A Preliminary Exploration of Breakthrough Thinking Preferences of Ice Hockey Players

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A Preliminary Exploration of Breakthrough Thinking
Preferences of Ice Hockey Players

An Abstract of a Thesis in
Creative Studies

By
Bonnie A. Doliszny

Submitted in Partial Fulfillment
of the Requirements
for the Degree of

Master of Science
December 2011

State University of New York
College at Buffalo
International Center for Studies in Creativity
Abstract

The purpose of this study was to conduct a preliminary exploration of creative-thinking preferences of ice hockey players. *FourSight: The Breakthrough Thinking Profile* is an assessment designed to assist individuals and teams to better understand their approach to problem solving through creative thinking. This qualitative study explored the application of *FourSight* to a New England Preparatory school ice hockey team identifying if the cognitive and creative preferences translate into on ice behavior. Triangulated data from real game performances, coaching analysis and individual player interviews were gathered to answer the following questions:

- Do creative process preferences exist among ice hockey players?
- Is there a dominant profile evident by position of play?
- In what ways do creativity preferences translate into on ice behavior?

Implications of these findings are discussed as well as limitations and recommendations for future research efforts related to the topic of creative cognition. Beyond adding to the body of knowledge of creativity and athletics, the intersection of these two burgeoning fields may help in leveraging creative-thinking skills in order to enhance team and individual athletic performance.

*Keywords*: hockey, cognitive preference, creativity, *FourSight*, team performance

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December 2011
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December 2011

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Dedication

I dedicate this work to my two most creative undertakings, my daughter Melana and my son Thomas both whom have inspired and encouraged me to complete this thesis. Pursuit of your passions and your love of life fill me with tremendous pride and joy. I love you both deeply.
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I would like to first and foremost like to thank my father Ben W. Doliszny, Q.C., for his love and support throughout my life and this academic pursuit. I love you Tato.

I am humbled to have had the opportunity to work with my advisor Gerard J. Puccio, Ph. D. and John F. Cabra, Ph.D. in the completion of thesis. Your time, patience and enthusiasm for my work have been invaluable. I also thank the entire faculty of the International Center for Studies in Creativity at Buffalo State College for opening up a new world to a lost soul. I truly wish I could work with you forever.

I would like to also thank those who in some cases must remain nameless for their assistance, support and compliance. To the coach and the hockey players who allowed me to observe and collect data and the institution they attended; I believe your participation will make an impact on the sport of ice hockey and all athletic team performance. I thank you all and wish you well in your future endeavors.

This thesis would not have come to fruition without the friendship of Diana and Jim Duryea, who opened their home to me for two years while I collected data. Дякую! I extend heartfelt thanks to all my family and friends who have persevered the last several years and supported this undertaking.

Finally, hugs to all my furry feline friends who have kept me sane and grounded throughout this process.
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Chapter One: Statement of the Problem

Given the history and growth in the field of creativity research, the time has come for other domains beyond business and education within which creativity principles can be applied. One of the domains in which creativity should be encouraged is in the field of athletics. This study sought to identify creativity profiles of individual members of an ice hockey team in addition to discovering if and how the profile translated to on ice performance.

This chapter describes the purpose of this exploratory study and the rationale for using *FourSight: The Breakthrough Thinking Profile* with ice hockey players. It presents a brief history of the development of *FourSight* and describes the benefits of using this assessment tool to examine preferences of individual hockey team members. The expectation is that the results of this study will provide useful insight into the development of athletic expertise.

Rationale and Purpose

In what ways does the individual cognitive style of the athlete influence his/her participatory role on a team? Puccio, Murdock and Mance (2007) stated “all teams whether they are aware of it or not, engage in the creative process” (p. 220). All teams in the creative process have members who have individual biases with respect to the creative process. The synergy of these differences can lead to creative potential or can cause conflict (Puccio, Murdock & Mance, 2005). In a review of creativity research, Mumford (2001) identified that in team settings, creativity seems to be encouraged by
supportive, charismatic leadership, an open approach to emerging issues, competitiveness, particularly externally focused competition and reasonable diversity in members' backgrounds.

Related to Mumford's observations about the importance of diversity in promoting creativity, Basadur, Wakabayashi and Takai (1992) conducted research that examined the role that different creative problem solving preferences have in team situations. Basadur, et al., (1992) proposed a focus on blending different cognitive problem solving process styles rather than placing emphasis on different personality types. Regardless of context, Basadur, et al., (1992) found that successful teams as opposed to unsuccessful teams, are better able to discover, define, problem solve and implement solutions. In addition Basadur and Head (2001) found that groups consisting of a heterogeneous blend of cognitive styles outperformed both homogeneous and partially homogeneous blended groups when working on a business challenge.

It has been common for researchers to examine the cognitive style preferences of individuals involved in the same profession. The diversity of team members' backgrounds warrants further exploration. This study was designed to identity the cognitive style preferences of individual team members of an ice hockey team for the purpose of identifying the diversity within an athletic team. A broader purpose to this study was to begin to lay the ground work for the potential value of applying deliberate creativity methods to develop individuals and teams in areas other than education or business where it has been primarily advanced.

The Creative Problem Solving (CPS) process is the most widely used and researched deliberate creativity method for nurturing creative thinking (Puccio, Firestien,
Coyle & Masucci, 2006; Scott, Leritz, & Mumford, 2004a, 2004b). The current CPS model, called *Creative Problem Solving: The Thinking Skills Model*, (CPS: TSM) describes the cognitive skills associated with the creative process (Puccio, et al., 2007). Elements of CPS: TSM can be correlated to the cognitive skills required for superior athletic performance studied in the field of sport expertise (Starkes & Ericsson, 2003). Researchers in the field of sport expertise are constantly striving for new ways to enhance individual and team performance at the next level of competition, ultimately developing winners in competition. The opportunity to use an assessment tool from the field of deliberate creativity which deals with identifying cognitive style preferences may yield useful results for the field of sport expertise.

*FourSight* was developed to identify creative preferences while engaged in the CPS process. CPS is a systematic process for aiding individuals and teams in analyzing problems for the purpose of generating and refining ideas, allowing for implementation of a more effective plan of action (Puccio, 2002b). *FourSight* measure profiles the individual’s preferences for solving problems through creative thinking (Puccio, 2002b). *FourSight* is an assessment tool designed to assist both individuals and teams to better understand their approach to problem solving. This assessment tool allows the individual to recognize his or her natural strengths, as well as the challenges faced while engaging in problem solving. Once strengths and challenges are identified, one can learn strategies to enhance and develop problem-solving skills. Team profiles may also help individuals’ become more tolerant and appreciative of different styles of problem solving allowing for communication among team members in addition to the creation of a better working environment (Puccio, 2002a).
Puccio (2002b) offers the following principles that serve as pillars for the

*FourSight* measure:

1. The creative process is a natural process i.e. all normally functioning people solve problems in creative ways both professionally and in the personal lives.
2. The CPS model is a valid way of depicting the areas of operation within the creative process.
3. The CPS process, specifically the CPS process, involves a series of mental operations.
4. People process preferences for different mental operations, which psychologists call cognitive styles; and
5. Since the creative process is a cognitive process that people engage in naturally, people will possess different preferences for areas within the creative process.

(p.5)

*FourSight* has been widely used to help individuals and teams in the business environment, but heretofore this tool, nor the broader concept of deliberate creativity, has been applied within the sports context. The purpose of this study was to conduct a preliminary exploration of *FourSight* preferences of ice hockey players. The specific questions addressed by this study were:

- Do creative process preferences exist among ice hockey players?
- Is there a dominant profile evident by position of play?
- In what ways do creativity preferences translate into on ice behavior?
Statement of Significance

Osborn (1952), developer of the CPS process, observed, “Creative thinking goes with hockey...during the game ...a contestant may bring his imagination into play” (p. 81). CPS research has extended beyond the classroom into organizational settings (Puccio, et al., 2006; Puccio, et al., 2005). The CPS process has been applied successfully in the field of education (Keller-Mathers, 1990; Keller-Mathers, Puccio & Treffinger, 2000; Puccio, 1994), as well as in the corporate, business and professional worlds (Isaksen, Dorval & Treffinger, 1998; Lewis, 2004). Although a majority of CPS research has been carried out in organizational and educational contexts, some researchers have examined the effects of CPS training in unique fields of endeavor. For example Everhart, Kernodle, Turner, Harshaw and Arnold (1999) found positive correlation after they examined the effects of CPS training on game-play decisions of university badminton students.

The need to teach athletic skills creatively has been identified by a number of authors (Gaier, 1966; Bournelli & Mountakis, 2008). Several studies use deliberate measures of creativity to identify creative game play in athletics (Kovac, 1998; Memmert, & Roth, 2007; Memmert, 2007) and Russell (2001) examined flow state in college athletes; however, the work of Everhart et al., (1999) is the only specific research that involved CPS training among athletes. The positive effect on player’s tactical game play decisions following CPS training were significant, warranting further inquiry into the effectiveness of deliberate creativity training for other sports.

In the field of athletic expertise a promising approach to talent identification involves the measurement of perceptual-cognitive skills such as anticipation and
decision-making. Consistent differences emerge when skilled and less skilled players are tested on their decision-making skills (Davids & Williams 1998). McPherson and Kernodle (2003) discussed collective studies by French and McPherson (1999), which indicated that knowledge bases and decision-making processes are necessary for the development of skillful athletic performance.

Analysis of decision-making has been studied with boxers (Ripoll, Kerlirzin, Stein, & Reine, 1995), soccer (Williams & Reilly, 2000), basketball (Memmert, 2006), and in team ball sports (Baker & Côté, 2003). A qualitative study of National Hockey League players was conducted identifying the mental skills associated with professional ice hockey (Barbour & Orlick, 1999) and developmental activities of elite ice hockey players suggests that participation in various time constrained decision making sports, is a contributing factor in the development of elite hockey players (Soberlak & Côté, 2003).

Research in deliberate creativity has shown that creativity can be taught (Khatena & Parnes, 1974; Noller & Parnes, 1972, 1973; Parnes, 1987; Parnes and Noller, 1972a, 1972b, 1973) and CPS is the most widely used process in training creativity (Mumford, 2003). Research has presented data confirming that knowing one’s creativity preferences contribute to the understanding of how individuals and teams solve problems (Puccio, 2002). Puccio, et al., (2005) identify decision making and critical thinking as part of the CPS process recognizing that CPS is a macro process for thinking “to provide rubrics that guide people in knowing and choosing kinds of thinking that will help them operate more effectively” (p. 49). The ability to solve problems and make tactical game play decisions are important for the development of elite athletes regardless of the type of sport played. In addition the ability for athletes and coaches to
understand the creativity preferences problem solving strengths to be leveraged for the
development of more effective diverse teams.

No empirical research has been conducted involving creativity preferences of
individual athletes or of athletic teams. There has been no data collected using the
FourSight assessment with members of athletic teams. This study was designed to
explore FourSight preferences in ice hockey players, identifying if and how creative
preferences translate into on-ice behavior.

Beyond adding to the body of knowledge in both creativity and athletics, the
overlap of these two burgeoning fields may aid in developing breakthrough thinking
skills strategies for elite enhancement of both individual and team athletic performance.
Understanding creativity preferences of athletes could indicate the specific type of CPS
training to support the cognitive development, ultimately facilitating the growth of elite
athletes. Identifying transference of creativity preferences to on-ice performance will
assist in providing a basis from which both coaches and ice hockey players understand
how they approach the game as individual players and as team members.

**Summary**

This chapter stated the purpose of this exploratory study, provided the rationale
and gave some background information on the measure to be used for data collection.
Questions to be answered were stated and significance for the fields of both creativity
and sport expertise were described. The next chapter reviews the literature related to
this exploratory study.
Chapter Two: Literature Review

Chapter One provided a rationale and purpose for this qualitative exploratory study. The purpose of this chapter is to present related literature referencing the study of creativity, Creative Problem Solving and critical thinking as it relates to the field of athletic expertise. Further research on use of *FourSight: The Breakthrough Thinking Profile* and its relationship to the Creative Problem Solving Process will be presented. Arguments for the use of *FourSight* will be presented linking it to the fields of sport psychology and expertise.

The Study of Creativity

In the Annual Review of Psychology, Hennessey and Amabile (2010) proclaimed that, “The study of Creativity must be seen as a basic necessity” (p. 370). The concept of creativity spans a multitude of domains from literature to science, education to business and beyond (Lubart, 2001; Mumford, 2003; Stumpf, 1995; Tang & Leonard, 1985; Runco, 2007; Torrance, 1972, 1984; Williams & Yang, 1999).

The field of deliberate creativity is described by creativity professionals at the International Center for Studies in Creativity, Buffalo State College, State University of New York, as taking a proactive approach toward the production of novel and useful ideas that address a predicament or opportunity (Puccio, Murdock & Mance, 2007).

