance. I look forward to hearing from you,

Luc

APPENDIX B

Focus Group Guide

Study 1

Cohesion in Child Sport Teams
Focus Group Guide

Introduction:

I am a researcher in sport and exercise who is interested in understanding child participation in sport. I would like to thank you for agreeing to participate in our research. I will be asking you a series of questions specifically to do with your participation in team sports. If at any time you feel that you do not want to carry on with the group discussion, you may stop and leave without consequence. The information you share during this group discussion will remain strictly confidential. The discussion should last approximately 45 minutes. I would ask only a few things to aid in the process of this focus group. First, only one person should speak at a time and please speak slowly and clearly. Second, please do not start side conversations. Direct your comments to the whole group. Third, when you begin to speak, could you please state your first name and then begin your response. Fourth, I encourage everyone to participate. The purpose of this group discussion is for me to learn about your thoughts and experiences. If you agree to proceed with the discussion, please complete the short questionnaire and then we will begin.

Opening question:

First, can you please tell me your name, what school you go to, and what you enjoy doing in your spare time?

Introductory question:

I am interested in your participation in team sports. Can you give me some personal examples of when you have been a member of a sports team?

Transition questions:

I am interested in learning a little more about your experiences on these teams.
How often would you participate in the sport?
How many people were a part of these teams?
Who were the people that were part of your group?
How did you know them?

Key questions:

1. Thinking back to your experiences on a team, what are some of the things you have observed that would lead you to believe that your team was very cohesive? What goes on in a cohesive group?

2. Now think back again to your experiences as a group member and tell me some of the things you have observed that would lead you to believe that your team or group was not very cohesive? What goes on in a non-cohesive group?

3. The prior questions tried to determine what you thought cohesive and non-cohesive groups might look like. Please tell me some of the ways people could develop cohesion in a physical activity group or team or tell me some of the ways people have developed cohesion in your teams or groups.

Ending question:

Moderator will provide a summary of key points raised by the focus group.

Followed by "Those are all the questions I would like to ask you about.
Is there anything that we should have talked about but didn't? Please take a moment to think about your involvement in these groups and please speak openly if you have any additional thoughts you would like to add".

Conclusion:

"That concludes our focus group. I want to thank you for sharing so much information about yourself and your experiences. I want to assure you again that this information will be treated in the strictest confidence. Thank you for your time.

APPENDIX C

Open Ended Questionnaire

Study 1

Cohesion Survey

Participant Instructions

This questionnaire is designed to help understand your experience on sport teams. There are no right or wrong answers so please give your immediate reaction. Please answer the questions as honestly and accurately as possible. **Your responses will be kept secret.**

1. Your Age:_____years
2. Gender: Male Female (Please circle one)
3. Name of Sport/Activity you participate in most often:_____
4. Other sports/activities you participate in:

_____
_____
_____
_____

5. Please indicate why you ***joined*** your current sport team.

_____
_____
_____
_____
_____
_____
_____

6. Please indicate why you are ***staying as*** a member of your current sport team.

_____
_____
_____
_____
_____
_____
_____

7. Why might you ***stop participating*** with your sport team.

_____
_____
_____
_____
_____
_____
_____

APPENDIX D

Child Sport Cohesion Questionnaire

Studies 2 and 3

Child Sport Cohesion Questionnaire (CSCQ)

The following questions ask about your feelings toward **your team**. Please **CIRCLE** a number from 1 to 5 to show how much you agree with each statement.

