ATTITUDES, INTERESTS AND SPORT SPECTATOR PROFILING: VARIABLES
AFFECTING GAME ATTENDANCE IN A NHL FRANCHISE

by

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Abstract

ATTITUDES, INTERESTS AND SPORT SPECTATOR PROFILING: VARIABLES AFFECTING GAME ATTENDANCE IN A NHL FRANCHISE

This study examined the literature on spectator profiling and evaluated current survey methodologies being used to profile hockey spectators and their preferences regarding NHL hockey game attendance. The research had two inter-related objectives. One was to investigate the consumer profiles of sport spectators associated with a specific NHL franchise, the Vancouver Canucks, and to relate these to game attendance. The second objective was to test and evaluate a questionnaire designed to incorporate latest thinking on variables that affect professional sports game attendance. Survey data were collected from 907 attendees at four Vancouver Canucks games and from 203 students at the University of British Columbia during the 2001-2002 NHL season. Two separate studies were conducted using the data. Study 1 investigated reasons for game attendance, and respondents' activity patterns and interests. Data analyses for study 1 included a confirmatory factor analysis for testing the validity of the game attendance items (reasons for game attendance), and a decision tree analysis for classifying spectators based on their reported game attendance frequencies, activity patterns, and interests. Results of study 1 indicate that the respondents' game attendance rates were affected by income, use of hockey websites, playing baseball when young, job, being accompanied by co-workers, ethnic background, perception of T.V. as the best promotional medium, personal fan history, and playing hockey when young. Study 2

investigated the relationship between spectators' opinions about sports and their game attendance, and attempted to identify potential predictors of game attendance levels. A confirmatory factor analysis was used in Study 2 to test the validity of the sport opinion items (opinions about sports), and a cluster analysis was used to identify unique spectator groups. Three distinctive spectator segments were identified, and the three groups varied on a number of dimensions including game attendance rates, sports participation history, and their opinions about the benefits of sports, community pride, cynicism about professional sports, attitude toward professional athletes, perceived time costs, role of government, and attitude toward amateur sports. The research found evidence of national cultural differences between Canadian sports spectators and their American counterparts. It is recommended that future research investigate national and regional cultural differences as well as differences between major and minor league sports and competitive factors in local sports markets.

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Chapter 1. Introduction

Spectators are integral to the business of professional sports. As well as contributing to the excitement and ambience of sport events, spectators are a vital component in the revenue stream of most professional sport franchises and leagues. Spectators typically make a direct contribution to revenues through ticket sales, but they also contribute indirectly to sale of broadcast and sponsorship rights, and to licensing. In the case of the National Hockey League (NHL), ticket sales comprise a major source of income along with broadcast rights and corporate sponsorships (Badenhausen & Stanfl, 2000). Although ticket sales for games and sale of broadcast and sponsorship rights are major sources of revenue for all major professional sport leagues in North America, their actual contribution to total revenue varies from league to league and from franchise to franchise. For example, the National Football League (NFL) in 1996 earned the major part of its revenue – 55.3 percent (US $43 million of total revenue US $77.7 million) – from *media contracts*, whereas in the same season (1995-96) the NHL earned most of its revenue – 60.5 percent (US $25.6 million of total revenue US $42.3 million) – from *ticket sales* (Badenhausen & Nikolov, 1997).

The picture that emerges from recent figures is that the NHL is in reasonable shape financially, but lacks a large network deal on a par with the other major professional sports leagues, and therefore ends up relying primarily on game attendance for revenue (Canfora, 2001). The average total revenue per franchise for the NHL was a respectable US $69 million for the 2001-02 NHL season (Badenhausen & Ozanian, 2002), and the total revenues are estimated to be US $1.9 billion for the 2002-03 season

(LeBrun, 2003). Current NHL broadcast agreements with ESPN/ABC, CBC, and TSN are worth US $600 million, CD $300 million, and CD $100 million respectively over five years, and each NHL franchise has about US $5.7 million shared TV contract revenue for the 2002-03 season (LeBrun, 2003). These are significant contracts and reflect positively on the new media environment for the NHL where they can sell rights to several different networks. The relatively low value of hockey to broadcasters, however, shows up when these figures are compared with the other major leagues in North America. The National Basketball Association (NBA), for example, has a six year deal worth US $4.6 billion with ESPN/ABC and AOL and US $26.4 million per team for the 2002-03 season, and the NFL has an eight year deal worth US $18 billion with ESPN/ABC, CBS and Fox and US $77.34 million per team in the 2002-03 season (LeBrun, 2003). Badenhausen and Stanfl (2000) indicate that arena sponsorship revenue has increased for the NHL from the late 1990s. Nevertheless, arena sponsorship remains relatively less important than ticket sales, and in any event, it too is responsive to spectator attendance and broadcast audiences.

Given the continued importance of spectators for revenue production in the NHL, it is critical to gain insight into the reasons why spectators choose to attend NHL games. Understanding spectator behaviour is necessary to increase our knowledge regarding why people attend sport events in the first place, and uncovering the profile of spectators and the different reasons why different kinds of people attend games can be a valuable tool for spectator recruitment as well as retention. When spectators' expectations regarding games are met, there is a greater chance they will attend games. Using

research to develop profiles of spectator interests, likes and dislikes can help managers in the NHL to identify core customer groups and target markets, analyse market trends and the market environment, develop marketing strategies, attract corporate sponsors, and set long-term marketing objectives and plans.

This dissertation examines the literature on spectator profiling and evaluates current survey methodologies being used to profile hockey spectators and their preferences regarding NHL hockey game attendance. To evaluate current methodology, a questionnaire was developed using variables identified in prior research relating to spectator interests and opinions and game attendance. By integrating these variables, the questionnaire served as a platform to holistically assess the explanatory power and the reliability and validity of attendance factors currently described in the literature, as well as the assumptions that have been made about spectator interests and game attendance. The dissertation is organized in five chapters. Following this introduction, Chapter 2 reviews prior research on spectator profiling and relevant theoretical frameworks in the literature. Chapter 3 sets out the methodology for the dissertation research project. Chapter 4 reports the research findings from the dissertation research project, and Chapter 5 discusses the implications and limitations of the findings as well as areas for further research.

Chapter 2. Review of Literature

This chapter is organized in three parts. First I briefly discuss three theories of consumer behaviour that have been used to explain consumer decision-making: the Fishbein model, the theory of reasoned action, and means-ends theory. This is intended to provide a conceptual framework and background for understanding factors that influence consumer decisions to attend NHL games. In the second part of the chapter, I discuss prior research on variables relating to game attendance in sport, including some multi-sport studies that examined game attendance across a range of different sports that included hockey, and several studies that looked exclusively at hockey. Third, I identify some additional variables that have not been well covered in prior research.

Theories of Consumer Behaviour

Fishbein Model and the Theory of Reasoned Action

The Fishbein model and the theory of reasoned action (the extended Fishbein model) provide a theoretical basis for understanding and analyzing consumer behaviour, and can be used to help explain consumer behaviour in sport.

The Fishbein model which is one of the most influential multi-attribute attitude models focuses on measuring a consumer's attitude toward a product.

> (1) an individual holds many beliefs about any given object, i.e. many different characteristics, attributes, values, goals, and objects are positively or negatively associated with a given object; (2) associated with each of these 'related objects' is a mediating evaluative response, i.e. an attitude; (3) these evaluative responses summate; (4) through the mediation process, the summated evaluative response is associated with the attitude object, and thus (5) on future occasions the attitude object will elicit this summated evaluative response, i.e. this attitude (Fishbein, 1963, p.233)

The Fishbein model measures attitude along three dimensions: 1) an individual's beliefs about the "attitude object" (i.e., those beliefs about the object that are considered during evaluation), 2) a measure of each belief and its evaluative aspect (i.e., the probability that a particular object has an important attribute), and 3) a measure of his attitude toward the object (Fishbein, 1963).

According to Solomon (1996), the predictability of the original Fishbein model, which focused on measuring a consumer's attitude towards a product, was improved by extending the number of factors in the model relating to consumer decision-making. The revised framework, known as the theory of reasoned action, includes all variables of the Fishbein model plus three new elements that concern the relationship of intention versus behaviour, social pressure, and attitude toward purchasing (Ajzen & Fishbein, 1975). The three elements are explained below. The theory of reasoned action offers a useful framework for conceptualising the reasons why people choose to attend sports events, and provides a holistic and comprehensive perspective on factors affecting attendance, particularly concerning the individual.

Intentions versus behaviour.

A number of factors might affect actual purchase behaviour, even though a consumer is willing to purchase a product (Ajzen & Fishbein, 1975). For instance, let us consider an individual who has an intention to attend a hockey game at a local ice arena. Prior to actually attending the game, a number of things could interfere with the person's intention to buy a ticket and go to the game. If, for instance, the tickets were already sold out or there were no means for getting to the arena, then the person logically would

choose not to go. Unexpected circumstances such as these can affect the actual buying behaviour of the consumer. The theory of reasoned action aims to measure behavioural intentions, recognizing that uncontrollable factors can inhibit behaviour and behaviour prediction. Identifying uncontrollable factors experienced by a consumer and working to solve potential problems can help to keep current customers and attract new customers.

Social pressure.

Based on the theory of reasoned action, other people may influence a particular individual's behaviour, which means that behaviour can occur based on social interactions (Ajzen & Fishbein, 1975). A new element in the theory of reasoned action, the subjective norm (SN), covers the socializing effects of other people on an individual's norms. According to Ajzen & Fishbein (1975), SN includes two other factors: the intensity of a normative belief that others believe an action should be taken or not taken and the motivation to comply with that belief. For instance, a person's actions to purchase a game ticket could be influenced by a normative belief such as a sense of community relating to supporting a local sport franchise or a sense of being committed to a peer group.

Attitude toward buying.

The third new element of the theory of reasoned action is attitude toward buying. An individual's positive or negative feeling associated with performing a specific behaviour. According to Ajzen and Fishbein (1975), in general, an individual will hold a favourable attitude toward a given behaviour if he/she believes that the performance of the behaviour will lead to mostly positive outcomes; on the other hand, if the individual

believes that mostly negative outcomes will result from the behaviour, he/she will hold a negative attitude toward it.

Even if a group of people have a positive attitude toward the Vancouver Canucks, this information does not necessarily allow marketers to anticipate whether or not they will attend games. One way to predict their attendance at hockey games would be to conduct an interview to investigate their preferences in game attendance. While a person might have a positive attitude toward the Canucks, his/her attitude toward the act of buying a ticket might be negative due to other issues such as parking, the high price of tickets, and the location of the stadium. Uncovering the profile of extant spectators is very important, as they are the consumers who have already demonstrated a positive attitude towards the act of buying (**Aact**) with respect to the sport event. This is the population studied in this dissertation.

Means-End Theory

Means-end theory covers another range of factors that relate to why people attend professional sports events. Means-end theory focuses on the cognitive linkage between the relatively concrete aspects of products (means), the more abstract consequences these attributes provide for consumers, and the highly abstract dimension of personal values (the ends) (Klenosky, Gengler, & Mulvey, 1993). Based on means-end theory, Klenosky et al. (1993) uncovered four different domains of personal values relating to choices of skiing destinations including belonging, fun and excitement, safety, and achievement.

Value is broadly defined as features of the world toward which people are oriented and as features of people that govern their orientation toward the world (Smith,

1991). More specifically, value is seen as an enduring belief that a specific mode of conduct or end-state of existence is personally or socially preferable to its opposite (Rokeach, 1973). According to Staub (1978), a personal norm is a person's expectation that he or she will engage in certain kinds of behaviour, presumably derived from personal values and beliefs. In other words, people's desirable outcomes from the same behaviours may be different because of their different personal values.

In a marketing context, a person's set of values plays a very important role in his or her consumption activities, since many products and services are purchased because they will help us to attain a value-related goal (Solomon, 1996). For example, the reasons why people attend Canucks' games would be expected to vary according to their personal values. One group of spectators might seek game performance. Another group might go to games based on price point (i.e., ticket discount). Or yet another might value both of these dimensions of the game as an exciting and affordable social event.

In this dissertation, I propose to test factors that influence game attendance. My research is not designed or intended to test theories of purchasing behaviour – (see Godin & Shephard, 1985; Dzewaltowski, 1989; Greenockle et al., 1990 for studies that tested Fishbein's theory) - but rather to use these theories as a conceptual framework to help identify and evaluate variables that affect game attendance.

Game Attendance Variables Identified In Prior Research

Since 1970, a number of studies have examined variables that affect spectator decisions to attend games. Several different sports have been studied, including

baseball, (Baade & Tiehen, 1990; Carter, 1996; Marcum & Greenstein,1981, 1985),

football (Carter, 1996; Hansen & Gauthier, 1989; Whitney, 1988; Kahle et al., 1996),

hockey (Carter, 1996; Hansen & Gauthier, 1989; Jones, 1984; Smith, 1995; Zhang,

1998; Zhang et al., 1997a, 1997b, 1998, 1999, 2001), soccer (Bird, 1982; Hansen &

Gauthier, 1989), golf (Hansen & Gauthier, 1993; Lascu, 1995), and basketball (Carter,

1996; Hansen & Gauthier, 1989; Whitney, 1988; Zak, Huang, & Siegfried, 1979; Zhang

et al., 1995).

Overall in these studies, five grouped variables have been found to affect

spectator decisions to attend games (Greenstein & Marcum, 1985; Hansen & Gauthier,

1989; Jones, 1984; Schofield, 1983; Smith, 1995; Whitney, 1988; Zhang et al., 1995;

1997a, 1998, 1999). The first variable is game performance which includes athletes'

individual skills (Hansen & Gauthier, 1989), home and opposing teams' records (Hansen

& Gauthier, 1989; Jones, 1984; Zhang et al., 1995, 1997a), league standing (Bird, 1982;

Hansen & Gauthier, 1989; Zhang et al., 1995, 1997a), tough/aggressive play (Jones,

1984; Zhang et al. 1997a, 1999), player appeal/fighting (Zhang et al., 1997a, 1999) and

superstars (Hansen & Gauthier, 1989; Johns, 1984; Zhang et al., 1995). Game

performance variables have generally been positively related to game attendance and

enjoyment (Greenstein & Marcum, 1985; Hansen & Gauthier, 1989; Jones, 1984;

Schofield, 1983; Zhang et al., 1995, 1997a, 1999).

The second grouped variable encompasses promotional dimensions of

attendance. It includes ticket price (Bird, 1982; Carter, 1996; Hansen & Gauthier, 1989;

Zhang et al., 1995, 1997a), promotions including advertising, publicity, special events,

and direct mail and notification (Hansen & Gauthier, 1989; Zhang et al., 1995, 1997a; 1999), entertainment/music (Kahle et al., 1996; Zhang et al., 1999), television effects and competition with other sport events (Hill et al., 1982; Zhang et al., 1997b), and team history in a community (Hansen & Gauthier, 1989). While promotions such as advertising, special events and income have been positively related to game attendance, ticket price, television effects, and competition with other sport events have been negatively related to game attendance and enjoyment (Bird, 1982; Hansen & Gauthier, 1989; Hill et al., 1982; Zhang et al., 1995, 1997a, 1997b, 1999).

Spectators' socio-demographic profile is a third grouped variable affecting the decision to attend games. This includes age, gender, ethnicity, occupation, education, and size of community. According to Greenstein and Marcum (1981) and Jones (1984), the population size of a community is positively related to game attendance. With respect to age, Zhang and his colleagues (1995) found that younger spectators account for a bigger proportion of the audience for NBA games.

The fourth grouped variable is facility convenience, which has included accessibility to facility (Carter, 1996; Greenstein & Marcum, 1985; Hansen & Gauthier, 1989) and stadium quality (Greenstein & Marcum, 1981; Hansen & Gauthier, 1989; Zhang et al., 1995, 1997a). This variable has been found to be positively related to game attendance (Hansen & Gauthier, 1989; Zhang et al., 1995, 1997a).

The last variable is schedule convenience, which has typically included the schedule of games and its suitability for spectators (Hansen & Gauthier, 1989; Zhang, 1998; Zhang et al., 1995). This variable has been found to be positively related to game

attendance (Greenstein & Marcum, 1981, 1985; Hansen & Gauthier, 1989; Zhang, 1998; Zhang et al., 1995). However, one study done by Zhang et al. (1997a) revealed that game convenience was not related to game attendance levels in minor league hockey.

In this study done on minor league hockey, Zhang et al. (1997a) developed what they called the Scale for Attendance Decision (SAD) using five factors: Game Attributes, (speed of game, tough/aggressive play, player appeal, and love of hockey), Home Team (home team quality, star player(s), win/loss records, history, and league standing), Economic Considerations (ticket price, good seats, promotion, and direct mail and notice), Opposing Team and Game Convenience. Spectator demographic variables (including age, gender, and ethnicity) and spectator attendance frequencies were investigated. According to Zhang et al. (1997a), the number of games attended during the season is positively related to Game Attributes, Home Team, and Economic Considerations. However, Game Convenience and Opposing Team were not found to be related to game attendance.