The problem of defining creativity is by no means an easy one. However, psychologists’ renewed interest in the phenomenon of creativity has resulted in literature that attempts to define and operationalize the word “creativity.” In recent
decades, psychologists have attempted to link creativity to measures of intelligence (Sternberg, 1985) and to the ability to abstract, generalize (Sternberg, 1985), and solve complex problems (Frensch & Sternberg, 1992). Sternberg and Lubart (1996) defined creativity as the ability to produce unexpected original work that is useful and adaptive. The most commonly used definition of creativity is the generation of product or ideas that are both novel and useful (Puccio, et al., 2007).

In psychology, creativity is usually defined as the production of an idea, action, or object that is new and valued, although what is considered creative at any point in time depends on the cultural context (Csikszentmihalyi, 1996). Current definitions of cognitive creativity found in scientific or organizational domains typically describe the construct as involving “the generation of novel behavior that meets a standard of quality or utility” (Eisenberger, Haskins, & Gambleton, 1999, p. 308).

Since the 1950 presidential address by J.P. Guildford to the American Psychological Association, the advancement of methodical inquiry into creativity began closely investigating the characteristics of creativity. Researchers have long recognized that creativity can refer to, what Rhodes (1961) dubbed as the 4 P’s of creativity; person, process, product, or press (environmental response). In discussing creativity from a holistic standpoint, the four P’s interact with each other.

In the past creativity was identified through quantitative measures of such skills as fluency, flexibility, and originality which can be derived from divergent-thinking tasks (Guilford, 1950; Torrance, 1969); numbers of patent applications; or citation counts among research and development scientists (Gardner, 1983; Griliches, 1990; Pappas & Remer, 1985). These measures established ways of identifying if individuals where
creative. Morris (2000) comments that earlier research on psychological characteristics and performance was criticized for its weak conceptual base and methods for having adapted an atheoretical approach (Schurr, Ashley & Joy, 1977; Morris, 1995; Cox, 1988). Measures such as the Myers-Briggs Type Indicator (MBTI) and the Kirton Adaption Innovation Inventory, (KAI) identified how an individual is creative and are referred to as creative/cognitive style assessments. These assessments profile a creative or cognitive style not creative ability.

For a review of literature analyzing creative product see Amabile (1982), Besemer and Treffinger (1981), Hennessey & Amabile (1999), Mumford (2003a) and Runco (2007). Further research on creative climate may be accessed through the work of Amabile (1990), Cabra (2006), Ekvall (1996), and Mathisen and Einarsen (2004).

As research moved beyond the study of the individual to group-level study, the problem of defining creativity became more complicated. In a study of diversity and creativity in teams, Kurtzberg (2005) found that as group patterns and interactions change, so do the cognitive and affective states and perceptions of the individual team members involved. Overall, Kurtzberg’s (2005) findings present creativity as a complex multidimensional construct, and cognitive diversity as an important predictor of both team emotions and outcomes. The developing body of literature on group-level creativity largely recognizes the theoretical importance of team-member interactions (Kurtzberg & Amabile, 2001; Paulus et al., 2001; Perry-Smith & Shalley, 2003).

The research in the field of creativity which began as the study of an individual cognitive and personality traits (Guilford, 1950; Kabanoff, & Bottger, 1991) has progressed to include more dynamic, interconnected social systems such as work
In team settings, creativity seems to be encouraged by supportive, charismatic leadership; reasonable diversity in members’ backgrounds; competitiveness, particularly externally focused competition; and an open approach to emerging issues. Given the importance of collaboration and teamwork to many creative ventures Abra, (1994), Basadur, Taggar and Pringle (1999), and Puccio (1999) suggested that individuals (leaders and team members) conducting creative problem-solving may have thinking preferences that influence their behaviors. The preferences may be contingent on environmental and task requirements (McFadzean, 1998) or on cognitive preferences (Puccio, 1999).

Basadur (2004) stated that individuals, teams, and organizations differ in their creative problem-solving styles. How these styles are managed can have a significant effect on performance. Basadur believed that the most effective leaders of the 21st century will help individuals and teams by coordinating and integrating their differing styles, directing change through a process of applied creativity. This can be achieved by continuously discovering and defining new problems, solving those problems, and implementing the new solutions. Leaders must appreciate individuals’ differing preferences for various stages of this process. Leaders can use various tools, particularly the Creative Problem Solving process (CPS), to encourage and enable individuals to think together in innovative ways.
Creative Problem Solving: A Process.

CPS is a comprehensive cognitive and affective system built on the natural creative processes that deliberately ignites creative thinking resulting in the generation of creative solutions and change (Puccio, et al., 2007). CPS refers to any activity during which an individual or team attempts to produce novel solutions to vague, open-ended, and ill-defined problems (Puccio, 1999).

CPS involves a series of distinct cognitive operations. CPS works because it parallels natural creative thinking processes through efficient organization of what happens when people work with problems. This suggests that CPS has an intuitive base that is easily accessed in more explicit ways. Secondly, CPS provides a method to manage impulsive or inappropriate judgment through alternating phases of divergent and convergent thinking. CPS helps people accomplish concrete actions getting results from their initial ideas by combining thinking and doing. Finally, CPS provides the opportunity to utilize several creativity tools through its flexible format (Puccio, et al., 2007).

The successful enhancement of creativity in individuals has been documented and the CPS model has been used in teaching and training for many years (Murdock, & Keller-Mathers, 2002.; Nickerson, 1999; Puccio, et al., 2006; Scott, et al., 2004a, 2004b).

The CPS Model (Osborn, 1963) is a structured framework for creative thinking principles using tools and stages. CPS model is a systemic process which aids both individuals and teams in analyzing problems, generating and refining ideas followed by more effective implementation of the plan of action (Puccio, 2002). The CPS process is
the most researched and widely used deliberate creative process model for the development of creative-thinking skills. (Osburn & Mumford, 2006; Parnes, 1992; Parnes & Noller, 1971, 1972a, 1972b, 1973a, 1973b; Rose & Lin, 1984).

In a meta-analytic study, Scott, et al., (2004a) illustrated that cognitively-oriented approaches to creativity training, such as the CPS-based “Creative Process Training” (p. 165) successfully enhanced creative thinking. These training programs indicated that the more successful training programs were likely to focus on the development of cognitive skills. Upon further examination of these CPS based training programs, indications were that the more successful programs focused on the development of cognitive skills as well as the heuristics involved in the skill application, through the use of realistic domain-specific exercises (Scott, et al., 2004a). In another meta-analysis, Scott, et al., (2004b) evaluated the effectiveness of different types of creativity training with respect to cognitive processes, training techniques, media, and types of practice exercises. Certain types of training, specifically idea production and cognitive training, proved particularly effective. Moreover, these effects held true when internal validity was taken into account.

**Creative Problem Solving: The Thinking Skills Model**

Since the CPS model was conceived by Osborn in 1953, it has gone through a series of modifications and has been consistently subjected to research. Current versions still maintain the hallmark features of the earlier work (Puccio, et al., 2005; Isaksen & Treffinger, 2004). The most recent CPS model is the first to specifically express the thinking skills involved within each step of the process and is referred to as
Creative Problem Solving: The Thinking Skills Model. This model structure involves three conceptual stages; clarifying, transforming and implementing. The following are the six explicit process steps: exploring the vision, formulating challenges, exploring ideas, formulating solutions, exploring acceptance and formulating a plan. Assessing the situation is considered an executive step, which involves what one wants or needs to do, followed by a decision as to the most appropriate entry point into the process model.

Running throughout the process is divergence and convergence, the dynamic balance of the process, and the core of effective thinking (Puccio, Murdock & Mance 2007; Ruggiero, 1998). Divergent thinking is a broad search for many diverse and novel alternatives, whereas convergent thinking is a focused and affirmative evaluation of alternatives. For a review of the CPS: The Thinking Skills Model please see Puccio, et al., (2007).

In a general definition of thinking, Ruggiero (1998), in Puccio, et al., (2007), described it as “any mental activity that helps formulate or solve a problem, make a decision, or fulfill a desire to understand. It is a searching for answers, or reaching for meaning” (p.48). Four specific complex thinking processes are, problem solving to resolve a known difficulty, decision making to choose the best alternative, creative thinking to create novel or aesthetic ideas or products, and critical thinking to understand particular meaning. Although CPS focuses on creative thinking it also involves decision-making and critical thinking.
Critical Thinking

Many definitions of critical thinking exist. Passmore (1967) defined critical thinking as a process that is reflective and imaginative. Jacobs, Ott, Sullivan, Ulrich, and Short (1997) identified critical thinking as “the repeated examination of problems, questions, issues, and situations by comparing, simplifying, and synthesizing information in an analytical, deliberative, evaluative, decisive way” (p. 20). Others have characterized critical thinking as “thinking that is reasonable and reflective and focused on what to believe or do” (Bullen, 1998). Thompson, Martin, Richards, and Branson, (2003) depicted “Critical thinking is an intellectual function of adulthood, and a necessity for personal survival (Paul, 1985). Facione and Facione (1994) contend that interpretation, analysis, inference, evaluation, and explanation make up the interactive process of critical thinking. Facione and Facione (1994) stated” that engaging students and allowing them to apply these skills (interpretive skills, analytical skills, etc.) actually aid students in developing their critical thinking abilities” (p.186).

Perkins (1990) articulated the relation between creative thinking and critical reasoning in the most convincing way claiming that the opposition between these two activities is in the goals that people want to attain. Perkins expressed that critical reasoning is targeted at evaluation whereas creative thinking is targeted at generation of creative products. According to Perkins, the two activities can be integrated: good creative thinking depends on multiple evaluative actions; good critical reasoning relies on imagination since a good evaluator should consider new perspectives that others miss or can imagine. Glassner and Schwarz (2007) have shown rich links between the critical reasoning ability and creative thinking. Kurtzberg’s (2005) findings presented
creativity as a complex multidimensional construct, and cognitive diversity as an important predictor of both team emotions and outcomes. *FourSight: The Breakthrough Thinking Profile* is a measure that identifies cognitive preferences and how these preferences support individuals as they approach challenges and assists them in team building.

**FourSight: The Breakthrough Thinking Profile**

The *FourSight* Measure v. 6.1 for breakthrough thinking is an ideographic measure which helps to identify individual, cognitive and decision-making preferences. The initial item creation began in 1992 with a pool of eighty-seven questions. The current *FourSight* version 6.1 is a thirty-six item measure comprised of nine statements for each of the four scales. The Internal consistency of the four *FourSight* scales shows alpha coefficients exceeding .70 (Puccio, 2002b). Factor analysis of items on the scales group together statistically providing confidence that the measure of a particular preference operates in the same manner. The Developer preference (n=296) has a .79 Cronbach alpha, Ideator (n=293) .81 Cronbach alpha, Clarifier (n=296) .78 Cronbach alpha and Implementer (n=294) has a .81 Cronbach alpha (Puccio, 2002b).

Research focused on concurrent validity of *FourSight* comes in two forms. The first form involves comparison with four highly reputed psychological measures. They are the Kirton Adaption Innovation Inventory, Myers-Briggs Type Indicator, the Creative Problem Solving Inventory and the Adjective Checklist.

The Kirton Adaption Innovation Inventory (KAI) measures the way in which people express their creativity known as creativity style, as opposed to their capacity or
potential to be creative. Summary of the correlation of KAI and FourSight showed three consistent results indicating that FourSight is not biased toward either Kirton’s Adaptor or Innovator styles. Both Adaptor and Innovator styles are equally valuable ways of expressing creative ability and FourSight is sensitive to both. Subsequently, the capacity for all to engage in the creative process requires that FourSight measure these preferences. KAI was compared continuously throughout the development of the FourSight measure.

The Myers-Briggs Type Indicator (MBTI) developed in 1985, is based on the work of Carl Jung for the purpose of measuring psychological type. Four dimensions are assessed by this measure. First the MBTI reveals a person’s orientation to either the outer or the inner world. Secondly, MBTI examines how people prefer to take in information and thirdly it refers to ways in which people make decisions. The final dimension deals with how individuals structure their lives. The relationship which emerged between FourSight and MBTI is easily interpreted and theoretically expected, despite the small sample size used (Puccio, 2002b).

The third measure used for establishing concurrent validity of FourSight is a paper and pencil inventory, known as the Creative Problem Solving Inventory (CPSC) developed in 1990 by Basadur, Graen and Wakabayashi. This measure was developed to assess different preferences in Basadur’s eight stage version of the CPS model. Although similar in purpose, the FourSight assessment described specific activities associated with its four preferences, the CPSP asks respondents to rank sets of words. CPSP is based on the assumption that the progression through Basadur’s Simplex model relates to two information processing dimensions. The first dimension focused on
how people gain knowledge and the second on how they use knowledge. Here again, despite the small sample size (n=36) analysis produced results reflecting a conceptual connection between CPSP and *FourSight* (Puccio, 2002b).