Gender: Male Female **Age**: _____ **Sport**: _____

1. Our team members all share the same goals.[1]

1	2	3	4	5
Strongly Disagree	Disagree	Sometimes Agree	Agree	Strongly Agree

2. I invite my teammates to do things with me.[2]

1	2	3	4	5
Strongly Disagree	Disagree	Sometimes Agree	Agree	Strongly Agree

3. We all have the same beliefs.[1]

1	2	3	4	5
Strongly Disagree	Disagree	Sometimes Agree	Agree	Strongly Agree

4. Some of my best friends are on this team.[2]

1	2	3	4	5
Strongly Disagree	Disagree	Sometimes Agree	Agree	Strongly Agree

5. I like the way we work together as a team.[1]

1	2	3	4	5
Strongly Disagree	Disagree	Sometimes Agree	Agree	Strongly Agree

6. Our team <u>does not</u> work well together.[3]

1	2	3	4	5
Strongly Disagree	Disagree	Sometimes Agree	Agree	Strongly Agree

7. We get together with each other a lot.[2]

1	2	3	4	5
Strongly Disagree	Disagree	Sometimes Agree	Agree	Strongly Agree

8. As a team, we are united.[1]

1	2	3	4	5
Strongly Disagree	Disagree	Sometimes Agree	Agree	Strongly Agree

9. I call or message my teammates a lot.[2]

1	2	3	4	5
Strongly Disagree	Disagree	Sometimes Agree	Agree	Strongly Agree

10. My team gives me the chance to improve my skills.[1]

1	2	3	4	5
Strongly Disagree	Disagree	Sometimes Agree	Agree	Strongly Agree

11. I like to spend time with my teammates.[2]

1	2	3	4	5
Strongly Disagree	Disagree	Sometimes Agree	Agree	Strongly Agree

12. I <u>do not</u> get along with my teammates.[3]

1	2	3	4	5
Strongly Disagree	Disagree	Sometimes Agree	Agree	Strongly Agree

13. I will keep talking to my teammates when the season ends.[2]

1	2	3	4	5
Strongly Disagree	Disagree	Sometimes Agree	Agree	Strongly Agree

14. We stick together outside of our sport.[2]

1	2	3	4	5
Strongly Disagree	Disagree	Sometimes Agree	Agree	Strongly Agree

15. We like the way we work together as a team.[1]

1	2	3	4	5
Strongly Disagree	Disagree	Sometimes Agree	Agree	Strongly Agree

16. In games, we all get along well.[1]

1	2	3	4	5
Strongly Disagree	Disagree	Sometimes Agree	Agree	Strongly Agree

Note:
[1]Task cohesion item
[2]Social cohesion item
[3]Spurious negative item

APPENDIX E

Modified Version of Sport Satisfaction Questionnaire

Study 3

Modified Version of the Sport Satisfaction Questionnaire (Duda & Nicholls, 1992; Note that this is the questionnaire format used in Study 3)

1. I usually find playing sports interesting.

1	2	3	4	5
Strongly Disagree	Disagree	Sometimes Agree	Agree	Strongly Agree

2. I usually have fun doing sports.

1	2	3	4	5
Strongly Disagree	Disagree	Sometimes Agree	Agree	Strongly Agree

3. I usually get involved when I am doing sports.

1	2	3	4	5
Strongly Disagree	Disagree	Sometimes Agree	Agree	Strongly Agree

4. I usually enjoy playing sports.

1	2	3	4	5
Strongly Disagree	Disagree	Sometimes Agree	Agree	Strongly Agree

5. I usually find time flies when I am doing sports.

1	2	3	4	5
Strongly Disagree	Disagree	Sometimes Agree	Agree	Strongly Agree

APPENDIX F

Modified Version of Competitive State Anxiety Inventory-2 Children

Study 3

Modified Version of the Competitive State Anxiety Inventory – 2 Children (Stadulis, MacCracken, Eidson, & Severance, 2002; Note that this is the questionnaire format used in Study 3)