Even though previous studies have provided relevant information for developing marketing strategies based on spectator expectations and needs, there are weaknesses in these studies. First of all, in most cases the sample size has been too small to adequately represent the population being studied. For example, the sample sizes in previous studies (i.e., Carter (1996), $N = 251$; Hansen & Gauthier (1989), $N = 54$; Smith (1995), $N = 31$; Zhang et al. (1997a), $N = 181$, (2001), $N = 257$) on hockey were too small to have population-level significance. Although Jones' study (1984) contained a large data set (annual observations for all teams in the six team league that operated from 1946 to

1976, and game observations for all 18 teams and 720-games during the 1977-1978 NHL season) and provided important variables affecting professional hockey game attendance (i.e., win/loss record of home and visiting team, game schedule, superstars, game style (fighting), game played or team located in a Canadian city, market competition for other sports, population size, income, and ethnicity), the study is now dated, having been done in 1984 on data that is now quite old (1946-1978). It is not known whether Jones' findings are still applicable to the rapidly changing current market. Zhang (1998) and Zhang et al. (1997b, 1999) had a large sample size (N = 2,225) and had meaningful findings, however, they focused on minor league hockey games and it is unclear how relevant these findings are to major league hockey games (NHL).

Second, it is critical to fully assess the validity of any questionnaires used in survey research, yet this has rarely been done in previous research. For instance, Hansen and Gauthier (1989) and Smith (1995) did not provide any evidence of having conducted validity tests on their respective questionnaires. Zhang et al. (1997a) were concerned about the validity of their instrument, but evaluated validity only on a limited basis with respect to content and internal consistency.

Thirdly, confirmatory factor analysis is the recommended statistical method for uncovering factors in survey research, yet an exploratory factor analysis was used instead in most previous studies of hockey discussed above (Carter, 1996; Hansen & Gauthier, 1989; Zhang et al., 1997a, 1998). Due to the limitations of exploratory factor analysis, variables containing different meanings could have been loaded into the same construct. For instance, there are seven items including evening games, unobstructed view,

weekend games, offensive of home team, fourth quarter of season, third quarter of season, and years franchise in arena listed under the 'scheduling of games' factor in the Hansen and Gauthier (1989) study. However, only four (evening games, weekend games, fourth quarter of season, and third quarter of season) of the seven items were actually related to the 'scheduling of games' factor. If items containing different meanings are inadvertently placed in the same construct, the construct ends up being less reliable for measuring objective values which affects the validity of the whole study.

Fourthly, although previous research including the studies by Carter (1996), Smith (1995), Hansen and Gauthier (1989), and Zhang et al. (1997) provided valuable insights into spectators' characteristics based on their demographic information, there are very few studies that have analyzed spectators' profiles based on their psychographic information. Uncovering additional information about spectators based on their lifestyles, interests and opinions and linking this to socio-demographic information could enhance understanding of the kinds of people who are sports fans and why and how they attend games.

Lastly, although several studies (Greenstein & Marcum, 1985; Hansen & Gauthier, 1989; Zhang et al. 1997a) assessed variables affecting hockey game attendance, it is unclear to what extent these findings can be applied to the case of NHL spectators. Zhang et al. (1997a) insist that because Greenstein and Marcum (1985) and Hansen and Gauthier (1989) studied multiple sports, they missed some of the unique characteristics of hockey (e.g., aggressive play and speed of game) and as a result their findings are not sufficient in themselves to explain hockey game attendance. As well,

findings of the studies of Zhang (1998) and Zhang et al (1997a, 1999) may not

applicable to the NHL in that their studies were focused on minor league hockey. To

understand NHL attendance, it is necessary to test the variables used in these previous

studies and to identify key variables that affect game attendance in the NHL, particularly

those that lead current spectators to continue attending games and those that attract new

spectators.

Additional Key Variables

Building on the work of Zhang et al. (1997a) and previous studies (Greenstein

& Marcum, 1985; Hansen & Gauthier, 1989), three additional variables need to be

considered with respect to NHL spectator attendance.

Advertising Media

Although researchers like Zhang and his colleagues used advertising as one of the

game promotion variables, it was too general to be discriminating. According to

Solomon (1996), a marketer might use different advertising media depending on levels

of involvement in the product, in this case, games.

> Involvement refers to the level of perceived personal importance and/or interest
> evoked by a stimulus (or stimuli) within a specific situation. When consumers
> are intent on doing what they can to satisfy a need, they will be motivated to pay
> attention to and process any information felt to be relevant to achieving their
> goals. Consumption at the low end of involvement is characterized by inertia,
> where decisions are made out of habit because the consumer lacks the motivation
> to consider alternatives. At the high end of involvement, we can expect to find
> the type of passionate intensity reserved for people and objects that carry great
> meaning to the individual. (Solomon, 1996, p.146-147)

Television is generally considered a low-involvement medium because it requires

a passive viewer who exerts relatively little control over content. In contrast, print media

demand high involvement. A marketer might use television as an advertising tool for

low-involvement spectators such as single-game ticket purchasers, and print media such as magazines and newspapers as media to attract high-involvement spectators such as season ticket holders or ten-game ticket holders. Another variable that should be included is spectators' dwelling information.

Dwelling Information

Geographic segmentation is useful when true differences in preference and purchase patterns for a product emerge along regional lines (Beckman, Kurtz, & Boone, 1992). For example, a marketer can use different strategies (e.g., different resource allocations for advertising) from region to region, if there are differences between regions and if the number of spectators varies along regional lines (Beckman, Kurtz, & Boone, 1992).

Psychographic Information

Although the lifestyle concept was developed nearly forty years ago by researchers in marketing (Laser, 1963; Levy, 1963; Moore, 1963; Plummer, 1971), application of the concept to sports marketing is still relatively new, and has real potential for enhancing understanding of sports spectating and for enabling more effective segmentation of sport spectators. The delayed adoption of lifestyle marketing is not entirely unique to sports marketing. According to Beckman, Kurtz and Boone (1992), socio-demographic segmentation remains a primary basis for grouping customers into target markets in many industries, and as a consequence, lifestyle segmentation is as yet an under-utilized resource. It is important to distinguish these two forms of segmentation. Demographic segmentation consists of dividing the market into groups on

the basis of socio-demographic variables. For conducting marketing research, the demographic profile is probably the most familiar and uses accessible information. Demographic information such as age, income, education, sex, occupation, religion, race, nationality, and household size are the most popular bases for distinguishing customer groups and developing appropriate marketing mixes in marketing research.

According to Wells & Tigert (1971), psychographic research (lifestyle research) focuses on consumers' activities, interests, prejudices, and opinions, and its major aim is to draw human portraits of consumers. Lifestyle refers to a person's pattern of living as expressed in his or her major activities, interest, and opinions (AIO). Activities refer to work, hobbies, shopping, sports, and social events. Interests refer to food, fashion, family, and recreation. Opinions concern people themselves, social issues, business, and products. Beckman, Kurtz, and Boone (1992) defined psychographics as the use of psychological attributes, lifestyles, and attitudes to determine the behavioural profiles of different consumers.

In a recent study related to NHL spectators, Carter (1996) segmented Toronto professional sports consumers into three groups based on their psychographic information. There were two main purposes in Carter's study. The first was to determine if naturally occurring psychographic segments were present and the second was to segment professional sport consumers based on their psychographic information including needs, wants, attitudes, interests, opinions, behaviours and demographics. For the purpose of his research, Carter collected and examined 251 questionnaires completed

by present and potential consumers of four different professional sports (football, baseball, basketball and hockey) from the Toronto area.

With respect to market segmentation, Carter (1996) found that there were three different segments (Strongly Committed, Weakly Committed and Non-Professional Sports Fans) among Toronto professional sports consumers. Carter performed three separate exploratory factor analyses to identify thirteen factors with a total of 45 different sub-items. Based on the thirteen identified factors, the three different segments were derived using cluster analysis. Chi-square analyses were used to reveal the relationships of the three segments to their game attendance level. According to the results for the case of the Toronto Maple Leafs, the Strongly Committed group was more likely to attend professional sporting events while the Non-Professional Sports Fan group was less likely to attend sporting events.

Even though Carter's study (1996) provided very important information for understanding professional sports market segmentation based on psychographics, there were a number of limitations to his study. Firstly, the sample size was too small ($N =$ 251) to evaluate four different professional sport consumers. Secondly, due to the small sample size, Carter ended up performing three separate exploratory factor analyses which overall resulted in 13 factors. While these results were useful, the factor loadings probably would have been different if he had conducted a single factor analysis with all 45 items from the questionnaire and a larger sample size. As a consequence of using exploratory factor analysis (instead of confirmatory factor analysis), variables containing different meanings were loaded into the same construct. Items that had weak loading or

were inconsistent with the other items in the same factors were all excluded in his study. Again, it is unclear how these would have stood up in a larger, single-sport study. Lastly, Carter evaluated the validity of his questionnaire on only a very limited basis in terms of content validity and so other conditions of validity were overlooked.

As noted by Beckman, Kurtz, and Boone (1992), demographic variables tend to be used more frequently in market segmentation than psychographic variables. There are several reasons for this. First, they are easy to identify and measure. Compared to psychographics, demographic information is easier to collect and measure because demographic questions are more straightforward to answer than are the interests and opinion questions required for psychographic information. As well, marketers can conduct research drawing on vast quantities of secondary data, such as census data, which can assist them in segmenting potential markets on a demographic basis. Marketing researchers collect socio-demographic information as a matter of routine and marketers feel comfortable using this information. Second, demographic variables are associated with the sale of many products and services. Third, they are typically referred to in describing the audiences of advertising media, so that media buyers and others can easily pinpoint the desired target market (Beckman, Kurtz, & Boone, 1992).

Socio-demographic information is unquestionably a useful basis on which to segment consumers. Wells (1988) insisted that demographic information has so much influence on so many kinds of consumer behaviour that users of a product or a brand, viewers of a television program, or readers of a magazine are virtually certain to differ from the rest of the population on one or more of the common demographic dimensions.

Gender is an obvious variable for segmenting many markets, since many products are marketed as being gender-specific. Age is another important demographic variable to segment markets. Generally speaking, people's spending patterns tend to vary according to age. For example, suppose there is a company that is producing inline skates and snowboards and the company needs to decide its target market. In this case, even though the older and senior middle-aged adults have relatively more income or money than younger adults have, they are not the company's target group because their products generally do not appeal to this age group.

Despite the importance of demographic factors, however, Solomon (1996) has noted that people tend to identify themselves with different lifestyle groups based on activities they prefer (psychographics), in addition to having different age-appropriate interests and spending patterns (demographics).

> Consumers often choose products, services, and activities over others because they are associated with a certain lifestyle or a lifestyle group (Beckman, Kurtz, & Boone, 1992). For this reason, lifestyle-marketing strategies attempt to position a product by fitting it into an existing pattern of consumption. Because a goal of lifestyle marketing is to allow consumers to pursue their chosen ways to enjoy their lives and express their social identities, a key aspect of this strategy is to focus on product usage in desirable social settings (Solomon, 1996, p. 579-580).

Lifestyle marketing does not focus its analysis on the characteristics of consumers as such, but rather it focuses on understanding consumers based on their patterns of behaviour. For example, Beckman, Kurtz, and Boone (1992) explain that while demographics allow us to describe who buys, psychographics allow us to understand why they buy. The obvious conclusion is to use both methods to profile

consumers so that we can understand who buys a product as well as why they buy it. This is the approach taken in this dissertation.

As can be seen from the discussion above, even though the theory of reasoned action and means-end theory are not formally evaluated in this dissertation, the two theories provide an important basis for understanding factors that influence ticket purchase decisions as well as game attendance. Their role in the dissertation is to help clarify the varieties of factors that influence game attendance and to provide an overarching perspective (broader than in most previous studies) on how these factors relate to one another. The research in this dissertation is focused on uncovering, *inter alia*, factors affecting ticket purchases and spectators' attitudes towards ticket purchases. In this respect, "attitude toward buying", which is one of three core concepts of the theory of reasoned action (the other two: "social pressure" and "intentions versus behaviour"), plays an important, albeit implicit, role to help evaluate game attribute items in the dissertation research. By comparison, because means-ends theory focuses on the cognitive linkages among products, consequences, and personal values, its main contribution is for understanding how spectators' attitudes and opinions relate to their behaviours and for taking account of the emotive, affective side of spectator attendance at games. The theory of reasoned action is used mainly in this dissertation as a framework for isolating cognitive factors and variables in previous research that can be seen to influence the purchase decision in buying tickets and attending games. Means-ends theory is used to help identify lifestyle and affective variables. Peoples' activity patterns and choices are rooted in personal values even as much as are their attitudes and

opinions. Although both the theory of reasoned action and means-end theory are effective tools to help reveal construct domains, this dissertation research was not intended to evaluate these two theories but to use them as a basis for developing and evaluating an instrument for testing extant understandings of factors affecting game attendance and for uncovering spectators' demographic and psychographic profiles. Having reviewed previous research in the areas of game attendance and spectator profiling, I turn in the next chapter to how I designed a questionnaire to 1) evaluate the efficacy of present methods of assessing game attendance factors and 2) describe the spectator profiles of NHL game attendees at Vancouver Canucks games in Vancouver, Canada.

Chapter 3. Methodology

The main purpose of this dissertation research was to investigate the consumer profiles of NHL spectators and to identify spectator profile factors relating to game attendance in the NHL. The research had two inter-related objectives. One was to investigate the consumer profiles of sport spectators associated with a specific NHL franchise, the Vancouver Canucks, and to relate these to game attendance. The second objective was to develop, test and evaluate a questionnaire designed to incorporate latest thinking on variables that affect professional sports game attendance. The study was intended to make a novel contribution to the literature as little research had previously focused on profiling NHL fans as such, and no research had been undertaken to holistically test the different attendance-related variables identified in prior research using confirmatory factor analysis.

The procedures followed in the evaluation of this questionnaire are discussed under the following headings: (a) subjects, (b) overview of instrument design and validity, (c) defining constructs and selecting items, and (d) data collection and data analysis.

Subjects

For the purpose of this study, three different groups of subjects were required for the three different components of the study (a pilot test, main tests, and a reliability test). For the main tests, actual Vancouver Canucks spectators who were attending a live game formed the target population. As well, all subjects needed to be 19 years of age or older for the main test to comply with UBC ethics standards and to represent the core target group for Canucks spectators. For the pilot and reliability tests, students from the

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University of British Columbia were targeted on a one-off basis so that students in the

pilot test would not participate in the reliability test.

Overview of Instrument Design and Validity

The instrument was designed to evaluate the most promising and theoretically

compelling variables identified in Chapter 2, and has four discrete parts (see Table 1).

Table 1. Parts and Components

Part	*Component*
Part 1 Reasons for Game Attendance (Number of Items = 33)	Overall performance, uniqueness of hockey, facility convenience, game schedule, game promotion, advertising, sense of community
Part 2 Sports Interests and Activities (NI = 20)	Ticket information, frequency of game attendance, ticket purchasing pattern, activities (work, hobbies, sports, and social events), interests (family, media, and recreation)
Part 3 Personal Background (NI = 9)	Sex, age, education, occupation, income, ethnicity, and dwelling information
Part 4 Opinions About Sports (NI = 33)	Opinions (about themselves, social issues, politics, economics, education, culture, future, business, and products) under 10 constructs: self-participation in sports, cynicism, children oriented, perceived time cost, sports benefits, resources, community pride, attitudes about professional athletes, government role, and attitude about amateur sports

Note. The complete questionnaire is presented in Appendix A.

The first part of the questionnaire consists of questions to assess the reasons

why NHL spectators attend games. It contains 33 items under seven constructs (Overall

Performance, Uniqueness of Hockey, Facility Convenience, Game Schedule, Game

Promotion, Advertising, and Sense of Community). The second part is related to

psychographic variables including spectators' sport interests and activities, and consists of 20 items. The third part is about spectators' personal backgrounds based on nine demographic characteristics including gender, age, education, occupation, income, ethnicity, and dwelling information. In the final part of the instrument, further psychographic variables relating to opinions about sports are examined using 33 items under 10 constructs: Self-participation in Sports, Cynicism, Children Oriented, Perceived Time cost, Sports Benefits, Resources, Community Pride, Attitudes about Professional athletes, Government Role, and Attitude about Amateur sports. As mentioned in the previous chapter, because psychographic information is an effective tool for understanding consumers, it is important to investigate spectators' psychographic profiles in addition to their demographic profiles in order to better understand spectator behaviour and potentially enhance marketing strategies in the National Hockey League.