The fourth measure, the Adjective Check List (ACL) was developed by Gough and Heilbrun in 1983 to aid in the study of creative personality at the Institute of Personality Assessment and Research. Rife (2001) measured 25 of the 37 ACL scales for a deeper understanding of the personality make up of the four *FourSight* preferences. Among the ACL scales the Creative Personality Scale related to all the *FourSight* preferences, indicating high levels of creative ability in each preference (Puccio, 2002b).

As a second form of evidence for the validity of *FourSight*, Wheeler (2001) examined the reactions of individuals to CPS training based on their *FourSight* profile. This research showed that people with different *FourSight* preferences responded differently to the same course content. Analysis of students’ reactions to a CPS course showed differences across the *FourSight* preferences (Wheeler, 2001).

The *FourSight* innovation tools help people meet challenges more effectively and are used by teams and organizations to boost problem solving, team building as well as strengthen communication. Understanding cognitive preference and style is essential to the development of motor skills and athletic ability.
Cognitive Style, Expertise, Decision Making and Athletic Performance

Cognitive Style in Motor Skill Development.

Learning in physical education is a progressive process that involves both cognitive and affective dimensions (Shen & Chen, 2007). An effective physical education curriculum should address both knowledge and skill acquisition and motivation simultaneously. It is evident that there is similar thinking in the field of athletics.

The cognitive psychology school of thought has generated models of information processing associated with various tasks. It has encouraged the study of cognition and attention as related to learning, performance and high levels of achievement in goal-directed complex activities expressed through movement. There is little doubt that the ability to learn as well as to excel in performing movement skills depends to a great degree on the effective self-regulation of cognitive processes in a variety of situations. What to think about (or not think about) prior to, during and even after an event, can have great consequences on present and subsequent performance. Examples of both self paced (closed) and externally paced (open) types of events exist in sport, with different information processing demands associated with each one. Any breakdown in a particular stage of processing will potentially lead to poorer performance. Cognitive operation of external paced acts includes decision making and problem solving (Anderson, 1990; Bower & Hilgard, 1981). Singer (2000) suggests special training techniques and strategies are evolving from the cognitive and psycho physiological research literature that might improve the level of functioning at each stage for either
self-paced or externally-paced skills. Abernathy, Farrow and Barry (2003) believe that there is a possibility that cognition and perception may be fundamentally different in motor tasks because of the need for these processes to pair both dynamically and often under severe time constraints. Sport tasks often require greater chronological constraints and greater spatial complexity. The task complexity arises with concurrent actions of both opponents and multiple teammates.

**Expert Athletic Performance**

There is a large body of research related to the study of expertise (Chi, Glaser & Farr, 1988; Ericsson, 1996; Ericsson & Smith, 1991; Sternberg & Grigorenko, 2001). The areas of study range from chess to surgery, and archery to wrestling. Ericsson (2000) discusses his expert performance approach as a framework to promote a partnership among three groups. Researcher, coaches and athletes can contribute and benefit a deeper understanding of the mechanisms that mediate expert performance and how that performance can be best and most effectively improved. Ericsson indicates that obstacles and constraints are often confronted by athletes motivated to reach their highest levels of performance. He feels that overcoming these constraints, athletes should be able to inform researchers by providing a source of empirical evidence on the true potential of human achievement.

Much information has been gathered on what makes an expert athlete and the optimal ways of training to attain peak performance. Traditionally, there was an expectation that the psychological determinants of successful performance could be delineated from the personality characteristics of outstanding players. Typically
research involved the use of general personality tests such as the Eysenck personality Questionnaire (Eysenck & Eysenck, 1975) or the 16 Personality Factor questionnaire (Cattell, 1965) The traits associated with expertise among top players seem to be too variable to permit any strong inferences to be drawn about personality requirements for a successful career in athletics. Emphasis has moved to cognitive measures, in particular, the anticipation and decision-making skills that are the hallmark of team sports. The merits of both these approaches are considered in turn in the course of a review of the psychological literature. There are very few examples of monitored trials following the detection of potential talent for placement on dedicated programs to develop soccer skills. The empirical study from the Australian Institute of Sport represents pioneering work in this respect (Williams & Reilly, 2000).

Two other cognitive measures recently proposed as predictors of talent include intelligence and creative thinking (Morris 2000). Skilled players often possess a `game intelligence' that allows them to analyze major features of their opponent's play (Singer & Janelle, 1999). Gréhaigne and Wallian (2007) assert that a player's game-play intelligence results from a combination of flair, resourcefulness, vigilant attention, sense of opportunity and so on. Based on this description, emphasis is always put on being 'practical' in order to attain success during game play. A player's practical efficiency must be flexible in order to respond appropriately to constantly varying game situations. It has been recommended that perception and action be coupled for the analysis of expert performance. This suggests that when considering the development of decision-making skills, anticipation, decision making and effective action should be associated whenever reflection on action is sought.
**Expertise and Decision Making in Sport**

Isaksen, Murdock, Firestien and Treffinger (1993) wrote that:

One of the advantages to viewing creativity from a transdisciplinary viewpoint is that a wide range of disciplinary perspectives may be surveyed for relevant information and concepts. In fact, although much of the creativity literature in the United States comes from the psychological research tradition, it is clear that the field of creativity studies has something to gain from many other disciplines, as well as something to contribute to them. (p. 33)

In the field of athletic expertise, there is an ongoing debate between the Abernathy, Farrow and Berry (in Starkes & Ericsson, 2003) study on motor expertise and the Ericsson and Simon (1993) theoretical framework of expertise research. Ericsson and Simon provided an analysis of how expert performance differs from other traditional laboratory studies which test general hypotheses about basic process and descriptive studies that attempt to elicit basic processes by designed tasks in the laboratory. Ericsson is firmly committed to the study of complex behavioral phenomena where a critical aspect of problem solving allows “performers to find ways to improve aspects of mediating mechanisms that increase the integrated performances on representative tasks without negative side effects.”(Starkes & Ericsson, 2003, p.391).

When the field of cognitive psychology was founded, few references where made to athletic pursuits (Moran, 2009.) With recent paradigm shifts in psychology and cognitive psychology, research in cognitive sport psychology is now believed to offer cognitive researchers from different disciplines a “rich and dynamic natural laboratory of
how the mind works.” (Moran, 2009, p. 421). The gradual change over the past 50 years in this discipline has gone from a deficit-based approach to a strength-based approach with certain aspects of cognition. Expertise in this field can be described as the growth of specialist knowledge and skill (Moran 2009).

Tenenbaum stated in Starkes and Ericsson’s Expert Performance in Sport (2003) that enough evidence exists to establish a scheme of expertise decision making after several decades of extensive research on expert behaviors and performance. Sport-related decision making has also been a focus of research since the 1980’s beginning with the collection of theoretical and applied articles on sport related cognition by Straub and Williams in 1984, followed by several special issues of the International Journal of Sport Psychology. The paradigm of knowledge for expertise under the cognitive psychology perspective was introduced by Anderson (1982), and Chi and Rees (1983). Tenenbaum (2003) declared, “By definition, response selection in sport indicates adaptive behavior based upon the capacity to problem solve.” (p. 194). Chamberlain and Coelho (1993) view decision making as being synonymous with problem solving and go even farther stating that “In fact, the establishment of superior decision-making capabilities is viewed as being the result of an athlete assuming a problem solving approach to knowledge acquisition, encompassing a hypothesis generation- test-revision cycle” (p.135). In their discussion of the perceptual side of sport, Chamberlain and Coelho (1993) suggest that the due to the huge number studies in athletic expertise which fall in the expert/novice paradigm, that it would be appropriate to classify experts and novices based on their decision-making capabilities. Abernathy (1991) however,
contends that decision-making in sport is a result of events occurring well before the obvious movement is required.

**Cognitive Factors and Decision Making in Sport**

A promising approach to talent identification involves the measurement of perceptual-cognitive skills such as anticipation and decision-making. Consistent differences emerge when skilled and less skilled players are tested on their anticipation and decision-making skills (Davids & Williams, 1998). It may be that talented players are predisposed to acquiring the knowledge structures underlying perceptual and decision-making skill in soccer (Davids & Williams, 1998). McPherson and Kernodle (in Starkes & Ericsson, 2003) discuss collective studies by French and McPherson (1999) indicating that knowledge bases and decision-making processes are necessary for the development of skillful athletic performance. Although genetic influences are likely to determine responsiveness to training, perceptual skill can be improved through specific instruction and practice regardless of one’s initial ability.

Analysis of decision-making has been studied with boxers (Ripoll, Kerlirzin, Stein, & Reine, 1995), soccer (Williams, 2000; Williams & Reilly, 2000) and in team ball sports (Baker & Côté, 2003). A qualitative study of National Hockey League players was conducted identifying the mental skills associated with professional ice hockey (Barbour & Orlick, 1999) and developmental activities of elite ice hockey players suggests that participation in various time constrained decision making sports, is a contributing factor in the development of elite hockey players (Soberlak & Côté, 2003).
Creativity and Athletic Performance

As previously discussed, decision making, critical thinking and problem solving, are crucial to the development of expertise in the field of sports. All of these aspects are benefited by the development of creativity. Bournelli’s (1998) original experiment, utilized Wyrick’s (1996) motor creativity test. Results of the original experiment revealed that motor creativity was developed because of participation in the specially designed physical education program. A follow up study by Bournelli and Mountakis (2008) indicated retention of the acquired motor creativity after a nine-year period. The experimental group continued to show statistically significant superiority in motor creativity. This revealed that if motor creativity is developed in childhood it remains active for prolonged periods, a potential lifelong retention with all the advantages (Bournelli & Mountakis, 2008).

In an empirical study, Kovac (1998) assessed the variables of creativity and creative memory for research on psychological characteristics and sport success in soccer. Among the measures employed to evaluate research participants, were the Torrance Test of Creative Thinking and Urban’s Figural Creativity Test (1993); neither which had been commonly used in sport talent identification. Although highly specific, Kovac’s (1998) results were the most encouraging empirical report deserving further investigation into psychological variables affecting athletic performance.

In an examination of a number of recent experiments, Memmert (2007) revealed that the interaction between breadth of attention and creative performance is mainly based on correlational studies and laboratory creativity tasks, without considering task complexity. Memmert (2007) documented recent studies that primarily used divergent
thinking tests for the creativity task in their research. In Memmert’s real world
exploratory he constructed the Game Test Situation (GTS) based on recommendations
of Kasof (1997) and Kurtzberg and Amabile (2000, 2001), for evaluating effectiveness of
attention broadening and attention narrowing team sport training. Memmert (2007)
reported that attention broadening team sport training increases creative performance
whereas consistent with previous studies, attention narrowing training programs did not.
In his discussion of practical implication of the findings, Memmert (2007) stressed the
opportunity of focusing attention on the training of creativity with more sensitive training
programs in ball games and the development of physical education programs that can
improve creative behavior.

Previous work done by Memmert (2006) also indicated that gifted children in a
sport enrichment program showed significantly higher increases in creative thinking.
Findings suggested that sport specific creative thinking can be increased as students
learn how to act creatively using certain types of motor functions in certain situations.
(Memmert, 2006)

Deliberate creativity measures have been used in athletic game play decision
making by Everhart et al., (1999). A CPS intervention was given to the experimental
group of university beginner badminton students, on a weekly basis. The results had an
obvious positive effect on the frequency of tactical decisions made between the
experimental and control groups. Regardless of ability level of the subjects, more
quality game play decisions were made and in addition, the experimental group used
higher quality strategies.
Summary

This chapter presented research in several fields of study to link the premise that individual cognitive preferences of athletes may be identified in their athletic performance. The current study will explore the on ice performance of ice hockey players after they have been profiled with a tool developed for the field of deliberate creativity. The *FourSight* measure was initially developed for identifying individual preferences in the creative process. In addition, these preferences may have an impact on team composition.

In Chapter Three the methods and procedures used for this exploratory study will be detailed.
Chapter Three: Methods and Procedures

The purpose of this chapter is to provide a detailed account of the methodology for the collection of data in this exploratory study of FourSight preferences among ice hockey players. A rationale is presented for the methodology used to generate and collect data.

Making the Case for Qualitative Exploratory Study

The nature of this exploratory study required the use of methodological procedures from qualitative research practices. Yin (1994) suggests that linking the data to proposition and criteria for interpreting findings are the least developed aspects in case studies. Pattern matching as described by Campbell (1975) is a useful technique for linking data to propositions. Pattern matching is a situation where several pieces of information from the same case may be related to some theoretical proposition (Campbell, 1995). Construct validity can be problematic, often criticized as an area of potential investigator subjectivity. Yin (1994) asserts that a trained investigator would understand the reason for the study, the type of evidence being taught as well as the variations that might be expected. The investigator in qualitative data collection does not control the data collection environment as in other research strategies, and interviews must be dictated by the subject’s schedule (Maxwell, 1996; Stake, 1995; Yin, 1994). The guide for data collection must not be neglected even though it may not have the uniformed outline of other research reports.
Another main component of qualitative methodology is the establishment of a relationship between the researcher and the subject organization. Often the ultimate credibility of study outcomes will depend on the extent to which trust will have been established with the participants (Maxwell, 1996).