1. I am concerned that I may not **play** as well as I can today.

1	2	3	4	5
Strongly Disagree	Disagree	Sometimes Agree	Agree	Strongly Agree

2. My body feels tense.

1	2	3	4	5
Strongly Disagree	Disagree	Sometimes Agree	Agree	Strongly Agree

3. I feel tense in my stomach.

1	2	3	4	5
Strongly Disagree	Disagree	Sometimes Agree	Agree	Strongly Agree

4. I am concerned that I will **play** poorly today.

1	2	3	4	5
Strongly Disagree	Disagree	Sometimes Agree	Agree	Strongly Agree

5. My heart is racing.

1	2	3	4	5
Strongly Disagree	Disagree	Sometimes Agree	Agree	Strongly Agree

6. I am worried about reaching my goals.

1	2	3	4	5
Strongly Disagree	Disagree	Sometimes Agree	Agree	Strongly Agree

7. I feel my stomach sinking.

1	2	3	4	5
Strongly Disagree	Disagree	Sometimes Agree	Agree	Strongly Agree

8. I am concerned that others will be disappointed with my **sport** performance.

1	2	3	4	5
Strongly Disagree	Disagree	Sometimes Agree	Agree	Strongly Agree

9. I am concerned about not being able to concentrate today.

1	2	3	4	5
Strongly Disagree	Disagree	Sometimes Agree	Agree	Strongly Agree

10. My body feels tight.

1	2	3	4	5
Strongly Disagree	Disagree	Sometimes Agree	Agree	Strongly Agree

APPENDIX G

Modified Version of Self-Efficacy Questionnaire—Soccer

Study 3

Modified Version of the Self-Efficacy Questionnaire—Soccer (Mills, Munroe-Chandler, & Hall, 2000; Note that this is the questionnaire format used in Study 3)

1. I am confident I can work through difficult situations (e.g., injury, tired).

1	2	3	4	5
Strongly Disagree	Disagree	Sometimes Agree	Agree	Strongly Agree

2. I am confident I can remain focused during a challenging situation.

1	2	3	4	5
Strongly Disagree	Disagree	Sometimes Agree	Agree	Strongly Agree

3. I am confident I can be mentally tough throughout a competition.

1	2	3	4	5
Strongly Disagree	Disagree	Sometimes Agree	Agree	Strongly Agree

4. I am confident I can remain in control in challenging situations.

1	2	3	4	5
Strongly Disagree	Disagree	Sometimes Agree	Agree	Strongly Agree

5. I am confident I can appear to be confident in front of others (e.g., opponents).

1	2	3	4	5
Strongly Disagree	Disagree	Sometimes Agree	Agree	Strongly Agree

APPENDIX H

The University of Western Ontario

Research Ethics Board Approval Notices

Office of Research Ethics

The University of Western Ontario
Room 4180 Support Services Building, London, ON, Canada N6A 5C1
Telephone: (519) 661-3036 Fax: (519) 850-2466 Email: ethics@uwo.ca
Website: www.uwo.ca/research/ethics

Western

Use of Human Subjects - Ethics Approval Notice

Principal Investigator: Dr. A. V. Carron
Review Number: 15746S **Review Level:** Full Board
Review Date: February 06, 2009

Protocol Title: Development of an Inventory to Assess Cohesion in Youth Groups: Ages 8 - 12
Department and Institution: Kinesiology, University of Western Ontario
Sponsor:
Ethics Approval Date: March 18, 2009 **Expiry Date:** January 31, 2010
Documents Reviewed and Approved: UWO Protocol, Participant Consent Form, Assent Form (8-12).
Documents Received for Information:

This is to notify you that The University of Western Ontario Research Ethics Board for Non-Medical Research Involving Human Subjects (NMREB) which is organized and operates according to the Tri-Council Policy Statement: Ethical Conduct of Research Involving Humans and the applicable laws and regulations of Ontario has granted approval to the above named research study on the approval date noted above.

This approval shall remain valid until the expiry date noted above assuming timely and acceptable responses to the NMREB's periodic requests for surveillance and monitoring information. If you require an updated approval notice prior to that time you must request it using the UWO Updated Approval Request Form.

During the course of the research, no deviations from, or changes to, the study or consent form may be initiated without prior written approval from the NMREB except when necessary to eliminate immediate hazards to the subject or when the change(s) involve only logistical or administrative aspects of the study (e.g. change of monitor, telephone number). Expedited review of minor change(s) in ongoing studies will be considered. Subjects must receive a copy of the signed information/consent documentation.

Investigators must promptly also report to the NMREB:

a) changes increasing the risk to the participant(s) and/or affecting significantly the conduct of the study;
b) all adverse and unexpected experiences or events that are both serious and unexpected;
c) new information that may adversely affect the safety of the subjects or the conduct of the study.