A key contribution of this research is that it fully assesses the validity of the questionnaire, including constructs and variables used in previous studies in which validity was not conclusively evaluated. The term 'validity' is used differently by different authors and in different contexts. According to Pedhazur and Schmelkin (1991), the meaning of validity in a measurement context differs from that in research design contexts. As well, within each of these contexts, one encounters different definitions of validity and distinctions among different types or kinds of validity.

The American Psychological Association (AERA/APA/NCME, 1985, cited by Johnson and Plake, 1998) offers a characterization of validity for educational and

psychological measures, that incorporates the appropriateness, meaningfulness, and usefulness of the specific inferences made from test scores. It will be noted that this characterization of validity refers not to a measure itself but to inferences made on the basis of scores obtained on that measure. Messick (1989) characterized validity in a similar manner, making validity a feature of the meaning of the scores rather than a condition of the test or assessment as such. In other words, he emphasized the meanings, interpretations, and applications of the test scores, rather than test validity itself.

Messick (1995) insists that validity should be a unified concept to address both score meaning and social values in test interpretation and test use. This comprehensive concept of validity made an important shift from content, criteria, and consequences into a construct framework to investigate rational hypotheses about score meanings and theoretically consistent relationships. Content, substantive, structural, generalizability, external, and consequential construct validity are six aspects of construct validity incorporated in the new unified concept of validity presented by Messick (1995).

Figure 1. Steps in Questionnaire Validity Test (Schutz, 1998)

| Define construct & Create and/or select items |
| ↓ |
| Review by experts for content validity, Revise |
| ↓ |
| Pilot on small sample for clarity and ambiguities |
| ↓ |
| Pilot on large sample for internal consistency, Revise |
| ↓ |
| Pilot on large sample for convergent and discriminant validity, Revise |
| ↓ |
| Pilot on large samples of divergent groups for concurrent validity |
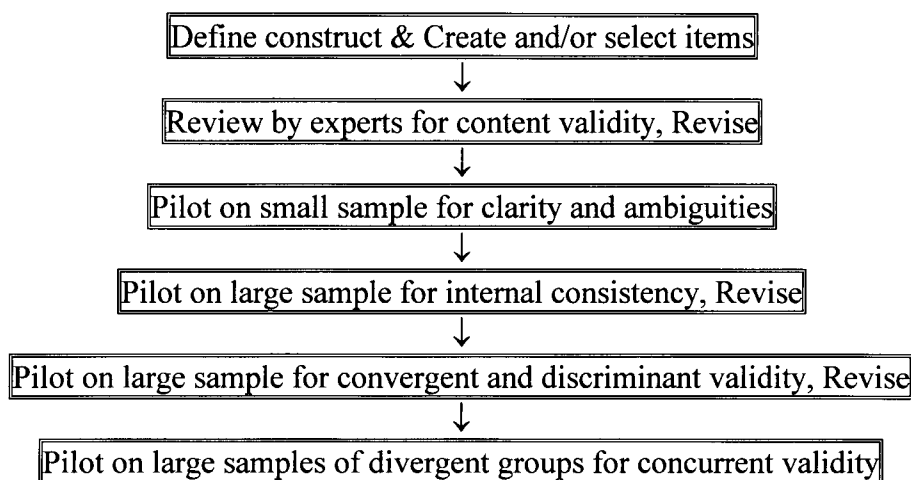
In this study, construct validity is examined as part of evaluating the questionnaire for the end purpose of assessing the consumer profiles of Vancouver Canucks' spectators. For testing an inventory in this study, there are six steps based on Schutz's inventory development procedure (1998) (Figure 1).

Defining Constructs and Selecting Items

As noted in the previous chapter, theory of reasoned action and means-ends theory were used respectively in this dissertation research to help conceptualize and identify cognitive and affective factors affecting NHL game attendance. The goal was to develop an inventory that could be used to profile NHL spectators and evaluate current understandings of factors in spectator attendance. A number of factors had been identified in previous research. These are critically reviewed below and the final selection of items is described.

Game Attendance

In previous studies (Baade & Tiehen, 1990; Bird, 1982; Carter, 1996; Dick & Sack, 2003; Hansen & Gauthier, 1989; Jones, 1984; Kahle et al., 1996; Marcum & Greenstein, 1981, 1985; Mawson & Coan, 1994; Schofield, 1983; Whitney, 1988; Zak, Huang, & Siegfried, 1979; Zhang et al., 1995, 1996, 1997a, 1997b, 1998, 1999, 2001), a number of factors were found to affect spectator attendance as described in the literature review section. Among the previous studies, Carter (1996), Hansen and Gauthier (1989), Jones (1984), Smith (1995), Schofield (1983), Zhang (1998), and Zhang et al. (1996, 1997a, 1999) have examined hockey attendance and focused on identifying variables which can affect the attendance level of spectators. Carter identified (1996) 10

variables (education, income, sports knowledge, participation in team sports, amount of

television sports watched, too much time to get there, want to see specific teams, busy

doing other things, ticket price, and a good opportunity to spend time with kids) that

affect spectator attendance. Schofield (1983) examined 17 studies, and developed four

categories (economic, demographic, game attractiveness, and general preferences) to

explain spectator attendance factors. Jones (1984) insisted that winning related variables

(home & opposing team) and market characteristics (scheduling, population size,

minority composition, income, market competition, arena capacity, and Canadian

tradition) were uncovered to affect attendance levels. Smith (1995) focused his study on

both major and minor league hockey surveying public relations directors, and revealed

eight attendance related variables: fast, action-packed, education, competitors/rivalries,

fight potential, giveaways, gimmicks, tie-ins, and individual players. Zhang et al. (1997a,

1999) identified 13 variables under three factors (game attribute, home team, and

economic consideration) and nine game enjoyment variables affecting the spectator

decision to attend minor league hockey games. As well, Hansen and Gauthier (1989)

uncovered 29 (out of 40) separate variables that influenced attendance at professional

Table 2. Constructs and Items in Hockey-Related Studies

Carter (1996)	Schofield (1983)
• education	Economics
• household income	♠ticket price
• sports knowledge	♥the existence of substitute
• participation in team sports	forms of entertainment
• amount of television sports watched	Demographics
♦ too much time to get there	• population size
• only want to go to certain games to see specific teams	• ethnic mix
	Game attractiveness
• busy doing other things	♣ team success
♠ tickets too expensive	♣ star players
• offers a good opportunity to spend time with kids	♣ closeness of competition

	♠special events General preferences ♦new stadium ♥weekend game ♥the end of season
Jones (1984) ♣ home and opposing team ♥ scheduling ● population size ● income ● minority composition ● market competition ♦ arena capacity ★ Canadian tradition	*Smith (1995)* ◐fast, action-packed ● education ♣ competitors/rivalries ◐fight potential ♠ giveaways ♠ gimmicks ♠ tie-ins ♣ individual players
Zhang et. al (1997a, 1999) 1997a Game attributes ◐ speed of game ◐ tough/aggressive play ◐ player appeal ★ love of hockey Home team ♣ win/loss records ♣ league standing ♣ star players ♣ home team quality Economic consideration ♠ ticket price ♦ good seats ♠ promotion ◈direct mail & notification 1999 ♣ music ◐speed of game ◐player appeal ★entertainment ★people watching ◐tough/aggressive play ◐player fighting ♠ promotions ★socializing with friends	*Hansen & Gauthier (1989)* Scheduling of games ◐offensive output of home games ♦unobstructed view ♥evening games ♥weekend games ♥fourth quarter of season ♥third quarter of season ♠years franchise in area Convenience of fans ♦easy access to facility ♦availability of parking ♦seating capacity of facility ♦cleanliness of facility ♥TV coverage of another major sport during home game ● ethnic mix of population ● average income of population Performance quality of the team ♣ record breaking performance of visitor athletes ♣ record breaking performance of home athletes ♣ rivalry of team and opponent ◐defensive output of home team ♠special event occasions Team as a contender ♣ team's place in division standings ♣ team's place in league standings ♣ team's involvement in 1st place race ♣ team's involvement in playoff race ♣ closeness of competition during season ♣ record of visiting team ♣ record of home team Price ♠ price of season ticket ♠ price of ticket to home game
This study ♣ Overall performance ◐ Uniqueness of hockey ♦Facility convenience ♥Schedule convenience ♠Game promotion ◈ Advertising ★Sense of community	

sport events. Twenty-eight of the 29 variables loaded on the five constructs: scheduling, convenience, quality of performance, team as a contender, and price. Table 2 lists the constructs, and specific variables that may measure these constructs, for all of these studies.

Although the names of the constructs from the five hockey-related studies were somewhat different, the implied meanings of the constructs were similar throughout the five studies and relate to the spectators' overall "attitude towards buying" tickets as well as to their personal values and affect. Based on the findings of these studies and in conjunction with studies in other professional sporting events (e.g., baseball, football, basketball), these following seven constructs are deemed to be the most important factors affecting hockey attendance: Overall Performance, Uniqueness of Hockey, Facility Convenience, Schedule Convenience, Game Promotion, Advertising, and Sense of Community (Figure 2).

The seven constructs and their associated items, along with the rationale for their inclusion, are discussed in the following section. Table 3 provides a complete listing of the seven constructs and 33 items.

Overall performance.

The first construct, overall performance, encompasses eight items related to the general quality of games. Factors in this construct are related to performance quality (Greenstein & Marcum, 1985; Hansen & Gauthier, 1989; Zhang et al., 1995, 1997a; 1999), star players/superstars (Greenstein & Marcum, 1985; Hansen & Gauthier, 1989; Smith, 1995; Zhang, et al., 1995, 1997a), the team as a contender (Bird, 1982; Hansen &

Table 3. Constructs and Items for Part 1

Constructs	Items
Overall Performance (O. P.) (Number of Items = 8)	• home team win/loss records • visiting teams win/loss records • home team superstars • visiting team superstars • record breaking performance of visitor's athletes • record breaking performance of home athletes • rivalry of team and opponent • closeness of competition (home vs. visiting teams)
Uniqueness of Hockey (U. H.) (NI = 3)	• offensive output of home games • defensive output of home team • frequent fights and penalties
Facility Convenience (F. C.) (NI = 6)	• unobstructed view • comfortable seat • easy accessibility to facility • availability of parking • seating capacity of facility • cleanliness of facility
Game Schedule (G. S.) (NI = 2)	• game time (afternoon, evening) • game day (weekday, weekend)
Game Promotion (G. P.) (NI = 5)	• giveaway/prize • ticket discount • special event occasions • price of season ticket • price of game ticket
Advertising (ADVT) (NI = 6)	• direct mail & notification • advertising through T.V. • advertising through newspapers • advertising through magazines • advertising through radio • advertising through internet (websites)
Sense of Community (COMM) (NI = 3)	• behaviour of fans during games • accompanied by friends • excitement

Gauthier, 1989; Zhang et al, 1995, 1997a.), and the closeness of competition during

season (Hansen & Gauthier, 1989). This construct includes the following items: home-

team win/loss record, visiting-team win/loss record, home-team superstars, visiting-team

superstars, home-team record breaking performance, visiting-team record breaking performance, rivalry of team and opponent, and closeness of competition during season (home and visiting teams).

Uniqueness of hockey.

The second construct of the hockey attendance component of the questionnaire includes variables related to the unique characteristics of professional hockey games. The three items belonging to this construct are offensive output (speed of game, and minutes of power play), defensive skills, and frequent fights and penalties (Smith, 1995; Zhang et al., 1997a, 1999).

Facility convenience.

The third construct, defined as facility convenience, contains six items focusing on the convenience of fans. Items in this construct are: unobstructed view (Hansen & Gauthier, 1989; Zhang et al., 1995), good seat (Zhang, 1995, 1997a), easy accessibility to facility (Greenstein & Marcum, 1981; Hansen & Gauthier, 1989), seating capacity of facility (Jones, 1984; Greenstein & Marcum, 1985), availability of parking (Hansen & Gauthier, 1989; Zhang et al., 1995), and cleanliness of facility (Greenstein & Marcum, 1985; Hansen & Gauthier, 1989).

Schedule convenience.

The fourth construct represents variables related to game schedule. Two items in this construct are related to scheduling of game times (afternoon and evening) and game day (weekday and weekend) (Greenstein & Marcum, 1985; Hansen & Gauthier, 1989; Schofield, 1983; Zhang, 1998; Zhang et. al, 1995, 1997a). These variables have been shown to influence spectator attendance.

Game promotion.

The fifth construct represents items related to game promotion. The five items in this construct are giveaway/prize (Smith, 1995; Zhang et al., 1995), special events (Hansen & Gauthier, 1989; Schofield, 1983), price of season ticket, price of home game ticket (Bird, 1982; Carter, 1996; Hansen & Gauthier; Schofield, 1983; Zhang et al., 1995, 1997a), and ticket discount (Zhang et al., 1995), all of which were verified to affect spectator attendance.

Advertising.

The sixth construct encompasses six items including direct mail and notification (Zhang et al., 1995, 1997a), advertising through T.V., radio, newspaper, magazines, and internet (Mawson & Coan, 1994). The items in this construct are intended to test spectators' game involvement based on advertising media affecting their game attendance.

Sense of community.

The final construct consists of three items including behaviour of fans during games, being accompanied by friends, and excitement. According to Kahle et al. (1996) some spectators have a strong emotional attachment to and excitement in their teams and this attachment possibly affects their team's performance. Zhang et al. (1999) identified two emotional items (socializing with friends and people watching) that affected spectators' game enjoyment of minor league hockey games. Means-ends theory supports including these items within a single construct because they reflect an end value of sociality that is informed by communal identity. The items demonstrate a concern for community that is both serious (supporting the team) and playful (socializing with

friends and people watching). Game attendance is a means for engaging in these activities and fulfilling this value.

Sports Interests and Activities

In addition to the seven constructs in part 1, part 2 consists of 20 items related to the spectators' lifestyles including sports interests and activities, hobbies, social events, fan history, and spending patterns for their activities (Table 4). According to Beckman, Kurtz, and Boone (1992), although demographic segmentation traditionally has been the primary basis for grouping customers and industries into segments to serve as target markets, psychographic segmentation focusing on lifestyles of potential consumers may provide more relevant and important information for market segmentation purposes. Carter (1996) insisted that the marketer could appeal to each segment by knowing the characteristics of different psychographic segments and he identified three different professional sport markets using spectators' lifestyle information. In addition to spectators' sports interests and activity patterns, items such as their ticket choices, amount of money spent for tickets, and frequency of attending games are included to investigate spectators' ticket purchasing characteristics along with their game attendance levels. The interests and activities questionnaire items were all designed to be open-ended, except for ticket choices, timing of purchasing tickets, ticket purchasers, best promotional medium, and colleagues for attending games, which were multiple choice items.

Personal Background

Demographics are statistics that measure observable aspects of a population

Table 4. Questionnaire Items for Part 2 and 3

Parts	*Items*
Part 2 Sports Interests and Activities (Number of Items = 20)	• number of games attended in the past 12 months • amount of money spent for game tickets • number of games attending in the next 12 months • ticket choices (season, 11 pack, single etc…) • timing of purchasing tickets • ticket purchaser • best promotional medium • colleagues for attending games • fan history • memberships of sports clubs • intention to participate in a new physical activity • favourite hobbies • favourite sports activities • amount of money for sports activities • favourite outings other than hockey games • amount of money for outings • favourite web sites • frequencies to visit and amount of time spent for web sites • favourite sports when young • favourite sports of kids
Part 3 Personal Background (NI = 9)	• age • gender • postal code • first language • ethnic background • business, industry or service to work in • occupation • income • level of education

(Solomon, 1996). In previous studies, eight demographic characteristics including age/

gender (Greenstein & Marcum, 1985), population size (Greenstein & Marcum, 1985;

Jones, 1984; Schofield, 1983), social status (Greenstein & Marcum, 1985), education

(Cater, 1996; Smith, 1995; Zhang et al., 1995), occupation (Zhang et al., 1995), income

(Jones. 1984; Hansen & Gauthier, 1989), and ethnicity (Hansen & Gauthier, 1989;

Jones, 1984; Schofield, 1983; Zhang et al., 1995) have been revealed to affect

spectators' game attendance levels. Part 3 of the questionnaire contains nine items to

uncover spectators' demographic information including age, gender, education,

occupation, income, ethnicity, and dwelling information (Table 4).

Opinions about Sports

In this part, thirty-three psychographic items were included. All thirty-three

variables were taken from Carter's multi professional sport study done in 1996. Carter

identified 14 factors based on 45 variables associated with issues including the role of

the family, participating versus spectating, sports avidness, views on types of sports or

athletes, sensation seeking, personality, societal treatment of athletes, sense of financial

security adding value to the quality of life, and the role of government.

The fourteen identified factors are as follows: self-participation in sports,

degree of excitement, skill versus genetics, emotion arousing, cynicism, inconclusive,

children oriented, perceived time cost sports benefits, resources, community pride,

attitudes about professional athletes, government role, and attitude about amateur sports .