At least six sources of evidence have been identified and used in case studies by Stake (1995) and Yin (1994). The case study is known as a triangulated research strategy requiring protocols that are used to ensure accuracy and alternative explanations (Stake, 1995). The use of triangulations comes from the ethical necessity to confirm the validity of the process by using multiple sources of data (Yin, 1984). These sources include archival records, interviews, direct observation, participant observation, documents and physical artifacts. Several sources were used in data collection for this triangulated exploratory study and they are presented in this chapter.

**Participants**

The participants of this study included all 21 male members of an elite preparatory school varsity ice hockey team falling within range of 15-19 years of age. Consent forms were signed by all participants prior to the collection of data for this study. Some of the participants of the study were minors between the ages of 15-17, requiring parental consent to participate in this study. Additionally, all team members signed an consent form as required by protocol for research involving human subjects from The Research Foundation at The State University of New York (see Appendix A).
Methods and Procedures

Upon obtaining permission from the head coach of the hockey team from which the research data for this exploratory study would be collected, the researcher informed participants of the purpose of the study. After participants indicated their interest in participating in the study, consent and assent forms were distributed to all participants (see Appendix B and C). A time was then set with the head coach of this team, for the administration of the first triangulated data collection, which was comprised of the pencil and paper version of the *FourSight* measure (Appendix D).

The *FourSight* measure was explained to all participants and administered to all team members. Players were also asked to indicate their position of play on the hockey team, at the top of the response page. This measure was administered prior to the beginning of the season of play for that particular academic year. The researcher scored the measure as per instructions of the assessment tool. Three players did not complete the measurement in a fashion to be included in the findings.

Based on the *FourSight* results, two players scored as clear high profile preferences, one as a Developer and the other as an Implementer. These profiles will be discussed later in this chapter. Both participants with high preference profiles were defensemen. For further explanation of the defensive position in ice hockey, please refer to the Glossary.

Each of two players was observed by this researcher during the final seven games of the hockey season. Notes were taken on my direct observations of game play during the final seven regular season matches. The players were not made aware that they were being observed until the completion of the season. Each of the two high
preference players was observed during each shift of play he participated in during these seven games.

The second set of data for the triangulation came from videotape analysis of game play of the two high preference profile players. The video was collected throughout game play of the season by the coaching staff, as was their practice. The head coach chose several clips from the last seven games of their season to reference in his evaluation of the two high profile players. The researcher attended a meeting with the head coach in his office, to view and document how the coach interpreted the performance and individual skill of each of the two high preference players. The coach chose three video clips he felt best showed how each player performed. The clips had been cued up by the coach prior to the meeting. He proceeded to show the clips and evaluate the play of each defenseman. There was no specific interview process followed. Unprompted, the coach delivered his evaluation as he normally would while the researcher made notes and asked for elaboration when needed.

The third set of data was derived from the individual high preference profiled player personal interview discussing their on ice performance. These interviews were no longer than an hour in length, and were conducted after the team’s playing season has ended. Each of the two high profile players was contacted via email asking their permission to conduct an interview at a time that was convenient for each of them. They were asked to respond to open ended questions and description of their profile preferences as described by the *FourSight* measure (see Appendix E and F). The questions and responses are included in the results of Chapter Four. Each of the players was also provided with the opportunity to comment on players they enjoyed.
playing with on this team and the players they found difficulty in playing with. This information could help to identify whether there was any indication of heterogeneous or homogeneous team groupings among team members. Having collected the other team member’s FourSight profiles could provide information for a team profile.

**Description of FourSight: The Breakthrough Thinking Profile**

*FourSight* is a measure that can be given to participants in a pencil and paper form or filled out online from the *FourSight* website. For the collection of data in this exploratory the participants were asked to only fill out the first page of *FourSight* measure. For each of the 37 statements in the measure they were asked to indicate the extent to which they felt the statement described them. Importance on description of how they felt was emphasized not their effectiveness in the activity indicated. Each question allowed for a scale ranging from ‘Not Like Me’ to ‘Like Me’ or ‘Very Much Like Me’ (see Appendix B).

As mentioned previously each participant filled out his name, age, and gender and playing position before returning in the measure. The players were not asked to score their own measures as this was done by the researcher. Each participant was reminded that he could learn the results of the assessment upon contacting the researcher. None did.

Based on the scoring of the *FourSight* measure individual scores are graphed and represent the level for each of the four mental processes necessary for innovation. The four profiles are Clarifier, Ideator, Developer and Implementer. These are considered the single high profiles. The four scores on the graph in combination create
a *FourSight* Profile. In addition to the single high profiles, 2-way, 3-way and a 4-way combination exist. Fifteen profiles can be identified with this measure. Each of these combinations is described in the *FourSight workbook*. For the purposes of identifying on-ice performance, two single high profile players were recognized, and triangulated data were collected.
Table 3.1.

An Overview of *FourSight* Preferences

<table>
<thead>
<tr>
<th>Clarifier</th>
<th>Ideator</th>
<th>Developer</th>
<th>Implementer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clarifiers are Focused</td>
<td>Ideators are Playful</td>
<td>Developers are Planful</td>
<td>Implementers are Persistent</td>
</tr>
<tr>
<td>Orderly</td>
<td>Social</td>
<td>Pragmatic</td>
<td>Determined</td>
</tr>
<tr>
<td>Serious</td>
<td>Flexible</td>
<td>Concrete</td>
<td>Action oriented</td>
</tr>
<tr>
<td>Methodical</td>
<td>Independent</td>
<td>Cautious</td>
<td>Decisive</td>
</tr>
<tr>
<td>Deliberate</td>
<td>Imaginative</td>
<td>Structured</td>
<td>Assertive</td>
</tr>
<tr>
<td>Organized</td>
<td>Adventurous</td>
<td>Disciplined</td>
<td>Risk takers</td>
</tr>
</tbody>
</table>

**Clarifiers need**
- Order
- The facts and history
- Access to information
- To ask questions

**Ideators need**
- Room to be playful
- Constant stimulation
- Variety and change
- The big picture

**Developers need**
- Time to consider the options
- Time to evaluate and to develop ideas

**Implementers need**
- The sense that others are moving just as quickly
- Timely responses to their ideas

**Clarifiers annoy others by**
- Asking too many questions
- Pointing out obstacles
- Identifying areas that have not been well thought out
- Overloading people with information
- Being too realistic

**Ideators annoy others by**
- Drawing attention to themselves
- Being impatient when others don’t get their ideas
- Offering ideas that are too off the wall
- Being too abstract
- Not sticking to one idea

**Developers annoy others by**
- Being too nit-picky
- Finding flaws in others’ ideas
- Getting locked into one approach
- Being too critical

**Implementers annoy others by**
- Being too pushy
- Readily expressing their frustration when others do not move as quickly
- Overselling their ideas
- Showing impatience in regard to group process.

Table 3.1 provides an overview of the *FourSight* preferences used to reference the *FourSight* profiles of the team members who completed the measure.

**Summary**

Chapter Three provided a detailed account of the methodology for the collection of data in this exploratory study. The methodology used to generate and collect data was presented. An overview of *FourSight* preferences was also made available for the reader to reference in the analysis of data collected and discussed in the Chapter Four.
Chapter Four: Findings

The purpose of this study was to explore *FourSight* preferences of ice hockey players, identifying if and how these preferences translate into on ice performance. Upon evaluation of the *FourSight* measurement results and analysis, a discussion will follow as to whether a dominant profile is evident by position of play.

Following the administration of the *FourSight* measure, two single high profile players were identified. The two identified research participants both competed at the same ice hockey position. The researcher’s observations of the player’s on ice performance from the last seven games of the season will be presented. Additionally the head coach’s interpretation of game video clips for these two players is discussed. The final piece of triangulated data was collected from interviews held by the researcher with the two identified single high preference profile players.

**Team *FourSight* Profiles**

Ackerbauer (2008) stated, “Although the *FourSight* profile does not predict performance, it does provide awareness of how teams would otherwise prefer to perform, if given the appropriate environment” (p. 23).

There were 18 players of this ice hockey team who completed the *FourSight* measure. Table 4.1 provides a summary of the high preferences identified through this self-report measure of creativity preferences. Please note that in some cases, a player had more than one high preference. Some of the player profiles were comprised of two, three or four *FourSight* preferences. These *FourSight* names are explained in the
*FourSight* manual based on the combination of preferences that make up each profile.

In Table 4.1, the high profile preferences are presented along with the position of play for each research participant who completed the *FourSight* measure.

Table 4.1  
*FourSight Preference for All Research Participants*

<table>
<thead>
<tr>
<th>Position</th>
<th>Profile Preference</th>
<th><em>FourSight</em> Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>forward</td>
<td>clarifier/ideator</td>
<td>Early Bird</td>
</tr>
<tr>
<td>forward</td>
<td>clarifier/ideator/developer</td>
<td>Hare</td>
</tr>
<tr>
<td>forward</td>
<td>developer/implementer</td>
<td>Finisher</td>
</tr>
<tr>
<td>forward</td>
<td>ideator</td>
<td>Ideator</td>
</tr>
<tr>
<td>forward</td>
<td>ideator</td>
<td>Ideator</td>
</tr>
<tr>
<td>forward</td>
<td>ideator/developer</td>
<td>Theorist</td>
</tr>
<tr>
<td>forward</td>
<td>ideator/implementer</td>
<td>Driver</td>
</tr>
<tr>
<td>forward</td>
<td>clarifier/developer</td>
<td>Analyst</td>
</tr>
<tr>
<td>forward</td>
<td>clarifier/implementer</td>
<td>Accelerator</td>
</tr>
<tr>
<td>forward</td>
<td>implementer</td>
<td>Implementer</td>
</tr>
<tr>
<td>goalie</td>
<td>clarifier/implementer</td>
<td>Accelerator</td>
</tr>
<tr>
<td>goalie</td>
<td>ideator/implementer</td>
<td>Driver</td>
</tr>
<tr>
<td>goalie</td>
<td>integrator</td>
<td>Integrator</td>
</tr>
<tr>
<td>defense</td>
<td>clarifier/implementer</td>
<td>Accelerator</td>
</tr>
<tr>
<td>defense</td>
<td>developer</td>
<td>Developer</td>
</tr>
<tr>
<td>defense</td>
<td>implementer</td>
<td>Implementer</td>
</tr>
<tr>
<td>defense</td>
<td>implementer</td>
<td>Implementer</td>
</tr>
<tr>
<td>defense</td>
<td>integrator</td>
<td>Integrator</td>
</tr>
</tbody>
</table>

In Table 4.1 two Integrators were identified among the team indicating 11% of the sample. An Integrator has no individual high or low *FourSight* profile preferences taking a very even approach to breakthrough thinking. Given their flexibility, Integrators can be very good team players easily working with others who have different profiles.
Integrators must therefore be cautious of others’ strong profile preferences and not merely follow their teammates lead.

Two-way high preference combinations were identified in 50% of the research sample with 22% of the two-way combination players also possessing two-way low preference profiles. The scores of the all the other players (minus the Integrators) had only a single low profile preference. The low profile preference indicates the activities that an individual may skip, shortchange or avoid during breakthrough thinking. In addition 6% of the team showed a three-way combination and 33% were identified as single high preference profile players.

Figure 4.1. *Foursight* Preference Combinations by Ice Hockey Position

<table>
<thead>
<tr>
<th></th>
<th>Forward</th>
<th>Defense</th>
<th>Goalie</th>
</tr>
</thead>
<tbody>
<tr>
<td>single</td>
<td>3</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>2-way</td>
<td>6</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>3-way</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Integrator</td>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>
In Figure 4.1 the high preference profile of the forwards on this team indicated 60% of the players had a two-way profile, 30% had a single high preference and 10% three-way profile. On defense 60% of the players had a single high profile and 20% each had both two-way and four-way profiles. One goalie showed an Integrator profile, while the other goalie showed a two-way profile.

Although the sample size is small in this exploratory study, it is noted that there was no Integrator among the forwards but identified in each of the more defensive positions on the ice hockey team. The only three-way player was a forward. The forwards had 50% more two-way profiled players than single high preference players, whereas the defense had 60% of their players with single high preference. In relation to the rest of the team the goalies had multiple preferences in their profiles.