If these changes/adverse events require a change to the information/consent documentation, and/or recruitment advertisement, the newly revised information/consent documentation, and/or advertisement, must be submitted to this office for approval.

Members of the NMREB who are named as investigators in research studies, or declare a conflict of interest, do not participate in discussion related to, nor vote on, such studies when they are presented to the NMREB.

Chair of NMREB: Dr. Jerry Paquette

Ethics Officer to Contact for Further Information			
☒ Grace Kelly (grace.kelly@uwo.ca)	☐ Janice Sutherland (jsutherl@uwo.ca)	☐ Elizabeth Wambolt (ewambolt@uwo.ca)	☐ Denise Grafton (dgrafton@uwo.ca)

This is an official document. Please retain the original in your files.

cc: ORE File

Office of Research Ethics

The University of Western Ontario
Room 4180 Support Services Building, London, ON, Canada N6A 5C1
Telephone: (519) 661-3036 Fax: (519) 850-2466 Email: ethics@uwo.ca
Website: www.uwo.ca/research/ethics

Use of Human Subjects - Ethics Approval Notice

Principal Investigator: Dr. A.V. Carron
Review Number: 16828S **Review Level:** Full Board
Review Date: February 05, 2010 **Approved Local # of Participants:** 300
Protocol Title: Development of an Inventory to Assess Cohesion in Children: Ages 9 - 12
Department and Institution: Kinesiology, University of Western Ontario
Sponsor:
Ethics Approval Date: March 09, 2010 **Expiry Date:** January 31, 2011
Documents Reviewed and Approved: UWO Protocol, Letter of Information and Consent, Assent Form.
Documents Received for Information:

This is to notify you that The University of Western Ontario Research Ethics Board for Non-Medical Research Involving Human Subjects (NMREB) which is organized and operates according to the Tri-Council Policy Statement: Ethical Conduct of Research Involving Humans and the applicable laws and regulations of Ontario has granted approval to the above named research study on the approval date noted above.

This approval shall remain valid until the expiry date noted above assuming timely and acceptable responses to the NMREB's periodic requests for surveillance and monitoring information. If you require an updated approval notice prior to that time you must request it using the UWO Updated Approval Request Form.

During the course of the research, no deviations from, or changes to, the study or consent form may be initiated without prior written approval from the NMREB except when necessary to eliminate immediate hazards to the subject or when the change(s) involve only logistical or administrative aspects of the study (e.g. change of monitor, telephone number). Expedited review of minor change(s) in ongoing studies will be considered. Subjects must receive a copy of the signed information/consent documentation.

Investigators must promptly also report to the NMREB:

a) changes increasing the risk to the participant(s) and/or affecting significantly the conduct of the study;
b) all adverse and unexpected experiences or events that are both serious and unexpected;
c) new information that may adversely affect the safety of the subjects or the conduct of the study.

If these changes/adverse events require a change to the information/consent documentation, and/or recruitment advertisement, the newly revised information/consent documentation, and/or advertisement, must be submitted to this office for approval.

Members of the NMREB who are named as investigators in research studies, or declare a conflict of interest, do not participate in discussion related to, nor vote on, such studies when they are presented to the NMREB.

Chair of NMREB: Dr. Jerry Paquette
FDA Ref. #: IRB 00000941

Ethics Officer to Contact for Further Information			
☑ Grace Kelly (grace.kelly@uwo.ca)	☐ Janice Sutherland (jsutherl@uwo.ca)	☐ Elizabeth Wambolt (ewambolt@uwo.ca)	☐ Denise Grafton (dgrafton@uwo.ca)

cc: ORE File

This is an official document. Please retain the original in your files.