Among the forty-five items under 14 constructs in total, thirty three variables relevant to

hockey were selected to test the relationship between spectators' psychographic

information and the frequency of game attendance in this study. The thirty-three items

are categorized into ten constructs and the names of constructs are as follows: self-

participation in sports, cynicism, children-oriented, sports benefits, resources,

community pride, attitudes about professional athletes, government role, attitude about

amateur sports, and perceived time cost. Table 5 provides a complete listing of the ten

constructs and 33 items.

Table 5. Constructs and Items for Part 4

Constructs	Items
Self-Participation in sports (S.P.) (Number of Items = 6)	• Given the choice, participating in sports is more enjoyable than watching. • It is always good to try new recreational activities. • It is difficult to understand how people could just lay around when there are so many recreational activities to do. • Individual sports are superior to team sports like soccer because you don't have to rely on others • Attending a sporting event with a friend is far more enjoyable than attending alone. • It is good to see what sports reporters say about the team before deciding whether or not to buy a ticket.
Cynicism (C.C.) (NI = 3)	• Buying professional sport memorabilia is a waste of money. • Buying tickets from scalpers is not worth the extra cost, even for excellent seats. • Belonging to professional sports fan clubs is a waste of time.
Children Oriented (C.O.) (NI = 2)	• Parents should always try to attend their children/s sport contests. • It is important to participate in regular physical activity with your child.
Sports Benefits (S.B.) (NI = 4)	• Professional sports provides an escape from my home and family pressures. • Participation in organized sports is not one of the best ways for kids to spend their free time. • Taking children to professional hockey events is a great way to spend time with them. • For children, the positive aspects of participating in sports for outweigh the negative ones.
Resources (R.S.) (NI = 2)	• For recreation, time is a bigger problem than money. • Our income is high enough to satisfy nearly all our desires for sporting event tickets.
Community Pride (C.P.) (NI = 5)	• It would be difficult to live in a city that does not have one or more professional sports teams nearby. • When my home team wins, it really makes me feel good. • The success of a professional sports team brings pride to the city. • Professional athletes make good role models. • Being able to cheer for my home professional sports

	franchise adds to my sense of community.
Attitude about Pro-athlete (A.P.) (NI = 3)	• Most professional athletes show a genuine caring for the city in which they play. • Professional athletes are only in it for the money. • Professional athletes tend to be whine and complain too much.
Role of Government (R.G.) (NI = 3)	• Tax dollars should not be spent on building stadiums and areas for professional sport franchises. • Government should not assist financially troubled professional sports organizations. • Government should offer tax incentives to keep a team in a city or to encourage another team to relocate there.
Attitude about Amateur sports (A.A.) (NI = 4)	• The enthusiasm of the amateur athlete makes amateur sports more enjoyable to watch than professional sports. • Amateur sport athletes/teams deserve more funding. • Attending an amateur sporting event is not as exhilarating as attending a professional sporting event. • Amateur sporting events are quite often far superior in entertainment value than their professional counterparts.
Perceived Time cost (P.T.) (NI = 1)	• Professional sporting events take too much time to watch.

Review by Experts for Content Validity

The content aspect of construct validity includes evidence of content relevance, representativeness, and technical quality (Messick, 1989). According to Messick (1995), a key issue for the content aspect of construct validity is the specification of the boundaries of the constructs to be assessed. In this study, the relevant constructs are the seven components of game attendance, and the ten components of opinion about sports.

For content validity, four experts (professors and marketers whose specialties are in sport marketing, statistics, and marketing) reviewed the contents of the items hypothesized to measure the content topics. The experts were requested to indicate if an item did not adequately reflect the construct associated with it, and if the item was

ambiguous or unclear. For part 1, game attendance, 18 items rated as having low

relevance to the constructs were excluded. These included team's involvement in 1st

place race, team's place in division standings, and timing (in the season) of the game.

Also, items showing similarity with other items were excluded. In part 2, the formats of

the items related to favourite hobbies, activities, and outings were changed from multiple

choice questions to open-ended questions. For part 3, personal background, the item

about marital status was excluded because it was too personal to answer. In parts 2, 3,

and 4, the layout and wording of some items underwent minor revisions. It was

anticipated that these changes would result in a questionnaire that would take 20 minutes

to complete (compared to the 30 minutes requested for the original questionnaire).

Pilot on Small Sample for Clarity and Ambiguities

Once content validity was established, a pilot study was conducted on a small

sample for improving clarity and eliminating ambiguities. The subjects for this pilot test

did not have to be spectators. Seventeen students from the University of British

Columbia were used. Subjects were asked to review items and to rate the degree of

difficulty to answer each item. Ratings were done using the following 5-point scale: 1

(Very Difficult), 2 (Difficult), 3 (Fair), 4 (Easy), and 5 (Very Easy), and mean scores

were calculated for each item. The results indicated that none of the items' mean scores

were less than 4 (expected mean score). However, about 70 percent of the subjects

pointed out that the questionnaire was too long. Based on the results of the pilot test

and comments from experts regarding content validity, three different forms of the

questionnaire were developed, namely Form A, B, and C (see Table 6).

Table 6. Questionnaire Forms and Components

Forms	Components
Form A	Part 1: Game Attendance Part 2: Sports Interest and Activities Part 3: Personal Background
Form B	Part 2: Sports Interest and Activities Part 3: Personal Background Part 4: Opinions about Sports
Form C	Part 1: Game Attendance Part 2: Sports Interest and Activities Part 3: Personal Background Part 4: Opinions about Sports

Part 1 (33 items) and part 4 (33 items) formulated the majority of the questionnaire's 95 items, and the logical choice was to separate them. Additionally, these two sections required two separate, unrelated confirmatory factor analyses and there was less necessity for uncovering the connection between them than among the other parts. Consequently Form A consisted of parts 1, 2, and 3, and Form B of parts 2, 3, and 4. These two forms were deemed to be short enough to be completed by spectators before a live hockey game. Form C included all items from parts 1, 2, 3, and 4 and was used with a university sample (UBC students recruited on campus).

Test on Large Sample for Internal Consistency and Internal Structural Validity

Two separate confirmatory factor analyses (CFAs) were envisioned for testing the internal consistency and internal structural validity of part 1 (game attendance-related variables), and part 4 (opinions about sports). According to Smith, Schutz, Smoll, and Ptacek, (1995), confirmatory factor analysis should be performed because this allows tests to evaluate the degree to which the structural characteristics of an instrument

confirm a hypothesized underlying model. Given that the two scales used in this study had been constructed on sound theoretical grounds with well-defined latent constructs, CFA rather than the more commonly utilized exploratory factor analysis (EFA) is appropriate here. EFA is a non-theory based data-driven procedure which may lead to factor structures unique to a specific sample, and with little or no theoretical justification on generalizability. Although it may be useful in the early stages of scale development in some situations, the constructs of the questionnaires used in this study were sufficiently defined a priori, thus negating the need for EFA. Several models can be tested based on inspection of the inter-factor correlations, modification indices, and normalized residuals. For evaluations of sequential models, several different indicators including the chi-square difference, Q test, root mean square residual (RMSR), root mean square error of approximation (RMSEA), the parsimony goodness-of-fit index (PGFI), and comparative fit index (CFI) can be used to assist in selecting the best model (Smith et al., 1995). A RMSEA of .05 or less indicates that the model based on the sample data represents a close fit to the population, and a value less than .08 indicates a reasonable fit (Jöreskog & Sörbom, 1993; cited by Smith et al., 1995). For PGFI, the larger the PGFI, the more parsimonious the model. CFI values of .90 and larger indicates an adequate fit of the model to the data (Smith et al., 1995). Based on the inter-factor correlations, modification indices, and normalized residuals a better fitting model could be uncovered by revisions to the scale such as deleting items and combining subscales into a new one, dividing one into two factors, or deleting some subscales which showed low factor loadings, large residuals, and redundancy.

For internal consistency, Cronbach's alphas are used as an indicator. Internal consistency reliability is concerned with the homogeneity of the items comprising a scale (Pedhazur & Schmelkin, 1991). High inter-item correlations suggest that the items are all measuring the same thing. Generally, alphas higher than 0.7 are acceptable (Nunnaly, 1978), and alphas higher than .80 are considered adequate (Schutz, 1995), but alpha is also a function of the number of items in the scale, such that lower values are considered acceptable for scales with few (2-4) items.

Test on Large Samples for Convergent and Discriminant Validity

Convergent validity refers to a convergence among different methods designed to measure the same construct (Pedhazur & Schmelkin, 1991). Ideally, the correlations between the new inventory and other scales used to measure the same construct should be high. Discriminant validity refers to the distinctiveness of constructs demonstrated by the divergence of methods to measure different constructs (Pedhazur & Schmelkin, 1991). Ideally, the correlations between the new inventory and other scales to measure different constructs should not be high. For testing convergent and discriminant validities of the scale which assesses personal values toward professional sports, the inventory of Zhang's study (1999) was used as his scale included both similar and dissimilar constructs in part 1 of this study.

Reliability refers to the degree to which measures are free from random error and therefore yield consistent results (Zikmund, 1997). In other words, reliability is the stability of a test score, that is, the ability of a test to provide a consistent measurement on repeated occasions. For testing reliability of part 1 and 4 of Form A, B, and C, 28

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subjects were used in a test-retest design. To avoid carry-over effects, the interval between the two administrations was two weeks. Bivariate correlation coefficient were calculated for each construct between two tests and used as a reliability index.

Test on a Large Sample for Criterion-Related Validity

A criterion is any variable one wishes to explain or predict by resorting to information from other variables, and the correlation coefficient between a predictor and a criterion is referred to as a validity coefficient (Pedhazur & Schmelkin, 1991). Criterion validity has two subdivisions depending on when the criterion data is collected, concurrent validity and predictive validity. One way to test criterion-related validity of an inventory which assesses variables affecting spectator attendance of professional sport is to analyze correlation coefficients between predictors and criterion information such as people's ticket preferences (season ticket holder, game pack holder, and single game holder) or the frequency (how many times last season, this season, and next season) of watching games as spectators.

In this study, the frequency of game attendance was used as a criterion variable, and the seven constructs in part 1 and ten constructs in part 4 used as the predictors.

Data Collection and Data Analysis

Collection of Data

A group-administered data collection method was used. For the selection of the subjects, spectators who were attending Canucks' games and UBC students who had attended Canucks' games at least once in the past were contacted.

The following statement was used to introduce the survey and was printed on the questionnaire:

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Dear Madame/Sir:
The purpose of the survey is to describe the activities and interests of hockey fans and poll opinions about why people attend NHL games. You have been randomly selected as a Canucks spectator. If you are an adult (19 years of age or older) and willing to participate in the survey, you will need to fill out as much of the questionnaire as you can.

Written permission was obtained from the Vancouver Canucks to conduct in-stadium data collection at General Motors Place prior to the start of live games. Surveys were conducted prior to four weekday games during the 2001-02 season. Approximately 15 students assisted with the data collection for each game. Distributing and collecting questionnaires were done during the 50 minutes before each game. There are 56 different seating sections in the Canuck's ice rink, but access to about 10 seating sections was restricted by the Canucks organization for various reasons including security problems and conducting a survey of their own. Each time, 15 sections were randomly selected and an average of 350 questionnaires was distributed. With respect to data collection for Form C, two hundred and fifty questionnaires were distributed to UBC students at the Student Union Building for four days during the hockey season in 2002.

Data Analysis

Responses to the questions were entered into a data file using the Statistical Package for Social Sciences (SPSS for Windows). The data were divided into three different data sets based on the questionnaire form completed (A, B, or C), and then analyzed in two studies, based on the purpose of the data analysis. Table 7 outlines these divisions. Confirmatory factor analyses, cluster analysis, discriminant function analysis, and decision tree analysis were conducted using LISREL 8.3, SPSS^x 10.0 for Windows,

and SPSS[x] Answer Tree 3.1. All confirmatory factor analyses (CFAs) were conducted with LISREL.

Table 7. Data Sets and Component

Data Set	Respondents	Form	Parts
1	Ice Rink Spectators	A	1, 2, 3
2	Ice Rink Spectators	B	2, 3, 4
3	UBC Students	C	1, 2, 3, 4
			2, 3 (Common components)
Study 1	Consisted of Data Sets 1 and 3		
Study 2	Consisted of Data Sets 2 and 3		

Study 1.

Study 1, based on data sets 1 and 3, had as its purpose the investigation of reasons for game attendance and relevant predictors. Data analyses consisted of a confirmatory factor analysis for testing the validity of part 1 of the questionnaire (modelled in Figure 2), and a decision tree analysis for classifying spectators based on all items (part 1, 2, and 3).

Study 2.

In study 2, using data sets 2 and 3, a confirmatory factor analysis for evaluation of part 4 was performed. The purpose of study 2 was to uncover the connections between spectators' opinions and game attendance, as well as to identify the potential predictors for game attendance levels. In addition to a confirmatory factor analysis, cluster analysis for classifying spectators based on identified factor scores, principle component analysis for revealing directions of clusters, and chi-square analyses for uncovering spectators' profiles based on relationship between clusters and the remaining items (part 2 and 3) were conducted.

Figure 2. Factor Analysis Model for Game Attendance
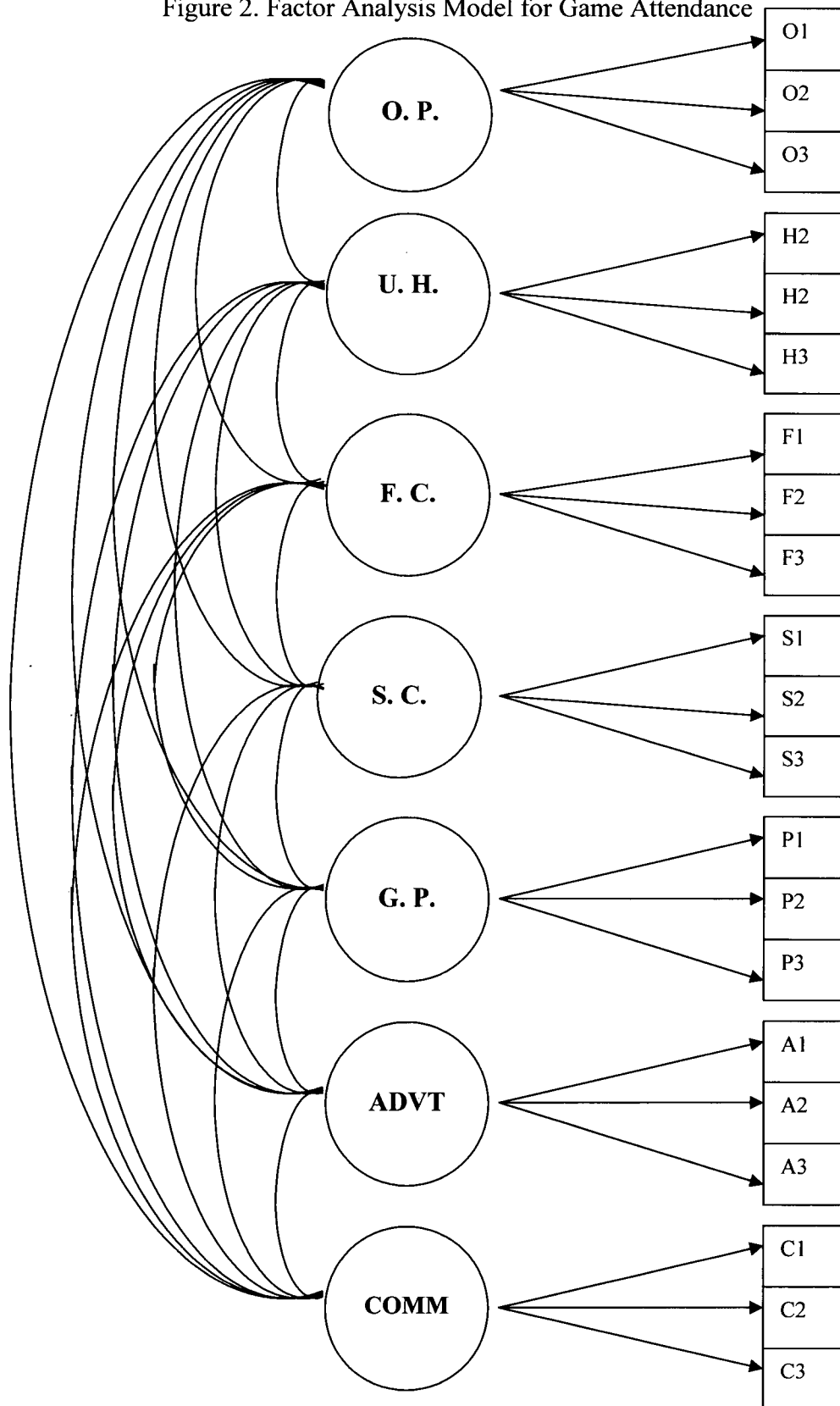
Chapter 4. Results

Descriptive Statistics

Response Rate

One thousand four hundred questionnaires in total were distributed to spectators in the arena, and 1,172 (Form A: 560 and Form B: 612) questionnaires were returned, for a return rate of 83.7 percent. Two hundred and sixty-five questionnaires were excluded from analysis due to excessive missing data (more than 10 items missing). In the end, 907 (425 Form As and 482 Form Bs) questionnaires were used for further data analyses.