**Figure 4.2. FourSight High and Low Preferences for all Research Participants**

<table>
<thead>
<tr>
<th>Research Participants N=18</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of players</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Clarifier</td>
</tr>
<tr>
<td>High Profile</td>
</tr>
<tr>
<td>Low profile</td>
</tr>
</tbody>
</table>
In Figure 4.2 the high preference profiles for the team as a whole, were 50% Implementer followed by 39% Ideator and 33% Clarifier. The most common low preference was 44% Developer. Interestingly the Developer high preference was found the least number of times on this team profile at 28%. Appreciating the Developers and those with Developer preferences would need further exploration to understand how best to leverage these players on this ice hockey team.

In Figure 4.3 the goalies had one Integrator preference. The Implementer high profile was evident in 67% of the research goalies and Developer was found the low preference profile with 67%. In this research sample it is evident that the Developer’s need to weigh the options may not be a necessary preference required to compete in the goalie position. During a game the goalie may not have time to consider the options, evaluate or develop ideas. It is also noted that the Implementer preference
was found in both goalies, indicating their constant striving to take action on ideas and seeing tangible outcomes from their decisions. Further exploration into the goalie position and the *FourSight* preferences is warranted, as the sample size is so small and may not represent the preferences of individuals who play this position.

*Figure 4.4.* Forward High and Low *FourSight* Preferences

![Forward High and Low FourSight Preferences](image)

*Figure 4.4.* summarizes the results for preferences among those individuals who played offense. Among the offensive players, 60% had a high Ideator preference in their profile. Developer and Clarifier, each at 30% were identified as the highest number of low preferences, This *FourSight* profile would indicate that more of the forwards than any other hockey position tend to be playful imaginative, adaptable, flexible, adventurous and independent playing their position. Ideator preference lends itself to
the offensive play of the forward position in that many different plays need to be
executed to get past the opposition’s defense and score the goal.

Figure 4.5 identifies the preferences for the defensive players on this hockey

![Bar chart showing defense preferences]

Figure 4.5 identifies the preferences for the defensive players on this hockey
team. In contrast to the offensive players shown in Figure 4.4, those who play defense
show greater preference for the Implementer orientation, than for the Ideator preference
(which was the case for forwards). Unlike the forwards, it is interesting to note that there
were no defensemen with a high Ideator preference. On defense, 60% of the players
had a single high profile and 20% each had both two-way and four-way profiles. The
defense on this team had three single high preference players, two Implementers and
one Developer. This information could be helpful in preparing the defensive pairings
needed in different game situations (power plays, penalty kills, etc.). In Figure 4.5, the
Implementer high profile preference was found in 60% of the defensemen. The low profile preference of the defensemen was at 60% Developer. With one high profile Developer on defense, there are indications that the rest of the defensemen would need to learn to understand how this preference affects interactions with others, perceptions, stress-levels and decision making to best leverage this preference and all other single high profiles. It is noted that no Clarifier low preference was found in this position.

**High Profile Players on the Ice**

Perhaps the obvious is stated in referring to hockey as a game of speed. It is however, important to acknowledge this fact in discussing the on ice performance of the research participants, to remind the reader of the level of expertise of these players. This ice hockey team as a whole was scouted by college and professional hockey organizations with some of the players being recruited by both. In many cases, small incremental differences in player performance make the difference in moving on to the next level of play.

A final point before continuing with the discussion is a reminder of the flow of the sport of hockey. As with basketball and soccer, ice hockey is a horizontal game requiring movement on the ice to go from player A–B-C-D-A etc. These games require the players to play together, pass the puck and flow as a unit. They also change from offense to defense continuously (Miller, 2009). Football is a game directed from the top of a pyramid with a clear understanding of the roles and responsibilities to successfully execute a plan. Games like baseball are considered a team sport of solo performances.
Understanding these facts assists the reader in comprehending the environment in which the research subjects are competing.

**Research Participant: Developer**

*FourSight* Developer Traits

The first high profile player identified was a Developer playing defense.

Developers, as stated in the *FourSight* manual,

like to spend time analyzing potential solutions, breaking them apart and examining their strengths and weaknesses. They delight in transforming a rough idea into a finely crafted solution and thinking through the steps necessary to implement an idea. In their eagerness to analyze compare and weigh competing solutions, developers may get stuck trying to come up with the “perfect” solution.

(p. 7)

*FourSight* Developers

- Enjoys putting together workable solutions
- Enjoys thinking about and planning the steps to implement an idea
- Enjoys analyzing and comparing potential solutions
- Likes to examine the pluses and minuses of an idea
- May get stuck in developing the perfect solution
- Developers are... reflective, cautious, pragmatic, structured, planning-oriented
- Developers need... time to consider options, time to evaluate, time to develop their ideas
Thinkers annoy others by... being too nitpicky, finding flaws in others’ ideas, spontaneously seeing the shortcomings in an idea, getting locked into one approach. (p. 7)

Puccio, et al. (2007) characterize Developers in the following paragraph:

Developers enjoy refining ideas. They are energized by the kind of thinking required to analyze and critique ideas. Developers may not generate a lot of ideas, but they are good at selecting ideas that can become highly workable and practical. Individuals who are Developers tinker with ideas. They enjoy crafting and polishing ideas. The potential downside to this preference is that Developers may sometimes become preoccupied with perfection and not willing to push an idea forward because they feel it can be improved. (p. 217)

Developer Game Play Observations

In game one, this research participant seemed to look calmer on the ice and slower to react in front of his net when compared to his teammates. He would observe the play and then “fly” to where the puck was going. In my field notes, I observed that perhaps he needed to be moving sooner to make it easier for him to get to where he needed to be. He tended to stay back further while in his zone but always looked for the play to be set up. He did go to where he was needed when time allowed, however, he seemed to wait longer than the other defensemen on the team. As a defenseman, this subject did play his position and looked as if he did what he should be doing while other defenseman were making errors.
This player looked and moved to where the puck could /should go, anticipated the play well and saw the ice well. He is a very efficient skater and played well under pressure. He had excellent speed with puck possession processing control in his skating. He did not let the opposition players know what he was doing. In the final minutes of the game, this defenseman glanced over to the bench for instructions on the 6 on 5 play as the opponents tried to tie the game. He glanced over again to check with the coach prior to the final puck drop.

In game two, the research participant again played very controlled under pressure always looking down ice. He sees the ice well. I commented in this game that I could understand why some observers of the game would think this player was not always using his speed and looked “lost out there”. In game three, it seemed as if this player slowed down the pace of the game when he was on the ice. He is skilled and it was evident in this game. He was able to get to where he needed to be or anticipate the shot/play. He used his speed to get to where he needed to be.

In game four, the team as a whole played a very undisciplined game. There was very little pressure put on the Developer by the opposing team. He did however, give and receive passes, and take shots in a timely and appropriate manner.

Game five was a highly charged, well-attended game with a completely different atmosphere in the rink. The Developer played with great confidence and changed up his speed well. Although still watching the play, he stepped up more instinctively making wiser and more appropriate decisions in his shot selection and placement. In game six however, I noticed this player needed to take a chance on the power play and step up
instead of waiting for someone else to initiate the play. In this game he played back in his defensive zone, not stepping up or taking a chance when he could or should.

**Coach’s Video Clip Interview**

A scheduled meeting was held with the head coach in his office. He had chosen and cued up at least three video clips of each of the two high profile players used in this FourSight exploratory. The coach was unaware of the subject’s FourSight profiles. In both descriptions of the player’s on ice performance, the coach added comments about the player’s conversational abilities without prompting from the researcher. This led me to believe that this was a common piece of information shared amongst recruiters and scouts for hockey teams.

The following is a summary of the coach’s comments made explaining the play of the Developer defenseman.

The Developer doesn’t move enough, he floats around waiting for play to develop. He is better skilled than many of the players on the team. However, he looks very casual, sits back and looks as if he is drifting out there. His play is very unpredictable; he is there but no one knows what he is going to do. He looks almost lost.

The video supported these comments indicating that even the developer’s body position gave no indication as to what he was going to do. The coach stated how extremely skilled this player is, yet it was frustrating to watch him play. The coach added that this player may be unduly "shell-shocked" by his parent's high expectations for their son's hockey performance, as he was not as strong academically as other players. In
off-ice conversations the coach felt that” this player seemed to ramble all over the place” and found it difficult to get a solid conversation out of him.

**Developer Personal Interview**

In recounting the interviews, every attempt was made to use the player’s words in the answers he provided.

The Developer defenseman had previously played as a hockey forward. He preferred playing that position because "of the freedom to move." He enjoyed "going faster and felt the forward position was “not as dirty as defense with all its hitting and slashing, carrying the burden of physical play.” He felt as a defenseeman, "you have to hold back, not just go."

The Developer approached a challenge by “making a plan and following it.” When on the spot, requiring an immediate response, this research participant pursued his first natural instinct but preferred to have a plan to follow. In relation to his hockey play he “relies on natural instinct and what he has been trained to do in practice” however, "he prefers to have a plan… likes to think of where he needs to be and how to fill a spot."

The following responses were specific to the *FourSight* Developer profile characteristics. In each case, the adjective was filled in the blank in the following statement.

“Can you give me an example of being *(adjective below)* while practicing or playing your position?”
Reflective – The Developer does think about his hockey IQ and how well he skates based on off-ice training, always looking for what he can do better.

Pragmatic – This research participant did not know the meaning of the word, however in the previous responses you can notice a practical, matter of fact, realistic response to how he interprets playing the game. You are trained; you think about it, have a plan and go to where you need to be. (Later you will notice this player prefers coaches who coach to win and are not necessarily the nice guy giving everyone a chance but playing the players that will win in that situation).

Structured – Prior to any game this player felt he “spent time getting mentally, physically and psychologically prepared for his own game.” He felt the need for coaches to provide information on how to best play the other team but his personal preparation was up to him as a player.

Planning oriented – The Developer felt he changed his play especially between periods if things weren’t working as planned in the game plan. He did find himself observing play of opposing players’ play but "a conscious plan was already in his head about how to get into the corners without thinking and using an intuitive response."

The next three questions discuss needs or likes of the FourSight Developer profile.

Do you need or like time to consider your options? “It is trouble when you have too many options; it is better to work with one decision and get in a rhythm don’t think too much about it.”
Do you need or like time to evaluate? “I’d prefer a little more time to evaluate solutions as a player; it is good to take time on the bench between shifts, watch what’s happening on the ice especially if I'm not being effective.”

Do you need or like time to develop ideas? “Not during a game. I don’t like to take too much time to think about it, it is good to do with your defensive partner after the game during practice. I like to take the initiative to start working on improving our plays.”

In answering whether he feels he is too nitpicky, the Developer responded “yes” he can be, especially “if kids aren't trying hard enough or have a careless attitude on the ice.” He comments, "I like things tightly strung together." When discussing whether he notices himself getting locked into one way of doing things. He affirms “Well I'll try things, but if it isn't working for me I go back to doing what I want to because I think it works for me.” When asked whether he spontaneously see shortcomings of an idea. The Developer responded very quickly and decisively, “Yep definitely!”

When asked to explain his relationship with different hockey coaches the Developer responded saying he likes “competitive aggressive coaches, in it to win it, with no judgment; will put you in to win the game, have no attitude issues, and promotes kids who are hard workers.” When asked which players he got along with from the previous year’s team. He indicated a goalie Accelerator (High Clarifier and High Implementer), a forward Accelerator (High Clarifier and High Implementer), a forward Implementer, a forward Ideator and a defensemen Accelerator (High Clarifier and High Implementer). As for the players this Developer defenseman had difficulty with on this past year’s team, he indicated: a Hare forward (High Clarifier, High Ideator and High
Developer), an Analyst forward (High Clarifier and High Developer), an Implementer forward and defensemen, and two Theorist (High Ideator and High Developer) forwards.

**Developer Data Triangulation**

It is evident that the Developer defenseman relies on his Developer traits to play his best game. One of the *FourSight* Developer traits most obvious in the previous analysis is to take time to evaluate and analyze potential solutions. Observations of game one specify how the developer takes his time to evaluate the game play and then utilizing his speed and skill get to where he needs to be to play effectively. The researcher’s observations reflect this throughout all the games observed. The player’s on-ice performance indicates that he took time to observe not only his opponent’s play, but that of his teammates. The player’s incredible skill and speed allowed him to follow through as an effective player. His league statistics identified that he was the highest goal scoring defenseman placing him in the top five total team point leaders for the season evaluated.

The coach however, viewed the need to evaluate and analyze as a negative characteristic, evident in his comment about the player’s performance frustrating the coach. This was evident in comments such as (this defenseman) “floats around waiting”, “looks almost lost” and “sits back looking as if he is drifting.” The player himself comments that as a defenseman “you have to hold back and not just go.” The Developer also stated that he would prefer more time to evaluate solutions as a player and that he attempts to utilize the time on the bench between shifts especially if he had not played effectively.
The Developer defenseman was also good at selecting ideas that become highly workable and practical. In game two others may have considered this player lost on the ice, however he played very controlled under pressure seeing the ice well and had an assist. During the undisciplined team play in game four this player continued to give and receive passes in a timely unselfish manner and was rewarded with another assist. Game five proved the best support for evidence of this Developer trait. As noted, the subject made wiser and more appropriate decisions on his shot selection and placement and was rewarded with a goal.