Western

Office of Research Ethics

The University of Western Ontario
Room 5150 Support Services Building, London, ON, Canada N6A 3K7
Telephone: (519) 661-3036 Fax: (519) 850-2466 Email: ethics@uwo.ca
Website: www.uwo.ca/research/ethics

Use of Human Subjects - Ethics Approval Notice

Principal Investigator: Dr. A.V. Carron
Review Number: 17491S **Review Level:** Full Board
Review Date: October 13, 2010 **Approved Local # of Participants:** 70
Protocol Title: Validation for the Child Sport Cohesion Questionnaire
Department and Institution: Kinesiology, University of Western Ontario
Sponsor: None
Ethics Approval Date: December 17, 2010 **Expiry Date:** November 30, 2011
Documents Reviewed and Approved: UWO Protocol, Letter of Information and Consent.
Documents Received for Information:

This is to notify you that The University of Western Ontario Research Ethics Board for Non-Medical Research Involving Human Subjects (NMREB) which is organized and operates according to the Tri-Council Policy Statement: Ethical Conduct of Research Involving Humans and the applicable laws and regulations of Ontario has granted approval to the above named research study on the approval date noted above.

This approval shall remain valid until the expiry date noted above assuming timely and acceptable responses to the NMREB's periodic requests for surveillance and monitoring information. If you require an updated approval notice prior to that time you must request it using the UWO Updated Approval Request Form.

During the course of the research, no deviations from, or changes to, the study or consent form may be initiated without prior written approval from the NMREB except when necessary to eliminate immediate hazards to the subject or when the change(s) involve only logistical or administrative aspects of the study (e.g. change of monitor, telephone number). Expedited review of minor change(s) in ongoing studies will be considered. Subjects must receive a copy of the signed information/consent documentation.

Investigators must promptly also report to the NMREB:

a) changes increasing the risk to the participant(s) and/or affecting significantly the conduct of the study;
b) all adverse and unexpected experiences or events that are both serious and unexpected;
c) new information that may adversely affect the safety of the subjects or the conduct of the study.

If these changes/adverse events require a change to the information/consent documentation, and/or recruitment advertisement, the newly revised information/consent documentation, and/or advertisement, must be submitted to this office for approval.

Members of the NMREB who are named as investigators in research studies, or declare a conflict of interest, do not participate in discussion related to, nor vote on, such studies when they are presented to the NMREB.

Chair of NMREB: Dr. Riley Hinson
FDA Ref. #: IRB 00000941

Ethics Officer to Contact for Further Information		
☑ Grace Kelly (grace.kelly@uwo.ca)	☐ Janice Sutherland (jsutherl@uwo.ca)	☐ Elizabeth Wambolt (ewambolt@uwo.ca)

This is an official document. Please retain the original in your files.

cc: ORE File

CURRICULUM VITAE

LUC J. MARTIN, PH.D.

School of Kinesiology, Faculty of Health Sciences
Graduate Office, Rm 2225, 3M Centre
The University of Western Ontario (UWO)
London, Ontario, Canada N6A 3K7

BACKGROUND

University Education:

2008-2011	Doctor of Philosophy (Ph.D.), Kinesiology, The University of Western Ontario Supervisor: Dr. Albert Carron
2007-2008	Master of Arts (M.A.), Kinesiology, The University of Western Ontario Supervisor: Dr. Albert Carron
2003-2007	Honors Bachelor of Arts (H.B.A.), Specialization in Kinesiology with a Minor in French (Bi-lingual), The University of Western Ontario

Academic Awards:

2012-2013	CIHR Post-Doctoral Fellowship Position, University of British Columbia, Value $37,500/year
2010-2012	SSHRC Canadian Doctoral Graduate Scholarship, Value $20,000/year
2010-2011	OGS Ontario Graduate Scholarship (Doctoral) granted, Value $15,000/year, declined in lieu of SSHRC scholarship
2009-2010	OUA (Ontario University Athletics) nominee for the CIS Randy Gregg Award to the player who best exhibits outstanding achievement in hockey, academics and community involvement
2005-2010	Academic All Canadian, Varsity athletes who receive a minimum 80% average
2004-2010	Dean's Honor List, The University of Western Ontario

Non-Academic Awards:

2010	Table of Honor Guest at the London Sports Celebrity Dinner
2009-2010	Most Dedicated Player Award for The University of Western Ontario Varsity Hockey Team
2008-2010	Captain of The University of Western Ontario Varsity Hockey Team
2008-2009	Robert McChesney Award for Loyalty and Sportsmanship towards The University of Western Ontario Hockey Program

SCHOLARLY RESEARCH ACTIVITIES

Refereed Publications:

Martin, L. J., Carron, A. V., Eys, M. A., & Loughead, T. M. (in press). Development of a cohesion inventory for children's sport teams. *Group Dynamics: Theory, Research, and Practice.*

Martin, L. J., & Carron, A. V. (in press). Team attributions in sport: A meta-analysis. *Journal of Applied Sport Psychology.*

Paradis, K. F., & **Martin, L. J.** (in press). Team Building in Sport: Linking Theory and Research to Practical Application. *Journal of Sport Psychology in Action*.