Two hundred and fifty Form C questionnaires in total were passed out to UBC students during four days of data collection at the Student Union Building and 215 questionnaires were collected for a return rate of 86 percent. Twelve questionnaires were excluded because of more than ten unanswered items and 203 questionnaires were put into a data file. In total, 1,110 (Form A: 425, Form B: 482, & Form C: 203) questionnaires were available for the analyses of this study (Table 8).

Table 8. Data Sets and Components

Data Set	Respondents	N	Form	Part & Components
1	Ice Rink Spectators	425	A	1, 2, 3
2	Ice Rink Spectators	482	B	2, 3, 4
3	UBC Students	203	C	1, 2, 3, 4
Total		1,110		2, 3 (Common components)
Study 1	Consisted of Data Sets 1 and 3 (N = 628)			
Study 2	Consisted of Data Sets 2 and 3 (N = 685)			

Demographics

Spectators' demographic information is presented in Table 9. The age of the subjects ranged from 18 to 85 years (M = 32.42; SD = 11.94). Although the target

subjects of this study were people who were 19 years or older, some university students were 18 years old at the time of data collection. The majority consisted of subjects in their twenties and thirties (59.3 %), with 718 male (68.1 %) and 337 female subjects (31.9 %) participating in this study.

Table 9. Descriptive Statistics for Demographic Variables

Variable		N	%	Valid Cumulative %
Age	Less than 21	178	16.0	16.9
	21 – 25	199	17.9	35.8
	26 – 30	178	16.0	52.7
	31 – 40	248	22.3	76.2
	41 – 50	153	13.8	90.7
	More than 50	99	8.8	100.0
	Missing	55	5.0	
	Total	1,110	·100.0	
Gender	Male	718	64.7	68.1
	Female	337	30.4	100
	Missing	55	5.0	
	Total	1,110	100	
Residence	Vancouver	252	22.7	22.7
	Burnaby	60	5.4	28.1
	Richmond	60	5.4	33.5
	West Vancouver	28	2.5	36.0
	North Vancouver	60	5.4	41.4
	Coquitlam	32	2.9	44.3
	Port Coquitlam	18	1.6	45.9
	New Westminster	13	1.2	47.1
	Surrey	76	6.8	54.0
	Langley	30	2.7	56.7
	Delta	53	4.8	61.5
	Maple Ridge	22	2.0	63.5
	Abbotsford	26	2.3	65.8
	Port Moody	8	0.7	66.5
	White Rock	9	0.8	67.3
	Others	134	12.1	79.7
	Missing	225	20.3	100.0
	Total	1,110	100.0	
Ethnicity	Caucasian	860	77.5	82.2
	African Canadian	6	0.5	82.8
	Asian	166	15.0	98.7
	Native	14	1.3	100
	Missing	64	5.8	
	Total	1,110	100	
Occupation	Management	167	15.0	16.1
	Social Science etc.	69	6.2	22.8
	Business	133	12.0	35.7
	Sales & Services	141	12.7	49.3

	Applied Sciences	67	6.0	55.7
	Manufacturing	16	1.4	57.3
	Retired	27	2.4	59.9
	Trades & Transportation	51	4.6	64.8
	Primary Industry	11	1.0	65.9
	Student	272	24.5	92.2
	Unemployed	26	2.3	94.7
	Art, Culture, Sport	31	2.8	97.7
	Health related	24	2.2	100.0
	Missing	75	6.8	
	Total	1,110	100.0	
Income	Less than C$ 10,000	84	7.6	8.6
	C$ 10,000 – 19,999	57	5.1	14.5
	C$ 20,000 – 29,999	74	6.7	22.1
	C$ 30,000 – 39,999	77	6.9	30.0
	C$ 40,000 – 59,999	181	16.3	48.6
	C$ 60,000 – 79,999	166	15.0	65.7
	C$ 80,000 – 99,999	118	10.6	77.8
	More than C$ 100,000	216	19.5	100.0
	Missing	137	12.3	
	Total	1,110	100.0	
Education	Some high school	32	2.9	3.1
	High school diploma	218	19.6	24.3
	Some college	295	26.6	53.0
	Two-year college diploma	125	11.3	65.1
	Bachelor's degree	235	21.2	87.9
	Some graduate school	49	4.4	92.7
	Master's degree	59	5.3	98.4
	Doctoral degree	16	1.4	100.0
	Missing	81	7.3	
	Total	1,110	100.0	

With respect to dwelling area, 252 spectators (22.7 %) replied that they lived in Vancouver and the rest as follows: 6.8 % in Surrey, 5.4 % each in Burnaby, Richmond, and North Vancouver, 4.8 % in Delta, 12.1 % in areas including Whistler, Mission, Victoria, Nanaimo, and other B.C. areas. With respect to ethnicity, 77.5 %, 15.0 %, 1.3 %, and 0.5 % answered that they were Caucasians, Asians, Natives, and African Canadians (self-identified) respectively. Management (15.0 %), business and finance (12.0 %), and sales and service (12.7 %) related occupations were the three most common occupations of subjects in this study. About 50 percent ($n = 521$) of subjects

replied that their annual household income exceeded C$ 40,000 and 19.5 % earned more than C$ 100,000 annually.   Table 10 presents the frequency for spectators' game attendance.

Table 10. Descriptive Statistics for Attendance Level

Variable		mean	median	SD	N	%	Valid Cumulative %
	Last 12 month (total)	5.0	2.0	7.5	1,110	100.0	100.0
	0	--	--	--	50	4.5	4.5
	1	--	--	--	336	30.3	34.8
	2	--	--	--	197	17.7	52.5
	3 – 4	--	--	--	205	18.5	71.0
	5 – 9	--	--	--	204	18.4	89.4
	More than 10	--	--	--	118	10.6	100.0
Frequency of game attendance	Next 12 month (total)	5.7	3.0	8.1	1,021	92.0	100.0
	0	--	--	--	114	10.3	11.2
	1	--	--	--	150	13.5	25.9
	2	--	--	--	218	19.6	47.2
	3 – 4	--	--	--	183	16.5	65.1
	5 – 9	--	--	--	235	21.2	88.1
	More than 10	--	--	--	121	10.9	100.0
Money spent for ticket (last 12 months)	Total (C$)	367.43	60	1,143.29	1,110	100.0	100.0
	Missing	--	--	--	35	3.2	3.2
	0	--	--	--	431	38.8	42.0
	1 – 50	--	--	--	86	7.7	49.7
	51 – 100	--	--	--	142	12.8	62.5
	101 – 200	--	--	--	156	14.1	76.6
	201 – 500	--	--	--	121	10.9	87.5
	More than 500	--	--	--	139	12.5	100.0
Ticket information	Season ticket	--	--	--	113	10.2	--
	Half season	--	--	--	23	2.1	--
	Twenty two game	--	--	--	13	1.2	--
	Fifteen game	--	--	--	16	1.4	--
	Eleven game	--	--	--	58	5.2	--
	Group rate	--	--	--	103	9.2	--
	Single ticket	--	--	--	838	75.5	--
	0	--	--	--	103	9.3	9.4
	1 – 5	--	--	--	142	12.8	22.5
	6 – 8	--	--	--	113	10.2	32.8
	9 – 10	--	--	--	147	13.2	46.3
Years of being a fan	11 – 15	--	--	--	150	13.5	60.0
	16 – 20	--	--	--	193	17.4	77.7
	More than 20	--	--	--	243	21.9	100.0
	Missing	--	--	--	19	1.7	
	Total	13.9	13.0	9.6	1,110	100.0	
Internet	Yes	--	--	--	703	63.3	63.3
	No	--	--	--	408	36.8	100.0

Spectators attended five games (*SD* = 7.5, Median = 2.0) on average in the last 12 months and planned to attend 5.7 games (*SD* = 8.1, Median =3.0) on average in the next 12 months. They spent C$ 367.43 (*SD* = 1,143.29, Median = C$ 60.00) on average for their season's game tickets and 431 (38.8 %) subjects reported that they spent C$ 0.00 for their game tickets, which implied they obtained free tickets (e.g., tickets from companies, gifts, school). Spectators in this study had been fans for 13.9 years (*SD* = 9.6, Median = 13.0) on average and 10.2 % were season ticket holders.

Study 1

In Study 1, the hypothesized seven-factor structure containing reasons for game attendance was evaluated using confirmatory factor analyses (CFAs). All confirmatory factor analyses in this study were conducted with LISREL 8.3 (Jöreskog & Sörbom, 1999), and estimation was done using maximum likelihood procedures with a covariance matrix as data input.

Psychometric Evaluation of Reasons for Game Attendance

Confirmatory factor analysis.

The results of the confirmatory factor analysis for part 1, game attendance, are presented in Table 11. Four different models were evaluated with data from part 1 of data sets 1 and 3 ($N = 628$).

In the original model, all 32 items and seven factors were evaluated. Before evaluating the original model, descriptive statistics of items including mean, standard deviation, skewness, and kurtosis were examined. One item, 'unobstructed view from seats' under the factor 'facility convenience' was not included in the original model due to a high kurtosis score (3.8). The parsimony goodness-of-fit index (PGFI), comparative fit index (CFI), and root mean square error of approximation (RMSEA) showed that the data did not conform to the original model of 32 items and seven factors (Table 11). After examination of the residuals, modification indices, and standardized solution, nine items were excluded from the next model due to large residuals, large modification indices, or low factor loading scores. Two of three items showing low loading scores (.14 and .31) under the factor, Sense of Community, were removed from the next model and thus just one item remained for this factor. The next model with 23 items and seven

factors was significantly better than the first model, $\chi^2_{diff} = 1,003$, $df_{diff} = 236, p < .001$, but the goodness of fit indices suggested that it was still not an adequate model of the data structure.

Table 11. Results of the Confirmatory Factor Analyses for Part 1

Model (item, construct)	χ^2,	df,	p	Q	PGFI	CFI	RMSEA
Original (32, 7)	1,911,	448,	<.001	4.3	.71	.83	.074
Revision 1 (23, 7)	908,	212,	<.001	4.3	.68	.90	.072
Revision 2 (21, 7)	495,	171,	<.001	2.9	.68	.95	.056
Final form (19, 7)	339,	134,	<.001	2.5	.67	.96	.049

Based on the result of the second model, two items with large residuals and low loading scores were removed from the model and the third model (revision 2 with 21 items and seven factors) revealed a significant improvement from the previous model $\chi^2_{diff} = 413$, $df_{diff} = 51, p < .001$. Although revision 2 had a relatively stronger dimensional structure than the previous models, the RMSEA (.056) indicated that it did not represent a close fit but only a reasonable fit. Therefore, by removing two additional items (one item at a time) with loadings less than .60 (.56 and .58), two additional models were tested.

The final model contained 19 items and seven factors. A number of model fit indices including chi-square statistics (Q = 2.5), SRMR (.043), CFI (.96), and RMSEA (.049) revealed a good fit of the final model. Among the seven factors, each of three factors (Overall Performance, Facility Convenience, and Game Promotion) had three items; each of two factors (Uniqueness of Hockey and Schedule Convenience) had two items; Advertising had five items; and Excitement had one item. Three factors

(Uniqueness of Hockey, Schedule Convenience, and Excitement) contained less than three items, which could possibly misrepresent the meaning of latent variables and provoke the low reliabilities of factors (Marsh et al., 1998). Even if it could be a weakness of this study in that three factors had less than three items, items of these three factors are assumed to adequately represent the content of latent variables due to high factor loading scores (.75 to .83).

Table 12. Factors, Items, Means, and Loading scores of the Final Model

Factor	Item	M	Loading score
Overall Performance (O.P.)	The Canucks' win/loss record	3.3	.63
	The Canucks' superstars	3.4	.71
	Record breaking performance of the Canucks	3.6	.67
Uniqueness of Hockey (U.H.)	Offensive output of the Canucks (speed of game, power play)	4.0	.75
	Defensive output of the Canucks	3.5	.77
Facility Convenience (F.C.)	Comfortable seats	4.1	.82
	Easy accessibility to facility	3.8	.77
	Cleanliness of facility	3.8	.75
Schedule Convenience (S.C.)	Game time (time of day)	3.6	.83
	Game day (day of week)	3.4	.80
Game Promotion (G.P.)	Ticket discount	4.0	.70
	Price of season ticket	3.8	.62
	Price of game ticket	4.3	.87
Advertising (ADVT)	Advertising through T.V.	2.5	.88
	Advertising through newspapers	2.4	.92
	Advertising through magazines	2.1	.85
	Advertising through radio	2.5	.83
	Advertising through internet (websites)	2.2	.75
Excitement (EXCIT)	Excitement	4.4	1.0

The 19 items from the final model are presented with means and factor loading scores in Table 12. All 19 loadings exceeded .60 and the lowest loading score was .63. The labels of factors, except for factor seven, remained the same based on the item content. The last factor in Table 12 had only one item, which was 'excitement' and the

factor's label was changed from Sense of Community to Excitement.

Internal consistency and test-retest reliabilities.

In Table 13, mean scores, standard deviations, and internal consistency statistics

for the final model were presented. In addition to descriptive statistics, the two-week

test-retest reliability coefficients (correlations) are provided. For the test-retest

reliability, the sample consisted of 28 male and female adults who attended at least one

Canucks' hockey game in the last year.

Table 13. Descriptive Statistics, Internal Consistency and Test-Retest Reliabilities

Factor	M	SD	Cronbach's α	Test-retest r
O.P.	9.96	2.72	.71	.81
U.H.	7.57	1.73	.72	.83
F.C.	11.74	2.62	.82	.80
S.C.	6.92	2.04	.80	.90
G.P.	11.95	2.92	.75	.82
ADVT.	11.75	4.88	.93	.90
EXCIT.	4.37	.78	--	.82

For the internal consistency of each factor, Cronbach's α was applied, which

ranged from .71 to .93. As foreseen by Schutz (1995), the alpha coefficients were

influenced by the number of items in the scale and three factors which contained 2 or 3

items showed low alpha coefficients (.71, .72, .75). The Overall Performance factor had

the lowest alpha coefficient, .71 with three sub-items. Although the Schedule

Convenience factor had only two items, its coefficient exceeded .80 because of a high

inter-item correlation (.67). The Advertising factor showed not only the highest alpha

coefficient, .93 but also high inter-item correlations (.64 to .82) with five sub-items,

which supported that alphas were influenced by the number of highly correlated items.

The test-retest reliabilities were very high, ranging from .80 to .92.

Convergent and discriminant validity.

Using data set 3 including 197 subjects (6 list-wise deletions), convergent and discriminant validities of the final 19-item model were evaluated with Zhang's Spectator Enjoyment Scale (1999). Zhang et al. identified 9 variables affecting spectator enjoyment of hockey games: music, socializing with friends, speed of the game, player appeal, promotions, entertainment, people watching, tough/aggressive play, and player fighting.

With respect to convergent validity, correlations between similar latent constructs should be higher than others. Table 14 presents correlations between the constructs. For instance, the factor U.H. (Uniqueness of Hockey) showed a stronger relationship with the four latent constructs player appeal, speed of game, aggressive play and player fighting, as represented by the relatively higher correlations (.21, .21, .29 and .20 respectively). Both the Game Promotion and Advertising factors had higher correlations (.29 and .28) with Zhang's promotion's factor than with any other factors.

With respect to discriminant validity, correlations between conceptually different latent constructs should not be high. While the U.H. factor had relatively strong relationships with similar latent constructs such as speed of game or tough/aggressive play, this factor had low correlations with dissimilar constructs including music (.01), socializing with friends (.06), promotions (.06), entertainment (.07), and people watching (.06).

This pattern, showing consistency in representing correlations between similar

latent constructs and correlations between dissimilar constructs, presented evidence for

convergent and discriminant validities of the final model, which presumed that similar

items of both scales were measuring the same values.