The coach commented that he never knew what this player was going to do during his play and I would suggest that the opposition did not know either. The player himself discusses his approach to challenges in his hockey performance in a practical, matter of fact, realistic response: “You are trained, you think about it, have a plan and go to where you need to be.” This defenseman also believes he relies on natural instinct and what he has been trained to do during practice however he prefers to have a plan and “to think about where he needs to be to fill a spot.”

Another trait evident in this research participant’s profile is cautiousness. In game one an observation reflecting this was made by the researcher at the end of the game one. Being in a 5 on 6 situation, with the opponents trying to tie the game and force overtime, the Developer was seen watching the bench for instruction. He again noticeably glanced over at the coach just prior to the final puck drop for any additional direction. Once again the coach’s categorizing this player as “looking lost” may indicate the cautious nature of the player.
Overall this Developer defenseman’s cautious nature is evident in his preference to follow the game plan and not experiment outside of it. He preferred to have “things tightly strung together and acknowledged that he would try different approaches indicating that he would ultimately return to what worked best for him. Remembering the hockey skills this player processes, these examples would indicate a cautious nature more than an insecurity or inability to perform on the ice.

**Research Participant: Implementer**

*FourSight Implementer Traits*

The second High profile player identified in this exploratory study was an Implementer. The *FourSight* Manual states the following about Implementers:

Implementers strive constantly to take action on ideas. They derive the most energy from bringing ideas to fruition and seeing tangible outcomes. Implementers like to get thing accomplished and are constantly concerned about getting the next idea to the implementation stage. In their urgency to get the job done, Implementers may get impatient and leap to action too quickly. (p.7)

*FourSight* Implementers

- Likes to see things happen
- Enjoys giving structure to ideas so they can become a reality
- Enjoys seeing ideas come to fruition
• Likes to focus on ideas and solutions they feel are workable
• Likes the ‘Nike’ approach to problem solving (i.e. “Just do it”)
• May leap to action too quickly
• Implementers are... persistent, decisive, determined, assertive, action oriented
• Implementers need to... feel that others are moving just as quickly, have control, receive timely responses to their ideas
• Implementers annoy others by... being too pushy, expressing their frustration readily when others do not move as quickly as they do, overselling their ideas (p.7)

Additionally Puccio, et al., (2007) further describe Implementers in the following manner:

High Implementers have little patience for deliberate creative process methodologies... They like to see things happen. They are action oriented and therefore may be quick to express impatience with deliberate process. Implementers move quickly from concept to reality. Their ideas have little chance of growing any moss. They take great pride in seeing their ideas come to fruition. Although Implementers are adept at getting things done, the potential risk they run is rushing too quickly to action and thus implementing ideas that are not fully developed. (p. 217)
Implementer Gameplay Observation

In game one, the Implementer defensemen seemed more selfish with the puck. He moved first than looked for teammates. His play “pushed the envelope” to find a way to move up the ice. As a defenseman, he played more offensively than necessary in this game. He did play with skill, defending his net by making a crucial save on the goalie was taken out of the play. In game two no notes were taken on the Implementers’ play.

In game three, his zealousness to take the puck down the ice proved inappropriate. He moves well backward down the ice and as a defenseman, he is very aware of the full ice. He talked to other teammate players on the ice during play to let them know where he was. As the game progressed, his play was more controlled and less volatile allowing for better responses to situations that developed on the ice. His control over his impulsive play allowed him to better play the defensive position. While skating backwards he attempted a poke check on an opposition player, a skill usually completed by a goalie. In my field notes, I noted that this implementer defenseman seemed to play better when paired with particular defensemen.

As stated previously, game four was a very poorly played game in which the team looked as if “they just fell apart.” The Implementer did not look for other players even when they were available for play, indicating his priority was to take the shot himself. In one play, the defenseman took the puck into four opposing players to take the shot. He was ready to jump ahead of the play and wait in front of the opposition goalie more as an offensive than defensive player. He seemed more anxious to move and get skating. He also seemed rushed in taking shots even though he was not pressured by the opponents. He seemed totally oblivious to the pace of the game,
showboating, not playing as a team member but as an individual. This player seemed persistent, determined or selfish in his attempts to score goals. After the first period, he played much better defensively.

In game five, the Implementer played a smarter, less erratic game than the previous one. He played the defensive position with better control and noticeable improvement in team play. He was less selfish and passed the puck more, but did chase after the puck when lines were changing. He covered well for his goalie on several occasions during this game. In game six, the Implementer seemed to be taking chances he didn't need to. His shots on net were rushed and good opportunities to score were wasted. Here again play was more offensive than defensive.

Game seven was played without the Developer (i.e., other research participant). Although the game began with very fast play from both teams, the defense could not keep the opposition’s top players “out of the crease.” The Implementer played his position as he was supposed to until after the opponents scored the third goal. That goal was caused by the Implementer’s defensive partner and frustrated the Implementer. The Implementer’s skating became very labored as if he was pushing himself. After this goal, the Implementer began playing more independently and as an individual.
Coach’s Video Clip Interview

The first observation made by the coach about the Implementer’s video clip indicated, “this player moves way too much.” He is a very strong player physically looking to jump up often into the play and in some cases too quickly. This player’s knee bend and body direction indicated his readiness to move before he was aware of where he needed to go. He moves too quickly for the rest of the team, often leaving his defensive partner back in the zone. The player’s athleticism is “part due to his DNA and part due to early hockey training.” It was the uncorrected early skill training which caused the implementer’s body looked physically tighter, tucked in with muscles tenser than they need to be. This player was needed on this year’s team and he received more ice time than the coaching staff would have liked to give him in terms of his level of development. Additionally, the Implementer lacked the puck control needed to jump up and be an offensive defenseman.

To improve his skills, the coach felt this player needed to learn to observe other more skilled players with similar statured (smaller framed) elite players to copy what they do and how they do it. It was felt that this player needed retraining to make smarter moves at the correct time. This player is a very intelligent individual and can carry a very intelligent, conversation with any adult. He is academically smart and as a prep school hockey player “he gets what he is here for.” As an aside; many prep school players are scouted and encouraged to attend these programs, to better their opportunity for participation at higher, more elite levels of hockey in the future.
Implementer Personal Interview

In his response to approaching any challenge, the Implementer defenseman feels he looks at the information given for the situation and gages what needs to be done. In school he stated he would use outside resources to get the additional information he needed. In response to how he relates his approach to playing hockey, the implementer stated, “I like to think my way around.”

The Implementer defensemen had also previously played as a forward. He preferred to play defense from an offensive perspective. He stated “I like to get into the rush; offense is the first thought that comes to me even when I am on defense”.

The following responses were specific to the FourSight Implementer profile characteristics. In each case, the adjective was filled in the blank in the following statement. “Can you give me an example of being (adjective below) while practicing or playing your position?”

Persistent - The research participant responded that he “won't give up battle” and works hard to get the job done.

Decisive – The Implementer felt he was sometimes decisive but “doesn't want to do too much over thinking.”

Determined- This player believes he is determined because he always wants to win and “will go 100% into game” from a practice because there is “only so much time between them.”

Assertive – The Implementer believes he is sometimes assertive during game play, but much of his action depends on the play of the opposing team. He felt he tried
not to jump up into the play when his team’s better players were on the ice to play their positions.

*Action oriented* – In terms of this player being action oriented, he indicated that he would step up to help in team leadership, but was very much aware of the older more experienced players as leaders on his team. He also commented that during practice, especially when new drills were introduced, he would watch to learn the drill first and “once I get the hang of it I'm okay.”

Discussing how he felt about the need to have others moving as quickly as he does the Implementer said he felt comfortable and confident when his teammates were able to keep up the pace. He would feel frustration when someone is left behind or could not keep up. The Implementer did like to get timely responses to his ideas. He wanted to know immediately how to improve his play, while it is fresh, not after the game. In responding to the need for control over the situation and himself, he emphatically and quickly responded yes.

When asked about being too pushy the player indicated that he did not feel he was pushy as he was usually the last to get into a conflict. In his response to specifically expressing frustration when others do not move as quickly as he does, the Implementer indicated how he would respond to feeling frustrated. He responded by saying that he would try to help the other player with an explanation and suggestions on how to handle the situation. The Implementer did not feel he tried to oversell his ideas on the ice.

With respect to different hockey coaches the implementer did not like immediate negative responses from them. He preferred to get information about how to work on
the areas that needed improvement. He felt that he would then be able to work hard at
the following practice to improve his play, as he” likes to have it right.”

In discussing teammates from last year’s team, the Implementer stated he got
along well with the Theorist (High Ideator and High Developer) forward and the Hare
(High Clarifier, High Ideator and High Developer) forward. The Implementer indicated
high respect for both of these players and enjoyed them as teammates and friends. The
only player that caused him difficulty was the Accelerator (High Clarifier and High
Implementer) forward and the Implementer defenseman was very quick to name this
player. These were the only players named by the Implementer defensemen.

**Implementer Data Triangulation**

The first *FourSight* Implementer trait most evident for this player is his need to be
action oriented and penchant for see things happen. In game three, it was noted that
this player’s zealousness was inappropriate for the play at the time. In game four, this
player seemed very anxious to move and skate, seeming rushed in taking shots even
when not pressured by the opposition. The coached illustrated how this player moves
“way too much”, jumps up into the play too often and in many cases too quickly. The
Implementer stated that he approaches his game from the offensive perspective
enjoying getting into the rush and thinks offensively even when he is playing defense.

This research subject also showed his preference for the “Nike” or “just do it”
approach to problem solving. In game four, the Implementer ignored other players
available for play, at one point taking the puck into four opposing players to take the
shot. It was evident in all of the games, that especially when the game plan broke
down, this Implementer took it upon himself to play more independently, and selfishly controlling the puck.

The coach noted that the style of play for this defenseman was “in his DNA” and that he had been trained from a young age to play this way. The Implementer however, lacked the puck control needed to jump up and play offensively. The coach felt that this individual could benefit from retraining to make smarter moves at the correct time.

Interestingly, this defenseman commented that his approach to playing hockey is to think his way around (as opposed to making a plan first) and does not want to do too much over thinking. The “Nike approach” was also evident in the Implementer’s overall responses to the interview. The researcher noticed how quickly, decisively and to the point he was with his answers. He was also concise with his response to teammates whom he got along with and whom he did not.

A very obvious FourSight Implementer trait observed in this player was his tendency to leap into action too quickly. In game one the researcher’s field notes highlighted the fact that the Implementer’s movement prior to looking for his teammates. Although he improved his play in game three, by game four he seemed totally oblivious to the pace of the game, showboating and often jumping ahead of the play. During game six, he took chances he did not need to and wasted good scoring opportunities due to rushing the shot. In game seven, with his team down three goals the Implementer persisted to the point that his body began reacting to his labored but ineffective play. The researcher noticed a physical response to his high-energy expenditure.
The coach pointed out in every one of the Implementer’s video clips that his body position and bend in his knees indicated his readiness to move before he was aware of the direction he needed to go. This posture frequently caused him to move too quickly for his teammates and left his defensive partner back in the defensive zone.

The player himself became frustrated when any of his teammates were left behind and liked to get into the rush of the play. Again we are reminded that this player indicates that the first thought that comes to him in anticipation of a play is offense even when he is playing defense.

Summary

Chapter Four presented the results of the triangulated qualitative data collected for this exploratory study using FourSight: The Breakthrough Thinking Profile. A discussion of the dominant FourSight profiles identified among the research participants led to an evaluation of high and low preference profiles among players by ice hockey positions.

Two single high profile players were identified. The researcher’s observations of these player’s on ice performance was presented. Additionally the head coach’s interpretation of game video clips observed for these two players were presented. Thirdly the interviews of the two identified research participants provided information on how they each viewed their own hockey performance. The data collected was used to explore whether there were any correlations between the FourSight cognitive profiles identified and the on-ice performance of the research subjects. Chapter Five will discuss the results and implications of the data collected.
Chapter Five: Discussion, Implications and Recommendations

The purpose of this chapter is to explore the meaning of the results presented in the previous chapter. The specific questions addressed by this study were:

- Do creative process preferences exist among ice hockey players?
- Is there a dominant profile evident by position of play?
- In what ways do creativity preferences translate into on ice behavior?

These findings will highlight implications for the field of deliberate creativity and the fields of sport psychology and athletic expertise. Limitations of this study’s methodology and procedure will be reviewed. Finally, recommendations are offered for future research studies focused on assessing the interaction between FourSight profiling and on ice performance of ice hockey players.