Paradis, K. F., **Martin, L. J.,** & Carron, A. V. (in press). Examining the relationship between passion and cohesion in sport groups. *Sport and Exercise Psychology Review*.

Carron, A. V., Shapcott, K. M., & **Martin, L. J.** (in press). The relationship between team explanatory style and team success. *International Journal of Sport and Exercise Psychology.*

Martin, L. J., Carron, A. V., Eys, M. A., & Loughead, T. (2011). Children's perceptions of cohesion. *Sport and Exercise Psychology Review, 7*, 11-25.

Martin, L. J., Burke, S. M., Shapiro, S., Carron, A. V., Irwin, J., Petrella, R., Prapavessis, H., & Shoemaker, K. (2009). The use of group dynamics strategies to enhance cohesion in a lifestyle intervention program for obese children. *BMC Public Health, 9*, 277-289.

Martin, L. J., Carron, A. V., & Burke, S. M. (2009). Team building interventions in sport: A meta-analysis. *Sport and Exercise Psychology Review, 5*, 3-18.

Other Publications (Book Chapters):

Carron, A. V., Eys, M. A., & **Martin, L. J.** (in press). Cohesion: Its nature and measurement. In Tenenbaum, G., Eklund, R., & Kamata, A. (Eds.), *Handbook of measurement in sport and exercise psychology.* Champaign, IL: Human Kinetics.

Carron, A. V., **Martin, L. J.**, & Loughead, T. (in press). Teamwork and performance in sport and the workplace. In Murphy, S. (Eds.) *Handbook on Sport and Performance Psychology.* Champaign, IL: Human Kinetics.

Works "submitted for publication":

Martin, L. J., Carron, A. V., Eys, M. A., & Loughead, T. M. (2011). *Validation for the child sport cohesion questionnaire (CSCQ).* Manuscript submitted for publication.

Works "in progress":

Martin, L. J., Paradis, K. F., Eys, M. A., Evans, B., & Carron, A. V. (in progress). Cohesion in sport: New directions for coaches and practitioners.

Martin, L. J., Carron, A. V., & Paradis, K. F. (in progress). The relationship between leadership style and team attributional style.

Refereed Published Abstracts:

Martin, L. J., Carron, A. V., Eys., M. A., & Loughead, T. M. (2011). Development of a cohesion inventory for children's sport teams [Abstract]. *Journal of Sport and Exercise Psychology, 33* (Suppl.) p. 168.

Paradis, K. F., **Martin, L. J.,** & Carron, A. V. (2011). Examining the effects of harmonious and obsessive passion on cohesion and intention to return in competitive and recreational athletes [Abstract]. *Journal of Sport and Exercise Psychology, 33* (Suppl.) p. 174.

Martin, L. J., Carron, A. V., & Shapcott, K. M. (2010). Team attributions in sport: A meta-analysis [Abstract]. *Canadian Society for Psychomotor Learning and Sport Psychology Abstracts, 42,* p. 127.

Carron, A. V., Shapcott, K. M., & **Martin, L. J.** (2010). The relationship between team attributional style and team success [Abstract]. *Canadian Society for Psychomotor Learning and Sport Psychology Abstracts, 42,* p. 10.

Carron, A. V., Shapcott, K. M., & **Martin, L. J.** (2010). Examining the relationship between collective efficacy and team explanatory style [Abstract]. *Canadian Society for Psychomotor Learning and Sport Psychology Abstracts, 42,* p. 38.