Table 14. Correlations between Latent Constructs with Zhang's Scale

Factor _Zhang's Scale_	O.P.	U.H.	F.C.	S.C.	G.P.	ADVT	EXCIT
Music	.01	.01	.19	.00	.07	.18	.17
Socializing with Friends	-.03	.06	.08	.04	.09	-.06	.16
Speed of Game	.18	.21	.09	-.17	.10	-.03	.14
Player Appeal	.29	.21	.00	-.02	.20	.29	.20
Promotions	.13	.06	.22	-.02	.29	.28	.12
Entertainment	.20	.07	-.01	-.06	.07	.12	.23
People Watching	.12	.06	.19	.25	.18	.17	.26
Tough/Aggressive Play	.16	.29	-.00	-.10	.08	-.10	.14
Player Fighting	.10	.20	-.01	-.09	-.00	-.07	.22

Criterion validity.

In order to assess criterion validity, the seven factors were identified as

predictor variables and the three attendance measures were defined as criterion variables,

namely, frequency of game attendance in the past 12 months, frequency of game

attendance in the next 12 months, and spectators' ticket information. Multiple

regressions were conducted for each of the three attendance measures, the results

indicating that a linear combination of the seven factors representing reasons for game

attendance did not explain much variance in any of the attendance measures ($R^2 = .028$

for number of games attended in the past 12 months, $R^2 = .019$ for number of games

attended in the next 12 months, $R^2 = .026$ for spectators' ticket information). In order to

more closely examine the nature and strength of the relationship between the predictors

and outcome measures, zero-order correlation coefficients were computed (see Table 15). The correlation coefficient indicates that there are no significant relationships between the seven factors purporting to reflect reasons for game attendance, and the three behavioural measures of game attendance. In other words, the seven factors identified as important game attributes for spectators' attending games and their game attendance levels (both current and intentional levels) were independent of one another, which meant that the final model did not predict well spectators' game attendance levels or their ticket preferences.

Table 15. Correlation Coefficients for Criterion Validity

Criterion \ *Factor*	*O.P.*	*U.H.*	*F.C.*	*S.C.*	*G.P.*	*ADVT*	*EXCIT*
# of games attended in last 12 months	.07	.13	.03	-.03	-.15	-.01	.02
# of games attended in next 12 months	.03	.10	.02	-.04	-.16	-.01	.02
Ticket information	.07	.14	.11	-.02	-.10	.08	.01

Due to the poor predictive probability of constructs identified from the confirmatory factor analysis, further statistical analyses using these seven factor scores may not be appropriate. Instead, in order to classify spectators and attempt to identify common characteristics of attendees, a decision tree analysis, a heuristic data analysis method, was conducted.

Predicting Game Attendance Using Decision Tree Analysis

According to Hair et al., (1998), decision trees are a sequential partitioning of the dataset in order to maximize differences on a dependent variable. In other words, decision tree analysis is the process of extracting information from the dataset. In this study, a decision tree analysis using Exhaustive CHAID was performed in order to

classify spectators based on all variables in parts 1, 2, and 3 of the questionnaire.

CHAID (Chi Squared Automatic Interaction Detector) is an exploratory method for classifying categorical data. The purpose of the procedure is to split a set of objects in a way, that the subgroups differ significantly with respect to a designated criterion. The criterion matches the dependent variable, while the remaining attributes represent their predictors in the model. The segments derived by CHAID are mutually exclusive and exhaustive which means, that the segments do not overlap and each object of the sample is contained in exactly one segment. Therefore the application of the method approves the classification of new objects by knowing the categories of the predictors (Magidson, 1993; cited from Lehmann & Eherler, p. 1).

A revision to the basic CHAID algorithm presented above, Exhaustive CHAID, was proposed by Biggs et al. (1991). In this procedure the best split emerges by merging similar pairs continuously until only a single pair of categories remains.

Table 16. Variables for the Initial Decision Tree Analysis

Variable	Items	Sub-items	Labels	Measurement
Dependent variable (Target)	Frequency of game attendance in last 12 months	--	NUM_GAM	Continuous
Independent Variables (Predictors)	Part 1	33 game attribute items	--	Continuous
	Part 2 Money spent for ticket	--	GAME_MON	Continuous
	Ticket information	Season ticket Eleven pack Fifteen pack Twenty two pack Group rate ticket Half season ticket Single game	SEA_TIC ELE_TIC FIF_TIC TWEN_TIC GRP_TIC HALF_TIC SIGL_TIC	Nominal Nominal Nominal Nominal Nominal Nominal Nominal
	Who buy tickets	I do Spouse Friend Other family member My company	I_DO_WBY SPOU_WBY FRID_WBY FA_M_WBY COMP_WBY	Nominal Nominal Nominal Nominal Nominal
	Best promotional medium	T.V. Radio Newspaper Magazine Website	TV_MED RADIO_MED NEWP_MED MAGA_MED WEB_MED	Nominal Nominal Nominal Nominal Nominal

Independent Variables (Predictors)	Game attending colleague	Alone	AC_AL	Nominal
		Spouse	AC_SPOUS	Nominal
		Children	AC_CHILD	Nominal
		Family	AC_FAM	Nominal
		Relatives	AC_RELAT	Nominal
		Co-worker	AC_CWORK	Nominal
		Neighbours	AC_NEIGH	Nominal
		Friends	AC_FRIEN	Nominal
	Years of being a fan	--	YRS_FAN	Continuous
	Membership of club	Soccer club	CLUB_SOC	Nominal
		Hockey club	CLUB_HOC	Nominal
		Golf club	CLUB_GOL	Nominal
		Fitness club	CLUB_FIT	Nominal
	Hobby	Golf	H_GOLF	Nominal
		Hockey	H_HOCKEY	Nominal
		Art	H_ART	Nominal
		Fitness	H_FITNES	Nominal
		Amateur sports	H_AMASP	Nominal
		Reading	H_READIN	Nominal
		Ski & Snowboard	H_SKIBOA	Nominal
	Favourite sports activity	Golf	ACT_GOLF	Nominal
		Baseball	ACT_BASE	Nominal
		Hockey	ACT_HOCK	Nominal
		Ski & snowboarding	ACT_SKIB	Nominal
		Basketball	ACT_BASK	Nominal
		Soccer	ACT_SOCC	Nominal
		Volleyball	ACT_VOLL	Nominal
	Favourite outings	Movie	OUT_MOVI	Nominal
		Football	OUT_FOOT	Nominal
		Concert	OUT_CONC	Nominal
		Amateur sports	OUT_AMSP	Nominal
		Dinner	OUT_DINN	Nominal
		Drinking	OUT_DRIN	Nominal
	Favourite website	Major media	WEB_MEDI	Nominal
		Sport media	WEB_SPME	Nominal
		Computer related	WEB_COM	Nominal
		Hockey related	WEB_HOCK	Nominal
	Favourite sports as a child	Baseball	YSP_BASE	Nominal
		Hockey	YSP_HOCK	Nominal
		Basketball	YSP_BASK	Nominal
		Football	YSP_FOOT	Nominal
		Soccer	YSP_SOCC	Nominal
		Volleyball	YSP_VOLL	Nominal
	Part 3			
	Age	--	AGE	Continuous
	Gender	--	GENDER	Nominal
	Dwelling information	--	RESIDENT	Nominal
	Job	--	JOB	Nominal
	Household income	--	INCOME	Continuous
	Level of education	--	EDULEVEL	Nominal

Three decision tree analyses were conducted as part of study 1. In the first analysis, data set 1 *(N = 628)* was used and the target (dependent) variable and predictive (independent) variables were configured as presented in Table 16. The frequency of game attendance in the past 12 months was used as a dependent variable due to the fewer number of missing cases (1 case) than those of intentional future game attendance (49 missing cases). In terms of the measurement scales of the variables, the dependent variable was a continuous and the independent variables consisted of both continuous and nominal variables (see Table 16).

The tree diagram based on data set 1 is shown in Figure 3. The mean frequency of game attendance over the last 12 months, the dependent variable, had a mean of 4.8 games *(SD = 7.2)* at node 0 (the total sample). Eleven terminal nodes (2, 4, 6, 7, 8, 9, 10, 11, 12, 14, & 15) in total were identified by five predictors; SEA_TIC (season ticket holder or not), WEB_HOCK (hockey related websites as favourites), GAME_MON (money spent for game tickets), JOB, and GENDER with the mean attendance in the terminal nodes ranging from 16.4 to 0.9 games. SEA_TIC was the best predictor, and there was a large difference in mean scores (16.4 versus 3.6 games) between season ticket and non-season ticket holders.

With respect to WEB_HOCK, people (node 4) who considered hockey related websites as their favourite web-sites represented higher game attendance frequencies (6.9 games) than the opposite group (node 3, 3.1 games). GAME_MON was an important interactive predictor with WEB_HOCK. Specifically, of the people who did not identify hockey websites as their favourite, those who spent more than C$ 250 on

Figure 3. Tree Diagram of the First Analysis
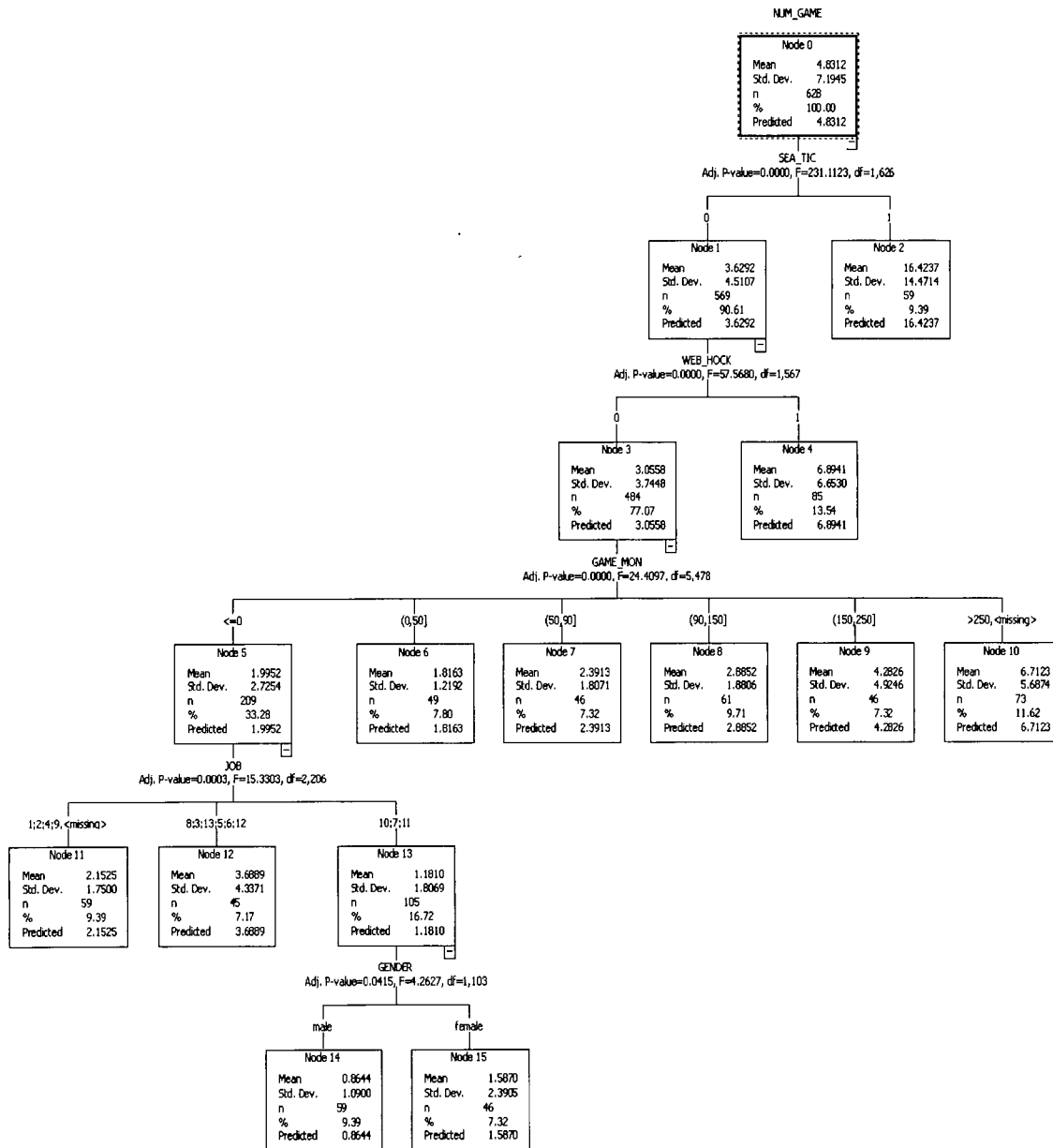
tickets (node 10) had higher game attendance frequencies (6.7 games) than those

spending less money (nodes 5, 6, 7, 8, & 9). That is, people who spent more money for

game tickets tended to attend more games than others who spent less money for tickets.

Although two other predictors, JOB and GENDER, were identified as significant

predictors in the initial analysis, all nodes (11, 13, 14, and 15) except for node 12

61

classified by these two predictors represented lower game attending frequencies than other terminal nodes (2, 4, 7, 8, 9, and 10). Individuals from node 12 whose job specialties were in business & finance, natural & applied science, unique to processing, manufacturing & utilities, trades & transport, art, culture, recreation & sport, and health represented higher game attendance levels than individuals from node 11 (management, social science, education, government service & religion, sales & services, and unique to primary industry) and node 13 (retired, student, and currently unemployed). With respect to gender, female respondents from node 13 represented higher game attendance frequencies (1.59 games) than males (0.86 game). None of the 33 game-attribute items was identified as an important predictor in the initial analysis, which supports no significant relations between the frequency of game attendance and game attribute items of the final form of the questionnaire.

With respect to a sample size for CHAID, Sonquist et al. (1964) recommended a minimum sample size of 1,000. In terms of the ratio between the number of observations and predictor variables, MacLanchlan and Johansson (1981) suggested 33 times as many observations as predictors. In addition, Perreault and Barrksdale, (1971) insisted that a minimum group size of 40 would be reasonable. Given these recommendations, increasing the sample size and reducing the number of predictor variables would be desirable for a reliable decision tree analyses. Since none of 33 items from Game Attendance (Part 1) was identified as an important predictor by the initial analysis, those items were excluded for further analyses, and thus data sets 1, 2 and 3 (which all contained components 2 and 3) could be combined to form a data set (# 4)

with a large N (1,110) suitable for further analyses.

Table 17. Variables for the Second Decision Tree Analysis

Variables	Items	Sub-items	Measurement
Dependent variable (Target)	Frequency of game attendance in last 12 months	--	Continuous
Independent Variables (Predictors)	Ticket information	Season ticket Eleven pack Single game	Nominal Nominal Nominal
	Who buys ticket?	I do	Nominal
	Best promotional medium	T.V. Radio Newspaper Website	Nominal Nominal Nominal Nominal
	Game attending colleague	Spouse Co-worker Friends	Nominal Nominal Nominal
	Years of being a fan	--	Continuous
	Membership of club	Soccer Hockey Golf	Nominal Nominal Nominal
	Hobby	Golf Hockey Reading	Nominal Nominal Nominal
	Favourite sports activity	Golf Hockey Soccer	Nominal Nominal Nominal
	Favourite outings	Movie Concert Dinner	Nominal Nominal Nominal
	Favourite website	Major media Sport media Computer related Hockey related	Nominal Nominal Nominal Nominal
	Favourite sports as a child	Baseball Hockey Basketball Soccer	Nominal Nominal Nominal Nominal
	Age	--	Continuous
	Gender	--	Nominal
	Dwelling information	--	Nominal
	Ethnicity	--	Nominal
	Job	--	Nominal
	Household income	--	Continuous
	Level of education	--	Nominal

In addition to removing the 33 game attribute items, variables containing a

number of missing values (ticket purchasing time, frequency of future game attendance, and children's favourite sports) or showing a low frequency (HALF_TIC, n = 23, and FIF_TIC, n = 16) were removed from further analyses. The thirty-nine variables for the second decisions analysis are presented in Table 17.

The second decision tree analysis was conducted and the full tree diagram is presented in Figure 4. Nine predictive variables were identified; SEA_TIC (season ticket holder), AC_CWORK (accompanied by co-workers), WEB_HOCK (hockey related websites as favourite websites), AC_FRIEN (accompanied by friends), SIGL_TIC (single game ticket holder), CLUB_HOC (membership of hockey club), I_DO_WBY (I am the ticket purchaser), JOB (occupations), and AC_SPOUS (accompanied by spouse). The mean for the dependent variable, number of games attended in the past 12 months, was 4.99 (SD = 7.49) and SEA_TIC was identified as the most important predictor for classifying frequencies of game attendance in the second analysis. Season ticket holders attended more games than non-season ticket holders (16.9 versus 3.6 games), as expected. Although SEA_TIC was identified as the best predictor in the second analysis, it can be excluded from predictive variables for further tree analyses. According to one of pre-defined stopping rules for CHAID classification, the minimum number of cases in a parent node must be more than 100 and the minimum number of cases in a terminal node must be more than 40 (Perreault & Barrksdale, 1971). Due to this stopping rule, no further branching was done on node 1, and therefore no further information on the 113 season ticket holders was revealed. For the next tree analysis, the three ticket information variables were eliminated.