Interpretation of the Research Outcomes

“People achieve success by recognizing and capitalizing on their strengths and by recognizing and either correcting or compensating for their weaknesses.”


Do creative process preferences exist among ice hockey players?

It is established that the FourSight measure does identify creative process preferences. In administering this measure to a preparatory male varsity ice hockey
team, a team profile provides evidence that creative process preferences do exist among them. Data collected for this particular team indicates that the Implementer preference is found in 50% the team followed by 39% Ideator and 33% Developer preference.

**Is there a dominant profile evident by position of play?**

It would be premature to draw any conclusions about dominant profiles among positions for hockey players; however, there were some interesting profile results found on this team. At the goalie position there were no Developer preferences found among the players either in combination or single high preference profiles.

At the forward position 60% of the players possessed high Ideator preferences with all the other high preferences at 30%. The single high preference profile was evident in 30% of the forwards with 66% of those players as Ideators. The forwards also had the highest number of 2-way profile players on the team.

The defense on the other hand, had 60% single high preference profile players in their ranks with a 60% Implementer high preference profiles. The only Developer found on this team was a defenseman.

Lastly there was no single high preference Clarifier orientation found on this team.

**In what ways do creativity preferences translate into on ice behavior?**

The Developer defenseman may have so many ideas in his head that it is difficult to formulate them into solutions which the coach perceives as suitable. This seemed to be the situation in off-ice conversations as the coach noted. On the ice this
player’s actions were observed as evaluative prior to movement, in some cases needing to initiate the movement sooner. From the coach’s perspective this player sits back, floats around, doesn’t move enough and is unpredictable in his actions. This Developer may benefit from being part of the process of constructing effective plays as opposed to just being told what to do. The coaching staff and the defensemen would then be more aware of what the Developer is thinking about, or looking for in the play. This player has skill and speed and although he frustrates his coaches as to what he is doing on the ice, he also confuses his opponents. Perhaps the Developer, his defensive pairs and coach can work together to inform each other during practices, as to what he is thinking and doing on the ice. This practice would definitely require a coach who is willing to try this approach with all *FourSight* Developer players. Working on skills that enhance ideation and implementation would also allow Developer players to strengthen their weaker traits thereby improving their on ice performance.

Both the researcher and the coach had similar observations about the Implementer’s on ice play. This player is a physically skilled individual however in analyzing the game play, it was evident that he wanted to get the puck and score all on his own. His play indicated that he felt he was capable of playing as an offensive defenseman, even though the coaching staff felt he needed some skill retraining to accomplish this goal. The physicality of defense requires the traits of *FourSight* Implementer and this player felt that his play showed persistence and determination. His response to being assertive, action oriented and decisive was evident in his play more than he himself thought about these qualities. His interview responses indicated that the Implementer traits were areas he was working on for the development of leadership
skills. The Implementer’s overzealous response to puck movement and play initiation indicated that he needed to work on team play and incorporating his strengths appropriately into the game. When the game play was not going as planned, this player felt frustrated in not getting immediate feedback during the game. This defenseman did play persistently and assertively in the determined and decisive manner; very much action oriented even if what he was doing on the ice was not working. There were, however, moments of brilliant play when he played the defensive position as it should be played. There was no doubt this player wanted tangible results from his on ice performance. He often used the ‘Nike’ approach as a solution to on ice problems. This player felt he was doing what needed to be done, with little patience for other players and coaching strategies.

In the Implementer’s case, it would perhaps be beneficial to break down his thinking process to understand how other player’s strengths and weaknesses work with his. It is believed that this player views his weaknesses as strengths in team play. On and off-ice drills, both sport specific and general problem-solving exercises, would benefit this player. Understanding his true strengths and true weaknesses would lead to the physical retraining he needs to advance his play. This Implementer defenseman’s play would only be able to change if he understood how he was playing now and where he needed to modify his perspective of his on ice performance. It would be very important for one of the coaching staff to be aware of and make the effort to give both positive and constructive comments to this player during his play, not just in post game conferences.
FourSight Implications of Team Dynamics

Ackerbauer (2008) stated, “Although the FourSight profile does not predict performance, it does provide awareness of how teams would otherwise prefer to perform, if given the appropriate environment” (p. 23).

It was easy for both the Developer and the Implementer to name who they liked and got along with on the team and whom they did not. The research participants personal preference profile was not found in the like category for either of the two participants…meaning the Developer preferred teammates that did not have Developer in their profile and the Implementer favored teammates that did not have the Implementer evident in their profiles.

The same strong (not High profile) preference in the player preference profile was evident the least liked players on the team. This indicates a preference for heterogeneous group dynamics by both research participants, as evidenced by each of their preferences for playing with heterogeneous teammates not homogeneous team members.

The importance of the Developer defenseman became apparent in game seven when he was excluded from the lineup of the game. Without the Developer, the defense did not have the depth or control of the game needed to be competitive. The researcher suggested that the Developer and his style of play were clearly missing in this game. Not only was his hockey skill noticeable absent, but his ability to slow down the play, confuse the opponents and set up good team play. The defensive pairings had to be changed as well, as there was no substitute for the missing Developer defenseman. The Developer’s profile traits may have changed the outcome of this game.
As mentioned in the game play observations of the Implementer, he played much better when paired with specific defenseman. This would be largely impacted when the pairings where changed. The researcher would posit that knowing which players fit the Implementer’s FourSight profile would make the choice of pairing players more productive and easier to adjust to.

**Limitations of the Study**

This study was limited by sample size and the fact that not all team members completed the measure. As an exploratory study, the limited number of research participants makes it impossible to generalize the results regarding the link between FourSight preferences and players’ positions and whether FourSight preferences are truly indicative of a players’ on ice performance. Larger samples would be especially useful in studying the degree to which Ideator preferences are truly more prevalent among forwards and whether Implementer preferences are more typical of defensemen.

Although appropriate for the further development of expertise in this team sport, further study of positional profiling should be compiled from teams at higher levels of play such as college, junior and professional ranks. Additionally, observations of profiled players’ on ice performance should be collected with attempts made to use more sophisticated sport analysis video. The on ice game performance could also benefit from analysis by panel experts in the field of ice hockey. In discussing the individual single high preference profiled players, it may be enlightening to have the players discuss their own on ice performance without the use of a questionnaire which highlights the traits of their personal FourSight profile. Another limitation was the
prompting or deductive approach applied in the interview process as opposed to an inductive approach.

Future Implications

Expanding this research can affect the field of deliberate creativity by discovering if and how creativity training can benefit athletes and athletic teams in their winning pursuits. Understanding athletic cognitive preference may assist the field of sport psychology with psychological preparation of athletes prior to performance. Understanding cognitive preference profiling allows athletes to leverage their preferences. Therefore deliberate creativity training may be used to further the study of athletic expertise. The development of sport specific and profile specific drills may allow for leveraging of cognitive preferences as well, as integration of all profiles to benefit the team.

Additional work with the FourSight measure could be carried out with hockey coaches to analyze their coaching style and discover whether their cognitive profiling is evident in player selection for their teams. We are reminded that hockey players are drafted and acquired by teams because they fit the criteria the particular team is looking for athletically, physically and mentally. However, the most physically trained and skilled group of athletes may not work together as a winning team. The opportunity to develop and understand how a particular group of players interact allows for further insight into how these players worked as a team. Initially developed as identification for creative preference, FourSight: The Breakthrough Thinking Profile has been successfully used as a cognitive profile for identifying the characteristics of teams. This exploratory study
applied the *FourSight* measure in the field of athletics and team sports where it had not been employed previously. The data indicates that *FourSight* preferences do transfer to on ice performance of the two high profile players.

Identifying profiles will assist coaches and players in further understanding how and why players play the way, they do from a cognitive perspective. Coaches can further recognize and leverage the strengths and areas of improvement needed to understand how players think they are playing.

*FourSight* preferences were developed from responses to CPS training. CPS training enhances creativity which involves critical thinking. Critical thinking is important in game play decisions in sports. Critical thinking is further developed with the CPS: Thinking Skills Model. Development of game play decisions have been explored in the field of sport psychology. Cognitive preferences as identified by *FourSight* may assist in understanding game play decisions made by athletes.

*FourSight* was initially developed as a measure to identify creative profiles based on cognitive preferences. Cognitive preferences have been used to develop more effective teams in business and industry. This study is the initial exploration of whether cognitive and creative thinking preferences have any impact on athletic team performance. In this explorative study, male ice hockey players were studied. Further work with *FourSight* administration should be continued to identify player profiles for successful teams in hockey as well as in other team sports. Further work with the *FourSight* measure ought to also be done for the evaluation of homogeneous and heterogeneous groupings of players in different playing situations such as penalty kills, power play, and four-on-four play.
Investigation could also continue into *FourSight* profiling of individual solo athletes and their coaches to best utilize the cognitive profiles to strengthen individual athletic performance and game strategies.

**Summary**

Chapter Five presented the interpretation of the qualitative analysis for the data collected in this exploratory study. The thesis questions were successfully addressed and implications of the current research were discussed. The limitations of the current exploratory study were acknowledged and suggestions were made for further study of the *FourSight* measure in athletics and team sports. Additionally an argument was presented to further investigate the use of deliberate creativity training and Creative Problem Solving in decision making on sports teams.
References


Mumford, M. D. (2003a). Where have we been, where are we going? Taking stock in creativity research. *Creativity Research Journal, 15* (2), 107-120.


THINKING PREFERENCES OF ICE HOCKEY PLAYERS


Appendix A

Dear [Ice Hockey Team Members],

As some of you may know, I have been pursuing my Master’s studies at the International Center for Studies in Creativity at Buffalo State College. My area of research is the investigation of breakthrough thinking preferences ice hockey players.

I will be asking players if they would like to be a participant in my qualitative study. Here is what being a participant in the study would entail:

- Use data collected from the results of the *FourSight: The Breakthrough Thinking Profile* measure.
- Allow examination of practice and game play from videotapes of [Ice Hockey video tapes as part of the data set. There will be no additional time commitment beyond
- Analysis of player’s on ice performance to see if there is any relationship between creative problem solving preferences and hockey play.
- Interview with head coach to understand the relationship between a hockey player’s *FourSight* preferences and his hockey performance on the ice.
- Follow up interview only if selected by your *FourSight Profile* results requiring an additional one-hour of time set up privately between the investigator and yourself.

Please read over the consent form attached. If you agree to participate in the study send me an email stating, “Consent”. You will need to officially sign the consent form when I administer the *FourSight* measure. If you do not agree to participate, insert your name into the “Non-consent” form and email it back to me (you can simply cut and paste from the word document).

Please note: If someone decides NOT to participate, the only person who will know is me, and I will simply not observe or comment on your game play in [videotaped game data. I would ask that you do not ask one another if he is a participant in this study, as it is important that no one feel any pressure to be a part of the study.

Consenting or declining to be a participant in this study will in no way affect your participation on the ice as a [ice hockey team member. Please see the various forms for more information.

If you would like to speak with me further about this course or being a participant in this study, please do not hesitate to contact me at (716) 689.6998 or (716) 450.7990 via email at bdoliszny@msn.com

I sincerely look forward to exploring this topic with all of you.

Bonnie Doliszny
Master of Science Candidate,
INFORMED CONSENT

A preliminary exploration of breakthrough thinking preferences of ice hockey players.

Participation in this research study is voluntary. Please read the information below and ask questions about anything that you do not understand before deciding if you wish to participate. The researcher listed below will be available to answer your questions.

Name of Lead Researcher: Bonnie Doliszny Graduate Student, International Center for Studies in Creativity, Buffalo State College, 247 Chase Hall, 1300 Elmwood Ave. Buffalo, NY 14222
Telephone: (716) 689.6998 or cell (716) 450.7990 Email: doliba84@buffalostate.edu

Faculty Advisor: Dr. Gerard Puccio, International Center for Studies in Creativity, Buffalo State College, 247 Chase Hall, 1300 Elmwood Ave. Buffalo, NY 14222 Telephone: (716) 878.6223 E-mail: pucciogj@buffalostate.edu

Study Location(s): The data collection for this study will be conducted at

PURPOSE OF STUDY
The purpose of this research study is to explore the breakthrough thinking principles of ice hockey players.

Participants
Inclusion Requirements
You are eligible to participate in this study if you have played organized ice hockey at Milton Academy, Milton MA during the 2008-09 season.

Exclusion Requirements
You are not eligible to participate in this study if you do not meet the inclusion criteria requirements.

Number of Participants
This study will include approximately 20-24 participants.

PROCEDURES
Procedure Details: If you agree to this study, you will be asked to do the following:

- Take the FourSight: The Breakthrough Thinking Profile as an pencil and paper survey or the online version.
- Allow your previously videotaped on ice performance in games and practice to be used as part of the data set. (no additional time commitment).
• Allow for observations of your individual game play made by the researcher during games and practices to be used for data (no additional time commitment).