Martin, L. J., Carron, A. V., Eys, M. A., & Loughead, T. (2009). Qualitative examination of the meaning of cohesion in children aged 9-12 [Abstract]. *Canadian Society for Psychomotor Learning and Sport Psychology, Abstracts, 41,* p. 73.

Martin, L. J., Burke, S. M., Carron, A. V., & Shapiro, S. (2009). The use of group dynamics strategies to enhance cohesion in a lifestyle intervention for obese children [Abstract]. *Journal of Sport and Exercise Psychology, 31* (Suppl.) p. 130.

Martin, L. J., Carron, A. V., & Burke, S. M. (2008). Team building interventions in sport: A meta-analysis [Abstract]. *Journal of Sport and Exercise Psychology, 30* (Suppl.) p. 184.

Refereed Conference Presentations:

Martin, L. J., Carron, A. V., Eys, M. A., & Loughead, T. M. (2011, October). *Validation for the Child Sport Cohesion Questionnaire*. Paper presented at the Canadian Society for Psychomotor Learning and Sport Psychology. Winnipeg, Manitoba, Canada.

Paradis, K. F., **Martin, L. J.,** Carron, A. V. (2011, October). *The Relationship Between Athlete Leadership Status, Starting Status, and Passion in Athletes*. Poster presented at the Canadian Society for Psychomotor Learning and Sport Psychology. Winnipeg, Manitoba, Canada.

Martin, L. J., Carron, A. V., Eys., M. A., & Loughead, T. M. (2011, June). *Development of a cohesion inventory for children's sport teams*. Paper presented at the North American Society for the Psychology of Sport and Physical Activity Conference, Burlington, Vermont, United States.

Paradis, K. F., **Martin, L. J.,** & Carron, A. V. (2011, June). *Examining the effects of harmonious and obsessive passion on cohesion and intention to return in competitive and recreational athletes*. Paper presented at the North American Society for the Psychology of Sport and Physical Activity Conference, Burlington, Vermont, United States.

Martin, L. J., Carron, A. V., & Shapcott, K. M. (2010, October). *Team attributions in sport: A meta-analysis.* Paper presented at the Canadian Society for Psychomotor Learning and Sport Psychology. Ottawa, Ontario, Canada.

Carron, A. V., Shapcott, K. M., & **Martin, L. J.** (2010, October). *The relationship between team attributional style and team success.* Paper presented at the Canadian Society for Psychomotor Learning and Sport Psychology. Ottawa, Ontario, Canada.

Carron, A. V., Shapcott, K. M., & **Martin, L. J.** (2010, October). *Examining the relationship between collective efficacy and team explanatory style*. Poster presented at the Canadian Society for Psychomotor Learning and Sport Psychology. Ottawa, Ontario, Canada.

Martin, L. J., Carron, A. V., Eys, M. A., & Loughead, T. (2009, October). *Qualitative examination of the meaning of cohesion in children aged 9-12.* Paper presented at the Canadian Society for Psychomotor Learning and Sport Psychology Conference, Toronto, Ontario, Canada.

Martin, L. J., Burke, S. M., Carron, A. V., & Shapiro, S. (2009, June). *The use of group dynamics strategies to enhance cohesion in a lifestyle intervention for obese children.* Paper presented at the North American Society for the Psychology of Sport and Physical Activity Conference, Austin, Texas, United States.

Martin, L. J., Carron, A. V., & Burke, S. M. (2008, June). *Team building interventions in sport: A meta-analysis.* Paper presented at the North American Society for the Psychology of Sport and Physical Activity Conference, Niagara Falls, Ontario, Canada.

Other Conference Presentations:

Martin, L. J., Paradis, K. F., & Carron, A. V. (2011, March). *Examining the relationship between leadership style and team attributional style.* Paper presented at the Eastern Canadian Sport and Exercise Psychology Symposium, Waterloo, Ontario, Canada.

Paradis, K. F., Carron, A. V., & **Martin, L. J.** (2011, March). *Examining the nature of conflict in sport teams.* Paper presented at Eastern Canadian Sport and Exercise Psychology Symposium, Waterloo, Ontario, Canada.