Figure 4. Tree Diagram of the Second Analysis with Data set 4

After removing all three ticket information variables, SEA_TIC, ELE_TIC, and

SIGL_TIC, the final decision tree analysis with 36 predictive variables was conducted.

The full tree diagram is presented in Figure 5.

Figure 5. Tree Diagram of the Final Model with Data set 4

NUM_GAME

Node 0
Mean	4.9901
Std. Dev.	7.4857
n	1110
%	100.00
Predicted	4.9901

INCOME
Adj. P-value=0.0000, F=24.3647, df=2,1107

<=5

Node 1
Mean	3.6364
Std. Dev.	5.2005
n	473
%	42.61
Predicted	3.6364

(5,7], <missing>

Node 2
Mean	5.0499
Std. Dev.	7.7518
n	421
%	37.93
Predicted	5.0499

>7

Node 3
Mean	7.8380
Std. Dev.	10.0045
n	216
%	19.46
Predicted	7.8380

WEB_HOCK
Adj. P-value=0.0000, F=48.5585, df=1,471

0

Node 4
Mean	3.0025
Std. Dev.	3.9240
n	408
%	36.76
Predicted	3.0025

1

Node 5
Mean	7.6154
Std. Dev.	9.1048
n	65
%	5.86
Predicted	7.6154

WEB_HOCK
Adj. P-value=0.0001, F=15.7529, df=1,419

0

Node 6
Mean	4.5027
Std. Dev.	7.1497
n	370
%	33.33
Predicted	4.5027

1

Node 7
Mean	9.0196
Std. Dev.	10.4508
n	51
%	4.59
Predicted	9.0196

YSP_BASE
Adj. P-value=0.0130, F=6.2776, df=1,214

0

Node 8
Mean	6.6712
Std. Dev.	8.5655
n	146
%	13.15
Predicted	6.6712

1

Node 9
Mean	10.2714
Std. Dev.	12.1987
n	70
%	6.31
Predicted	10.2714

JOB
Adj. P-value=0.0003, F=14.6579, df=2,405

7;10;9

Node 10
Mean	1.9306
Std. Dev.	2.2860
n	144
%	12.97
Predicted	1.9306

4;12;8;11;5, <missing>

Node 11
Mean	4.3478
Std. Dev.	5.6331
n	138
%	12.43
Predicted	4.3478

1;3;2;13;6

Node 12
Mean	2.7540
Std. Dev.	2.4485
n	126
%	11.35
Predicted	2.7540

AC_CWORK
Adj. P-value=0.0005, F=12.5103, df=1,368

0

Node 13
Mean	3.9969
Std. Dev.	6.7033
n	321
%	28.92
Predicted	3.9969

1

Node 14
Mean	7.8163
Std. Dev.	8.9714
n	49
%	4.41
Predicted	7.8163

YSP_HOCK
Adj. P-value=0.0156, F=5.9931, df=1,144

1

Node 15
Mean	9.0000
Std. Dev.	11.1964
n	51
%	4.59
Predicted	9.0000

0

Node 16
Mean	5.4211
Std. Dev.	6.4784
n	95
%	8.56
Predicted	5.4211

ETHNIC
Adj. P-value=0.0182, F=10.1028, df=1,142

1

Node 17
Mean	2.3200
Std. Dev.	2.5893
n	100
%	9.01
Predicted	2.3200

3;4;2

Node 18
Mean	1.0455
Std. Dev.	0.8880
n	44
%	3.96
Predicted	1.0455

YRS_FAN
Adj. P-value=0.0000, F=14.7711, df=2,318

<=15, <missing>

Node 19
Mean	2.5888
Std. Dev.	4.0303
n	197
%	17.75
Predicted	2.5888

(15,28]

Node 20
Mean	5.3333
Std. Dev.	7.2117
n	84
%	7.57
Predicted	5.3333

>28

Node 21
Mean	8.1250
Std. Dev.	12.0431
n	40
%	3.60
Predicted	8.1250

AC_SPOUS
Adj. P-value=0.0055, F=7.8977, df=1,195

0

Node 22
Mean	2.0000
Std. Dev.	1.7275
n	127
%	11.44
Predicted	2.0000

1

Node 23
Mean	3.6571
Std. Dev.	6.2366
n	70
%	6.31
Predicted	3.6571

TV_MED
Adj. P-value=0.0048, F=8.2522, df=1,125

1

Node 24
Mean	2.4821
Std. Dev.	2.0626
n	56
%	5.05
Predicted	2.4821

0

Node 25
Mean	1.6197
Std. Dev.	1.3324
n	71
%	6.40
Predicted	1.6197

The full tree diagram was classified by 10 predictors (INCOME, WEB_HOCK, YSP_BASE, JOB, AC_CWORK, ETHNIC, TV_MED, YRS_FAN, and YSP_HOCK), and yielded 25 nodes, 15 of which were terminal nodes. A brief description of each terminal node is presented in Appendix B. Node 9 represented 70 spectators whose mean frequency of game attendance was 10.3 games (SD = 12.2). In general, the traits and behaviours of those individuals with the highest attendance frequencies were: high income, identifying hockey-related websites as their favourite websites, played baseball or hockey when they were young, preferred being accompanied at games by co-workers, and had been hockey fans for a long time.

A gain summary of the tree analysis is presented in Table 18. Eight segments (nodes) had frequencies greater than the mean frequency of game attendance (5.0). The most important segment was node 9 with an index of 205.8 %, which implied that targeting an individual of node 9 would be anticipated to increase the frequency of game

Table 18. Gain Chart Defined by 9 Predictors

Node	n	M	Node (%)	Cumulative (%)	Index (%)
9	70	10.27	6.3	6.3	205.8
7	51	9.02	4.6	10.9	180.8
15	51	9.00	4.6	15.5	180.4
21	40	8.13	3.6	19.1	162.8
14	49	7.82	4.4	23.5	156.6
5	65	7.62	5.9	29.4	152.6
16	95	5.42	8.6	37.9	108.6
20	84	5.33	7.6	45.5	106.9
11	138	4.35	12.4	57.9	87.1
23	70	3.66	6.3	64.2	73.3
12	126	2.75	11.4	75.6	55.2
24	56	2.48	5.0	80.6	49.7
17	100	2.32	9.0	89.6	46.5
25	71	1.62	6.4	96.0	32.5
18	44	1.05	4.0	100.0	21.0

attendance 2.06 times over a random selection. If a franchise targeted people belonging to the top six segments (node 9, 7, 15, 21, 14, & 5), the frequency of game attendance would be expected to increase by a range of 152.6 to 205.8 percent. That is, people who had one or more of the following set of characteristics: (a) node 9: high incomes (greater than C$ 100,000) and played baseball when young; (b) node 11: middle to high incomes (C$ 60,000 to 99,999) and hockey websites as their favourite internet sites; (c) node 15: high incomes and played hockey when young; (d) node 21: the greatest fan history (more than 28 years) and middle to high incomes; (e) node 14: middle to high incomes and accompanied by their co-workers; (d) node 5: low to middle incomes (less than C$ 60,000) and hockey websites as their favourite internet sites.

Comparing Low, Middle, and High Game Attendance Groups

Activity pattern comparisons among the three attendance groups.

Descriptive statistics are presented in Table 19 to examine differences in spectators' characteristics based upon their game attendance frequencies. Since there was no specific definition available to divide spectators into low, middle and high attendance groups based strictly on their game attendance frequencies, three groups of similar size were formed to force the sample into three populations. The three categories were as follows: Low frequency group (0 to 1 game), Middle frequency group (2 to 4 games), and High frequency group (more than 4 games).

As indicated previously, fan history had a positive relationship with game attendance. The Low frequency Group represented the shortest fan history with a mean of 11.2 years and the High Group had the longest fan history mean (16.8 years). While

172 (53.4 %) individuals from the High Group had been Canucks' fans for more than 16 years, only 44 (13.7 %) had fan histories of less than 6 years. On the other hand, 225 (58.2 %) people in the Low Group belonged to a short fan history category of 0 to 10 years.

Table 19. Group Descriptive Statistics of Activity Pattern

Group Predictors	Low # Group (n=386) 0 – 1		Middle # Group (n=402) 2 – 4		High # Group (n=322) > 4		Chi-square or F^a	p
	Mean		Mean		Mean			
Game attendance	0.87		2.7		12.8			
Years of being a fan	11.2		14.2		16.8		F = 30.681	.001
	n	%	n	%	n	%		
Season	10	2.6	13	3.2	90	28.9	156.730	.001
Half season	2	0.5	4	1.0	17	5.2	23.217	.001
11 pack	5	1.3	14	3.5	39	12.1	45.340	.001
15 pack	1	0.3	2	0.5	13	4.0	21.592	.001
Group	26	6.7	35	8.7	42	13.0	7.742	.021
Single	331	85.8	345	85.8	163	40.6	155.514	.001
Best medium								
T.V.	185	47.9	202	50.2	119	37.0	14.043	.001
Newspaper	102	26.4	110	27.4	113	35.1	7.488	.024
Game colleague								
Co-worker	32	8.3	47	11.7	72	22.4	31.531	.001
Friends	208	53.9	252	62.7	181	56.2	6.690	.035
Sport club								
Hockey	26	6.7	51	12.7	65	20.2	28.476	.001
Hobby								
Golf	37	9.6	33	8.2	47	14.6	8.380	.016
Hockey	56	14.5	77	19.2	93	28.9	22.935	.001
Favourite activity								
Golf	53	13.7	59	14.7	66	20.5	6.834	.033
Hockey	84	21.8	129	32.1	130	40.4	28.895	.001
Outing								
Concert	97	25.1	100	24.9	109	33.9	8.975	.011
Favourite website								
Major media	40	10.4	55	13.7	21	6.5	9.799	.007
Sport media	19	4.9	35	8.7	34	10.6	8.165	.017
Hockey related	27	7.0	47	11.7	78	24.2	46.229	.001
Play as a child								
Hockey	109	28.2	141	35.1	127	39.4	10.170	.006

Note. Chi-square or F^a: Reported test statistic is χ^2, unless otherwise noted. The complete descriptive statistics table for activity pattern is presented in Appendix C.

With respect to a promotional medium, TV was considered as the best medium by all three groups. About 48 and 50 percent of observations in the Low and Middle Groups believed TV was the best promotional medium. For the case of the High Group, TV (37.0%) was the most preferred medium and newspapers (35.1 %) the second most preferred.

In terms of attending games with colleagues, the three groups presented similar patterns regarding friends but differed significantly regarding co-workers with 22.4 % of the High Group attending games with co-workers versus 8.4% and 11.4% of the Low and Medium Groups, respectively. While 65 individuals (20.2 %) in the High Group replied that they were members of hockey clubs, 6.7 and 12.7 percent individuals in the Low and Middle Groups were members of hockey clubs. In all three groups, hockey was considered as the most favourite activity and golf was the second.

For the case of favourite outing, differences between groups were uncovered concerning the item, concert. Individuals in the High Group reported greater interest (33.9 %) in concerts than individuals in the other two groups (25.1 and 24.9 %). The use of hockey related websites was identified in the tree analyses as one of the most important variables to predict game attendance. In terms of the use of hockey websites, the difference between the High Group and the Low and Middle Groups was clear. While 27 (7 %) and 47 (11.7 %) of survey respondents in the Low and Middle Groups replied that they were hockey website users, 78 individuals (24.2 %) in the High Group reported being hockey website users.

With respect to preferred sports played when young, all three groups were the

same in that hockey had the highest frequencies. Unlike other sports including soccer, basketball, football, and volleyball, it was interesting that playing both hockey and baseball reflected a linear relationship with game attendance frequencies between the Low, Middle, and High Groups (hockey: 28.2 %, 35.1%, 39.4 % and baseball: 21.5 %, 25.6 %, 28.3 %).

As can be seen in Table 19, the differences in relative frequencies of all these reported activities were significantly ($p < .05$) different among the three attendance groups, as indicated by a chi-square test. However, given the large number of significant tests, an alpha of .01 was used to partially protect against Type I errors (a full Bonferroni correction, .05/20 = .0025, would have led to overly conservative significance tests). Six predictors including group ticket holder, newspaper as the best medium, accompanied by friends, golf as a hobby, golf as a favourite activity, and sport media as a favourite websites were not significant between groups after this correction.

Demographic characteristics comparisons among three groups.

Individuals in the Low Group were the youngest with an average age of 31.3 years, and people in the High Group were the oldest with a mean of 34.7 years. In terms of residence area, while the majority of the Low and Middle Groups were living in Area 1 (Vancouver), the residence areas of the High Group were distributed through Area 1, 3 (Richmond, Delta, & White Rock), 4 (North & West Vancouver), and 6 (Surrey & Langley). With respect to job categories, the Low and Middle Groups exhibited similar patterns. Compared to the other two groups, the portion (19.6 %) occupied by management related jobs was larger than those of the Low (13.5 %) and Middle (12.9 %)

groups. With respect to income, the Middle group had a slightly higher household income than the Low Group overall. The highest income level was represented by people of the High Group with 101 (31.4 %) individuals whose household income exceeded C$ 100,000. In terms of gender, the High Group represented a higher portion (71.1 %) of male spectators than the other two groups (60.9, 63.2) (Table 20).

Table 20. Demographic Profiles

Group Predictors	Low # Group (n=386) 0 – 1		Middle # Group (n=402) 2 – 4		High # Group (n=322) > 4			
	Mean		Mean		Mean			
Age	31.3		31.7		34.7			
	n	%	n	%	n	%	Chi-square	p
Age							27.342	.002
21 >	78	20.2	71	17.7	29	9.0		
21 – 25	77	19.9	70	17.4	52	16.1		
25 – 30	53	13.7	70	17.4	55	17.1		
31 – 40	86	22.3	85	21.1	77	23.9		
40 – 50	43	11.1	53	13.2	57	17.7		
50 <	30	7.8	32	8.0	36	11.2		
Missing	19	4.9	21	5.2	16	5.0		
Gender							9.634	.008
Male	235	60.9	254	63.2	229	71.1		
Female	132	34.2	128	31.8	77	23.9		
Missing	19	4.9	20	5.0	16	5.0		
Residence							62.332	.001
Area 1	86	22.3	110	27.4	56	17.4		
Area 2	20	5.2	31	7.7	22	6.8		
Area 3	43	11.1	34	8.5	44	13.7		
Area 4	18	4.7	26	6.5	44	13.7		
Area 5	35	9.1	32	8.0	25	7.8		
Area 6	24	6.2	41	10.2	41	12.7		
Area 7	71	18.4	41	10.2	24	7.5		
Missing	89	23.1	87	21.6	66	20.5		
Ethnicity							12.293	.056
Caucasian	285	73.8	310	77.1	265	82.3		
African Canadian	4	1.0	1	0.2	1	0.3		
Asian	71	18.4	60	14.9	35	10.9		
Natives	7	1.8	4	1.0	3	0.9		
Job							61.692	.001
Managerial	52	13.5	52	12.9	63	19.6		
Social science	23	6.0	25	6.2	21	6.5		
Business / finance	46	11.9	44	10.9	43	13.4		
Sales & service	36	9.3	59	14.7	46	14.3		
Applied science	16	4.1	25	6.2	26	8.1		

							57.330	.001
Manufacturing	8	2.1	6	1.5	2	0.6		
Retired	13	3.4	6	1.5	8	2.5		
Trade/transportation	16	4.1	21	5.2	14	4.3		
Primary industry	2	0.5	4	1.0	5	1.6		
Student	128	33.2	103	25.6	41	12.7		
Unemployed	10	2.6	9	2.2	7	2.2		
Recreation/sport	8	2.1	12	3.0	11	3.4		
Health related	7	1.8	5	1.2	12	3.7		
Household income							57.330	.001
< C$ 10,000	42	10.9	30	7.5	12	3.7		
10,000 – 19,999	23	6.0	24	6.0	10	3.1		
20,000 – 29,999	28	7.3	30	7.5	16	5.0		
30,000 – 39,999	24	6.2	34	8.5	19	5.9		
40,000 – 59,999	66	17.1	72	17.9	43	13.4		
60,000 – 79,999	61	15.8	63	15.7	42	13.0		
80,000 – 99,999	40	10.4	40	10.0	38	11.8		
> C$ 100,000	53	13.7	62	15.4	101	31.4		
Missing	49	12.7	47	11.7	41	12.7		

Study 2

In Study 2, the hypothesized ten-factor structure containing opinions about sports was evaluated using confirmatory factor analyses (CFAs). Using a covariance matrix as data input, all confirmatory factor analyses in Study 2 were conducted with LISREL 8.3 (Jöreskog & Sörbom, 1999) and estimation was done using maximum likelihood procedures.