• Follow up interview only if selected by FourSight Profile results

You may decline to answer any question, or to complete any part of the tasks.

RISKS AND DISCOMFORTS
The possible risks and/or discomforts associated with the procedures described in this study are no more than that of day-to-day life.

BENEFITS
Potential Benefits to the Participant
You may directly benefit from participation in this study by being able to identify your personal breakthrough thinking preference, and enhance your self-awareness

Benefits to Others or Society
This study will expand the field of Creative Problem Solving by understanding if, how, and when creative FourSight profile preferences effect on ice performance as a player and or team member on an ice hockey team.

COMPENSATION
You will not receive monetary compensation for your participation in this study. Feedback on your FourSight profile; usually administered for a fee, will be made available upon request by emailing the researcher.

WITHDRAWAL OR TERMINATION FROM THE STUDY AND CONSEQUENCES
You are free to withdraw from this study at any time without negative consequences. If you decide to withdraw from this study, please notify the researcher as soon as possible.

CONFIDENTIALITY

Data Storage
Your research records will be stored in the following manner: A copy of all original returned files with personally identifiable information will be kept under lock and key and electronically with password protection. These files will only be accessible to the lead researcher (Bonnie Doliszny) and faculty advisor (Dr. Gerard Puccio). All additional copies will be coded to maintain participant confidentiality. These coded files will be used for analysis and for publication purposes. All data will be retained for at least three years in compliance with federal regulations. Your name, the name of the educational institution you attend, ice rinks you play at or practice at, will not be named in the results of this study.
FINDINGS
The researcher will be using the data collected for her masters’ thesis, publications, and public presentations in the field of creativity and athletics. A summary of research results may be obtained by emailing the researcher directly.

IF YOU HAVE QUESTIONS
If you have any comments, concerns, or questions regarding the conduct of this research, please contact the researcher listed at the top of this form.

If you are unable to reach a member of the research team listed at the top of the form, and have general questions, or you have concerns or complaints about the research study, researcher, or questions about your rights as a research subject, please contact either The Research Foundation of SUNY/Office of Sponsored Programs by phone, (716) 878-6700 or by e-mail at gameg@rf.buffalostate.edu or in person at Bishop Hall, Room 17, 1300 Elmwood Avenue, Buffalo, NY 14222

VOLUNTARY PARTICIPATION STATEMENT
Participation in this study is voluntary. You may refuse to answer any question or discontinue your involvement at any time without penalty or loss of benefits to which you might otherwise be entitled. Your decision will not affect your future relationship with [Milton Academy] or Buffalo State College. Your signature below indicates that you have read the information in this consent form and have had a chance to ask any questions that you have about the study.

SIGNATURE LINES

Player Signature ________________________ Date

Researcher Signature ____________________ Date

Guardian Signature (if player is under 18) ____________________ Date
Non-Consent Form

I do not wish for any of my data to be included in this study. As a result, there will not be negative consequences, and other players on the team will not know I have chosen not to be a part of the study. If I have any concerns, I will contact the researcher immediately.

__________________________________  ________________________________
Signature                                                                     Date
Appendix B

A preliminary exploration of breakthrough thinking preferences of ice hockey players

Assent Form

Introduction: As a member of the varsity boy’s hockey team at [Name], you are being asked to participate in a research study about your creativity profile and hockey performance on the ice.

Procedure: If you decide to participate in this study, you will be asked to complete a FourSight Breakthrough thinking profile questionnaire asking you about your thinking preferences. The survey will be used to identify the type of thinking you are naturally drawn to. The survey will take approximately fifteen minutes to complete. Once the survey is completed individual game play will be observed via video tape, game analysis and discussion with the head coach to discover whether the FourSight profiles can be identified in on ice performance. The single high profiled players chosen from your questionnaire results will be asked to participate in a one on one interview with the researcher to get your input on your thinking style preferences and on ice performance. No more than an additional one hour of your time will be required. This interview will be set up between the investigator and yourself.

Risks/Side Effects: There should be no risk or side effects to you as a result of participating in this research study.

Benefits: The specific benefits to you as a result of your participation, other than the knowledge that you have contributed to the advancement of the study of thinking preferences and on ice hockey play, is being able to identify your personal thinking preference. This may enhance your self-awareness and understanding of both on and off ice thinking allowing you to leverage your own strengths and those of others.

Voluntary Participation: Your participation in this study is completely voluntary. You may quit at anytime without penalty.

Confidentiality: All information that I obtain from you is strictly confidential. The results reported from this information obtained from you will not identify you in any way.

Please call Bonnie Doliszny at [Contact Info] or 716.450.7990 with any questions concerning this study.

If you wish to participate in this study, please sign below.

Signature ____________________________________________

Name (Print) ____________________________________________

Parent or Guardian Signature _______________________________________

Parent or Guardian Name (Print) _______________________________________

### Appendix C

**THINKING PREFERENCES OF ICE HOCKEY PLAYERS**

<table>
<thead>
<tr>
<th>Name:</th>
<th>Age:</th>
<th>Gender: M / F</th>
<th>Occupation:</th>
</tr>
</thead>
</table>

**Directions:** Every day, we all face challenges, meet opportunities and solve problems—from the simple to the complex. The statements below describe various activities associated with solving problems or dealing with challenging situations. For each statement indicate the extent to which you feel the statement describes you. Don’t worry about how effective you are in that activity, just indicate how descriptive each statement is of you by placing an “x” through one of the dots that follow it. The response scale ranges from “Not like me at all” to “Very much like me.” Remember, there are no right or wrong answers, just your opinions about yourself.

**Example:**
28. I am a tall person.  
30. I enjoy eating salad.

<table>
<thead>
<tr>
<th>Not like me at all</th>
<th>Like me</th>
<th>Very much like me</th>
</tr>
</thead>
</table>

1. Generally I don’t approach problems in a creative manner.  
2. I like testing and revising my ideas before coming up with the final solution or product.  
3. I like taking the time to clarify the exact nature of the problem.  
4. I enjoy taking the necessary steps to put my ideas into action.  
5. I like to break a broad problem apart and examine it from all angles.  
6. I find it difficult to come up with unusual ideas for solving a problem.  
7. I like identifying the most relevant facts pertaining to a problem.  
8. I don’t have the temperament to sit back and isolate the specific causes of a problem.  
9. I enjoy coming up with unique ways of looking at a problem.  
10. I like to generate all the pluses and minuses of a potential solution.  
11. Before implementing a solution I like to break it down into steps.  
12. Transforming ideas into action is not what I enjoy most.  
13. I like to generate criteria that can be used to identify the best option(s).  
14. I enjoy spending time looking beyond the initial view of the problem.  
15. I don’t naturally spend much time focusing on defining the exact problem to be solved.  
16. I like to take in a situation by looking at the big picture.  
17. I enjoy working on ill-defined, novel problems.  
18. When working on a problem I like to come up with the best way of stating it.  
19. I enjoy making things happen.  
20. I like to focus on creating a precisely stated problem.  
21. I enjoy stretching my imagination to produce many ideas.  
22. I like to focus on the key information within a challenging situation.  
23. I enjoy taking the time to perfect an idea.  
24. I find it difficult to bring my ideas to fruition.  
25. I enjoy turning rough ideas into concrete solutions.  
26. I like to think about all the things I need to do to implement an idea.  
27. I really enjoy implementing an idea.  
28. Before moving forward I like to have a clear understanding of the problem.  
29. I like to work with unique ideas.  
30. I enjoy putting my ideas into action.  
31. I like to explore the strengths and weaknesses of a potential solution.  
32. I enjoy gathering information to identify the root causes of a particular problem.  
33. I enjoy the analysis and effort it takes to transform a rough concept into a workable idea.  
34. My natural tendency is not to generate lots and lots of ideas for problems.  
35. I enjoy using metaphors and analogies to come up with new ideas for problems.  
36. I have little patience for the effort it takes to refine or polish an idea.  
37. I tend to look for a quick solution and then fly with it.

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Appendix D

FourSight: The Breakthrough Thinking Profile Manual

Introduction

Innovation calls for breakthrough thinking—
a blend of insight, imagination, analysis and action.

Which of these four thinking modes do you prefer?
Which do you avoid? Tap all four, and take innovation
and team performance to the next level.

All it takes is FOURSIGHT!

Congratulations on discovering FourSight: The breakthrough
thinking profile. You’re about to pick up speed on the road to
innovation. With more than ten years of field testing and
research, this simple, powerful tool measures your preferences
for different parts of the breakthrough thinking process.
Specifically, it reveals what type of thinking you—or your
group or organization—are naturally drawn to and what you
might be shortchanging. FourSight is designed to foster
innovation. Use it to leverage your own strengths and those
of others. Take it as an invitation to...

- build more innovative teams
- anticipate road blocks
- get better results

Let FourSight reveal how your thinking preferences may
be influencing your effectiveness, relationships and
bottomline results.

Get ready to meet the faces of innovation....

Clarifier  Ideator  Developer  Implementer
Appendix E

Developer Interview

Number of years you played hockey?

What other sports do you currently participate in?

How do you approach a challenge?

How can you relate this to your hockey play?

Can you give me examples of being ________ while practicing or playing your position?

- Reflective-
- Cautious-
- Pragmatic
- Structured-
- Planning oriented-

Have you played other hockey positions?

Does playing one position lend itself better to your style of play?

Do you need or like:

  Time to consider your options?
  Time to evaluate?
  Time to develop ideas?

Do you ever find yourself being too nit picky?

Do you ever notice yourself getting locked into one way of doing things?

Do you spontaneously see shortcomings in an idea?

Can you tell me about your relationship with different hockey coaches?
For profile purposes:

Who are the other players from last year’s team that you get along with?

Who are the players you feel it is difficult for you to get along with?
Appendix F

Implementer Interview

Number of years you played hockey?

What other sports do you currently participate in?

How do you approach a challenge?

How can you relate this to your hockey play?

Can you give me examples of being ______ while practicing or playing your position?

• Persistent-
• Decisive-
• Determined-
• Assertive -
• Action oriented -

Have you played other hockey positions?

Does playing one position lend itself better to your style of play?

Do you need or like

   To feel that others are moving just as quickly as you?

   Get frustrated when someone is left behind?

   To receive timely responses to your ideas?

   To have control over the situation? Yourself?

   Do you ever find yourself being too pushy?

Do you ever notice yourself expressing frustration readily when others do not move as quickly as you do?
Do you ever find yourself overselling your ideas?

Can you tell me about your relationship with different hockey coaches?

For profile purposes:

Who are the other players from last year’s team that you get along with?

Who are the players you feel it is difficult for you to get along with?
Glossary

A defenseman in ice hockey is a player position whose primary responsibility is to prevent the opposing team from scoring. They are often referred to as defensemen, D or defense. Defensemen generally position themselves along the blue line to keep the puck in the offensive zone. The blue lines in North American Hockey are 64 feet (20 m) from the goal line and 50 feet (15 m) apart from each other. The area between the bluelines is considered the neutral zone. In regular play, two defensemen complement three forwards and a goaltender on the ice. Exceptions include overtime and when a team is shorthanded (i.e. has been assessed a penalty), in which two defensemen are typically joined by only two forwards and a goaltender.

In ice hockey, there are normally two defensemen on the ice. One is usually a more offensive player better known for their ability to pick up assists or goals rather than for their strong defensive play. Such players are known as offensive defenseman. The other is usually in a more defensive role and rarely score points on the score sheet but are important for their defensive prowess; these players are known as 'stay-at-home defense.'
Vita

Bonnie A. Doliszny is a native of St Catharines, ON. She attended Sir Winston Churchill Secondary School before continuing on to complete both a Bachelor of Physical Education degree and a Bachelor of Education degree from Brock University. She actively participated in many sports and was a member of the Women’s Varsity Volleyball team at Brock. She is also a lifelong member of PLAST Ukrainian Scouting.

Bonnie has completed a Master’s of Science in Creative Studies at the International Center for Studies in Creativity at Buffalo State College. She was the 2009 recipient of the Sidney J. Parnes and Ruth B. Noller Scholarship. Bonnie’s current area of interest is research involving creative and cognitive style and preference in the field of sports and athletics. Currently Bonnie is continuing to hone her skill in design and delivery of creativity, innovation and change leadership training.

Bonnie was also a recipient of a Harvard Ukrainian Research Institute Scholarship attending Harvard University in 1979. A voracious learner Bonnie has studied at The University of Minnesota and SUNY at Buffalo. Bonnie holds both New York State and Ontario Teaching certificates.

As a founding director of The Friends of Brock Incorporated, Bonnie supports her alma mater. In the recent past, Bonnie was involved in wardrobe design, costume construction, and training performers in the dance and performing arts field. She is also a certified FourSight Trainer, certified Irlen Screener, Vortex Healer and Reiki Master.

Bonnie has returned home after living in the Twin Cities, MN, Wethersfield, CT, and Amherst, NY.