Martin, L. J., Carron, A. V., & Burke, S. M. (2008, March). *Team building interventions in sport: A meta-analysis.* Paper presented at the Eastern Canadian Sport and Exercise Psychology Symposium, Sudbury, Ontario, Canada.

Invited Presentations:

Martin, L. J. (2011). *Transformational leadership theory in the context of physical education.* Presentation as a guest speaker at the Exercise and Health Psychology Laboratory, London, Ontario, Canada.

Martin, L. J. (2011). *How to write successful scholarship applications.* Presentation as a guest speaker for the School of Graduate and Post-Doctoral Studies scholarship application session at The University of Western Ontario, London, Ontario, Canada.

Martin, L. J. (2011). *The importance of team cohesion for children.* Presentation as a guest speaker at Wilfrid Laurier University sport psychology lab, Waterloo, Ontario, Canada.

Martin, L. J. (2011). *Working with teammates to excel.* Presentation as the guest speaker at PEAC (school for elite athletes), London, Ontario, Canada.

Carron, A. V. & **Martin, L. J.** (2010). *Initiating group interventions.* Presentation at the German Research Center of Elite Sport Consensus Conference & International Symposium, Cologne, Germany.

Martin, L. J. (2010). *The importance of goal setting and time-management.* Presentation as the guest speaker for the Elgin Middlesex AAA Chiefs hockey organization, Aylmer, Ontario, Canada.

Martin, L. J. (2010). *The "mental" side of hockey.* Presentation as the guest speaker at the TPH Training Center, London, Ontario, Canada.

Martin, L. J. (2010). *Team building and leadership in hockey.* Presentation as the guest speaker for the Parkside Collegiate Institute high school coaching class, St. Thomas, Ontario, Canada.

Martin, L. J. (2010). *Great coaches; A players perspective.* Presentation as the guest speaker at the Mount Brydges Minor Hockey Coaches Association meeting, Mount Brydges, Ontario, Canada.

Carron, A. V. & **Martin, L. J.** (2009). *The structure and dynamics of groups: Implications for physical education classes.* Presentation at the German Association of Sport Science Annual Conference, Muenster, Germany.

Martin, L. J. (2009). *Team cohesion and its effects on performance.* Presentation to the St. Thomas Stars (WOHL) Junior Hockey Organization, St. Thomas, Ontario, Canada.

Martin, L. J. (2009). *Becoming the total player.* Presentation at Elite Level Skills Camp for the Ontario Hockey Association, London, Ontario, Canada.

Research Service:

2011-2012 Peer Review for *Journal of Sport and Exercise Psychology*

Related Research Experience:

2009-2011 Research Coordinator for Team Attributions Grant (SSHRC)
2009-2010 Graduate Research Assistant, The University of Western Ontario
Children's Health and Activity Modification Program (SSHRC)

SCHOLARLY TEACHING ACTIVITIES

Instructor Position:

2011 *Instructor for Kinesiology 2208 IH, The University of Western Ontario*
Course: Hockey Activity Course (practical and theory based)

Teaching Assistantships:

2010 *Graduate Teaching Assistant, The University of Western Ontario*
Courses: Hockey (Kinesiology 2208Q and 2208R) Activity Course
Instructor: Clarke Singer M.A.

2010 *Graduate Teaching Assistant, The University of Western Ontario*
Course: Psychology of Sport (Kinesiology 3388b)
Instructor: Dr. Albert Carron

2009 *Graduate Teaching Assistant, The University of Western Ontario*
Course: Hockey (Kinesiology 2208Q and 2208R) Activity Course
Instructor: Clarke Singer M.A.

2009 *Graduate Teaching Assistant, The University of Western Ontario*
Course: Psychology of Sport (Kinesiology 3388b)
Instructor: Dr. Albert Carron

2008 *Graduate Teaching Assistant, The University of Western Ontario*
Course: Psychology of Sport (Kinesiology 3388b)
Instructor: Dr. Albert Carron

2007 *Graduate Teaching Assistant, The University of Western Ontario*
Course: Psychology of Sport (Kinesiology 3388a)
Instructor: Dr. Albert Carron