Psychometric Evaluation of Opinions about Sports

   Confirmatory factor analysis.

The results of the confirmatory factor analysis for part 4, opinions about sports, are presented in Table 21. Three different models were evaluated with data set 1 ($N =$ 685) which included questionnaire Form B and C.

In the original model, all 33 items and 10 factors were evaluated. The parsimony goodness-of-fit index (PGFI), comparative fit index (CFI), and root mean square error of approximation (RMSEA) showed that the data did not conform well to the hypothesized model. However, a high inter-factor correlation of .89 between the Child-oriented and Sport benefit factors indicated that a better structure would be established by combining these two constructs. After an examination of the residuals, modification indices, and the standardized solution, nine items were excluded from the next model due to large residuals, large modification indices, or low factor loading scores. The next model with 24 items and 9 factors showed a significant improvement in structure with $\chi^2_{diff} = 764$, $df_{diff} = 234, p < .001$, to the original model.

Although revision 1 resulted in a stronger dimensional structure than the

original model, the RMSEA (.051) and CFI (.88) suggested that it was still not a good fit. Therefore, by reducing one item in each model, two additional models were tested. Two items under Community Pride with large residuals and low loading scores were removed and the final model with 22 items and 9 factors revealed a significant improvement from the previous model ($\chi^2_{diff} = 156$, $df_{diff} = 43, p < .001$). A number of model fit indices, SRMR (.048), CFI (.90), and RMSEA (.047), indicate that this final model represented a good fit to the data.

Table 21. Results of the Confirmatory Factor Analyses for Opinions about Sports

Model (item, construct)	χ^2, df, p			Q	PGFI	CFI	RMSEA
Original (33, 10)	1,344,	451,	<.001	2.9	.71	.76	.058
Revision 1 (24, 9)	580,	217,	<.001	2.7	.67	.88	.051
Final form (22, 9)	424,	174,	<.001	2.4	.65	.90	.047

The 22 items from the final model are presented along with means and factor loading scores in Table 22. All 22 loadings except for three (.41, .43, .35) exceeded .50.

Table 22. Factors, Items, Means, and Loading scores of the Final Model

Factor	Item	M	Loading score
Self-Participation (S.P.)	Given the choice, participating in sports is more enjoyable than watching.	4.1	.41
	It is always good to try new recreational activities.	4.3	.80
	It is difficult to understand how people could just lay around when there are so many recreational activities to do.	3.7	.43
Cynicism (C.C.)	Buying professional sport memorabilia is a waste of money.	2.9	.75
	Belonging to professional sports fan clubs is a waste of time.	3.0	.50
Sports Benefits (S.B.)	Parents should always try to attend their children's sport contests.	4.5	.61
	Taking children to professional hockey events is a great way to spend time with them.	4.4	.57

Sports Benefits (S.B.)	For children, the positive aspects of participating in sports far outweigh the negative ones.	4.2	.50
	It is important to participate in regular physical activity with your child.	4.5	.67
Resources (R.S.)	For recreation, time is a bigger problem than money.	3.2	.74
	Our income is high enough to satisfy nearly all our desires for sporting event tickets.	2.5	.35
Community Pride (C.P.)	When my home team wins, it really makes me feel good.	4.2	.61
	The success of a professional sports team brings pride to the city.	4.4	.72
	Being able to cheer for my home professional sports franchise adds to my sense of community.	3.8	.60
Attitude to Pro-athlete (A.P.)	Professional athletes are only in it for the money.	2.9	.83
	Professional athletes tend to whine and complain too much.	3.3	.59
Role of Government (R.G.)	Tax dollars should not be spent on building stadiums and areas for professional sport franchises.	2.7	.59
	Government should not assist financially troubled professional sports organizations.	2.9	.70
	Government should offer tax incentives to keep a team in a city or to encourage another team to relocate there.	3.5	-.63
Attitude to Amateur sports (A.A.)	The enthusiasm of the amateur athlete makes amateur sports more enjoyable to watch than professional sports.	3.4	.72
	Amateur sporting events are quite often far superior in entertainment value than their professional counterparts.	3.0	.52
Perceived Time cost (P.T.)	Professional sporting events take too much time to watch.	2.0	1.0

Internal consistency and test-retest reliabilities.

In Table 23, mean scores, standard deviations, and internal consistency statistics for the final model are presented. In addition to descriptive statistics, two-week test-retest reliability coefficients (correlations) are provided. For two-week test-retest reliability coefficients, 28 male and female adults who attended at least one Canucks' hockey game in the past were contacted. For the internal consistency of each factor,

Cronbach's α was computed, and ranged from .41 (Resources) to .68 (Community

Pride). A low inter-item correlation (.26) between two items confirmed that one of two

items on the Resource factor represented the weakest loading score in the confirmatory

factor analysis result.

Table 23. Descriptive Statistics, Internal Consistency and Test-Retest Reliabilities

Factor	M	SD	Cronbach's α	Test-retest r
S.P.	12.1	2.2	.53	.80
C.C.	6.0	1.8	.55	.87
S.B.	17.7	2.3	.67	.81
R.S.	5.7	2.0	.41	.85
C.P.	12.5	2.0	.68	.83
A.P.	6.2	1.9	.65	.79
R.G.	8.1	3.0	.67	.84
A.A	6.4	1.7	.54	.80
P.T.	2.0	1.1	--	.82

The inter-factor correlations based on the raw score item totals are presented in

Table 24, and the relatively low correlations (.002 to .43) indicated that there was no

multicollinearity among factors.

Table 24. Inter-Factor Correlations

Factor	SP	CC	SB	RS	CP	AP	RG	AA	PT
Self Participation	--								
Cynicism	-.07	--							
Sport Benefit	.30	-.15	--						
Resource	.03	.11	.04	--					
Community Pride	.20	-.26	.43	.04	--				
Attitude about Pro-athlete	.10	.28	-.07	.10	-.11	--			
Role of Government	-.05	.28	-.19	-.00	-.34	.24	--		
Attitude about Amateur sports	.17	.09	.10	.07	.00	.24	.19	--	
Perceived Time cost	-.06	.32	-.19	.09	-.32	.23	.23	.08	--

Cluster Analysis of Opinions about Sports

Using raw factor scores based on identified factors from the confirmatory factor analysis, cluster analyses were conducted to uncover distinctive segments related to observations' opinions about sports. There is no standard to determine the number of clusters (Hair et. al, 1998), and thus both the hierarchical and K-Means methods were examined to determine the appropriate numbers of clusters. According to Hair et al. (1998), determining the number of clusters, profiling the cluster centres, and identifying outliers should be established by using a hierarchical technique, and then a non-hierarchical method with the cluster centres obtained by the hierarchical method should be conducted to form clusters. Using a hierarchical method (Ward's), three different cluster analyses (two to four clusters) were conducted to determine the number of clusters based on the raw factor score totals. The number of clusters from each analysis and the number of cases per cluster are presented in Table 25.

Table 25. The Number of Clusters and Cases per Cluster

		Cases per cluster			
		1	2	3	4
# of clusters	2	282	403		
	3	282	244	159	
	4	282	112	132	159

With respect to the cluster profiles, the cluster centroids of cluster #1 on three different cluster solutions were identical, which indicated that the first cases of all three cluster solutions ($n = 282$) consisted of the same individuals throughout the two to four cluster solutions. According to Hair et al. (1998), a cluster centroid represents the average value of the objects contained in the cluster on all the variables in the cluster

variate. Based on the cluster centroids, cluster 1 and 2 from the two-cluster solution indicated two clusters were almost opposite images of each other. Although this two-cluster solution would suggest two different segments and was easy to characterize, it was possible to miss some important information underlying cluster # 2 in that it contained relatively a large number of observations ($n = 403$). In a cluster analysis, a large number of observations in a cluster implies that it would be increasing the average distance within each group, which suggests a less homogeneous group membership (Hair et al.).

The difference between the three-cluster and four-cluster solution was cluster #2 on the three cluster solution was divided into two separate clusters (#2 and #3) on the four cluster solution (Table 25). Inspection of the cluster centroids (reported in Table 26) of the four cluster solution revealed that some distinctive features of cluster #2 from the three cluster solution were distributed into clusters #2 and #3 in the four cluster solution. For instance, the S.P. centroid (0.62) of the 3 cluster solution was transformed into cluster #2 (0.24) and cluster #3 (0.93) in the 4 cluster solution. While cluster #2 represented the highest centroid on S.P. among the three clusters, the centroid of cluster #3 (0.93) still showed the highest score among the four clusters on the four cluster solution, but the centroid of cluster #2 (0.24) resulted in an ambiguous place among clusters. Due to an ambiguity of clusters and a difficult profiling for the four cluster solution, the three cluster solution was examined. Compared to the two cluster solution, the three cluster solution represented an improved distinctive group. Compared to the four cluster solution, the three cluster solution represented less ambiguity in terms of

profiling each cluster.

Table 26. Cluster Centroids from the Hierarchical Cluster Analysis

Cluster	SP	CC	SB	RS	CP	AP	RG	AA	PT
Two-cluster solution									
1	0.37	-0.56	1.03	0.65	1.16	-0.52	-2.24	-0.30	-0.36
2	-0.26	0.39	-0.72	-0.45	-0.81	0.37	1.56	0.20	0.25
Three-cluster solution									
1	0.37	-0.56	1.03	0.65	1.16	-0.52	-2.24	-0.29	-0.36
2	0.62	0.61	0.38	-0.51	-0.54	0.48	2.62	0.58	0.27
3	-1.61	0.04	-2.42	-0.37	-1.22	0.20	-0.07	-0.37	0.22
Four-cluster solution									
1	0.37	-0.56	1.03	0.65	1.16	-0.52	-2.24	-0.29	-0.36
2	0.24	1.37	0.24	0.74	-1.17	1.37	3.99	1.05	0.70
3	0.93	-0.03	0.50	-1.58	-0.00	-0.29	1.46	0.17	-0.10
4	-1.61	0.04	-2.42	-0.37	-1.22	0.19	-0.07	-0.37	0.22

Once the three-cluster solution was determined as the final cluster solution, K-Means (a non-hierarchical cluster analysis method) with three clusters was conducted and the numbers of cases per cluster are presented in Table 27. The cross-tabs which measured how much overlap existed between the K-Means and Ward's methods indicated 83 percent similarity, which represented consistency in clustering between the two different methods.

Table 27. Overlap between K-Means and Ward's Methods

Ward's K-Means	Cluster 1	Cluster 2	Cluster 3	Total
Cluster 1	242 35.33 %	35 5.11 %	14 2.04 %	291 42.48 %
Cluster 2	21 3.07 %	195 28.47 %	17 2.48 %	233 34.01 %
Cluster 3	19 2.77 %	14 2.04 %	128 18.69 %	161 23.50 %
Total	282 41.17 %	244 35.62 %	159 23.21 %	685 100 %

Multivariate analysis of variance (MANOVA) compared the means of the nine factors among the three clusters to determine whether their differences were statistically significant. The significant multivariate F (*Pilai F* = 105.67, df = 18, p < .001) indicated that the sectors of nine means of Opinion about Sports differs among the three clusters.

Table 28. Cluster Centroids, MANOVA Table, & Profiles of the Three-Cluster Solution

Cluster	SP	CC	SB	RS	CP	AP	RG	AA	PT
Cluster 1	0.58	-0.62	1.15	0.18	1.10	-0.55	-2.37	-0.15	-0.39
Cluster 2	0.55	0.59	0.35	-0.07	-0.38	0.63	2.94	0.59	0.31
Cluster 3	-1.85	0.26	-2.60	-0.22	-1.44	0.09	0.03	-0.56	0.26

	S.S.	df	M.S.	F	Sig.
Self participation in sport	719.105	2	359.553	96.734	.001
Cynicism	201.614	2	100.807	33.661	.001
Sports Benefits	1502.210	2	751.105	254.411	.001
Resource	18.428	2	9.214	2.212	.110
Community Pride	717.096	2	358.548	121.984	.001
Attitude to Pro-athletes	182.087	2	91.043	28.708	.001
Role of Government	3642.828	2	1821.414	550.139	.001
Attitude to Amateur sports	135.473	2	67.737	25.954	.001
Perceived Time cost	75.721	2	37.861	33.011	.001

	Cluster 1	*Cluster 2*	*Cluster 3*
Self participation in sport	Active	Active	Inactive
Cynicism	Low	High	Neutral
Sports Benefits	Positive	Neutral	Negative
Resource	High	Neutral	Low
Community Pride	Positive	Low negative	Negative
Attitude to Pro-athletes	Positive	Negative	Low negative
Role of Government	Positive	Negative	Low positive
Attitude to Amateur sports	Less prefer	Prefer	Least prefer
Perceived Time cost	Low	High	Low high

Figure 6, a K-Means bi-plot visually shows the separation of the three clusters. Follow-up ANOVAs indicated that three clusters were significantly different at the .001 level for all nine factors except for the factor 'Resource' (Table 28). In addition, Scheffé post-hoc tests were conducted to inspect cluster differences for the eight factor score means. The

results of the post-hoc tests were as follows: cluster 1 and 2 were different from cluster 3 in the factor 'Self-Participation in sport; cluster 2 was not different from cluster 3 in the factors 'Cynicism' and 'Perceived Time cost'; cluster 1, 2, and 3 were different from one another in the factors 'Sports Benefits', 'Community Pride', 'Attitude to Pro-athletes', 'Role of Government', and 'Attitude to Amateur sports'.

Figure 6. K-Means Method Clusters Plotted on the Principal Components
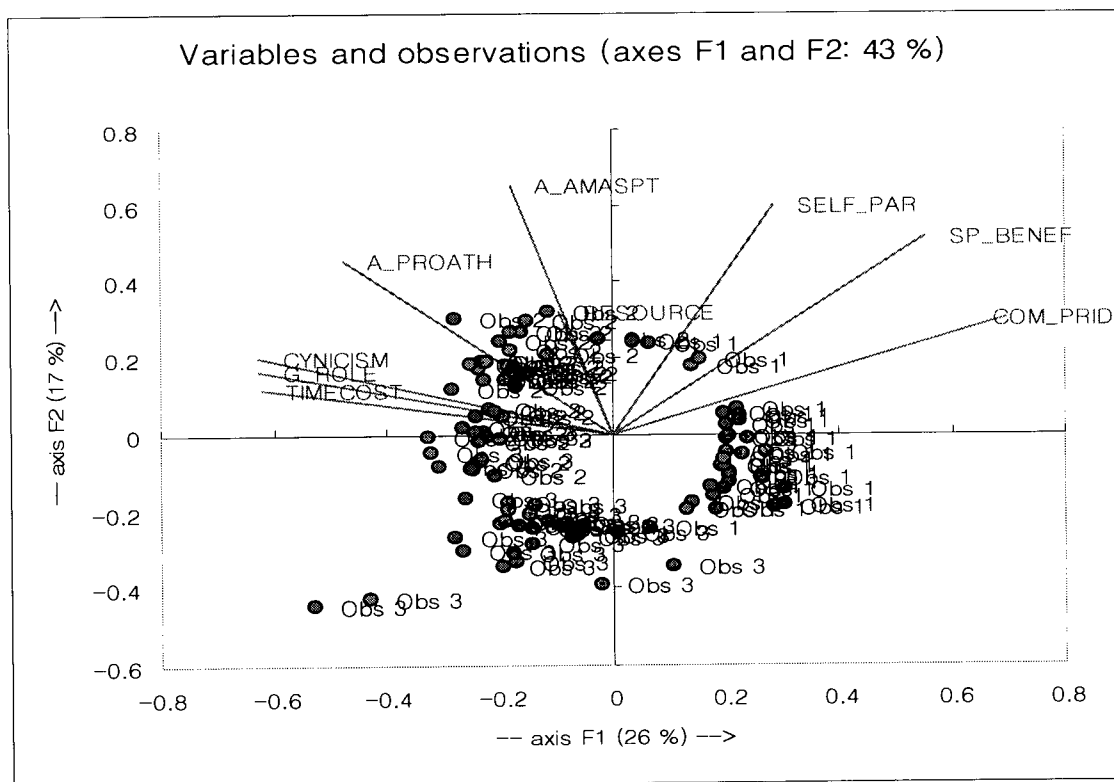
As can be seen from Table 28 and Figure 7, individuals in cluster 1 tended to have positive aspects to Self-Participation in sports, Sports Benefits, Community Pride, Cynicism about professional sports, Attitude toward Pro-athletes, Perceived Time cost, and Role of Government (note that the latter four variables are reverse scored, thus negative centroids reflect positive attitudes). In terms of entertainment value, people in

cluster 1 preferred professional sports to amateur sports. In addition, they had higher

values on Resource and their values for Perceived Time cost were low. They tended to

be very faithful to sports in general, especially to professional sports.

Figure 7. Cluster Profiles for the Three-Cluster Solution
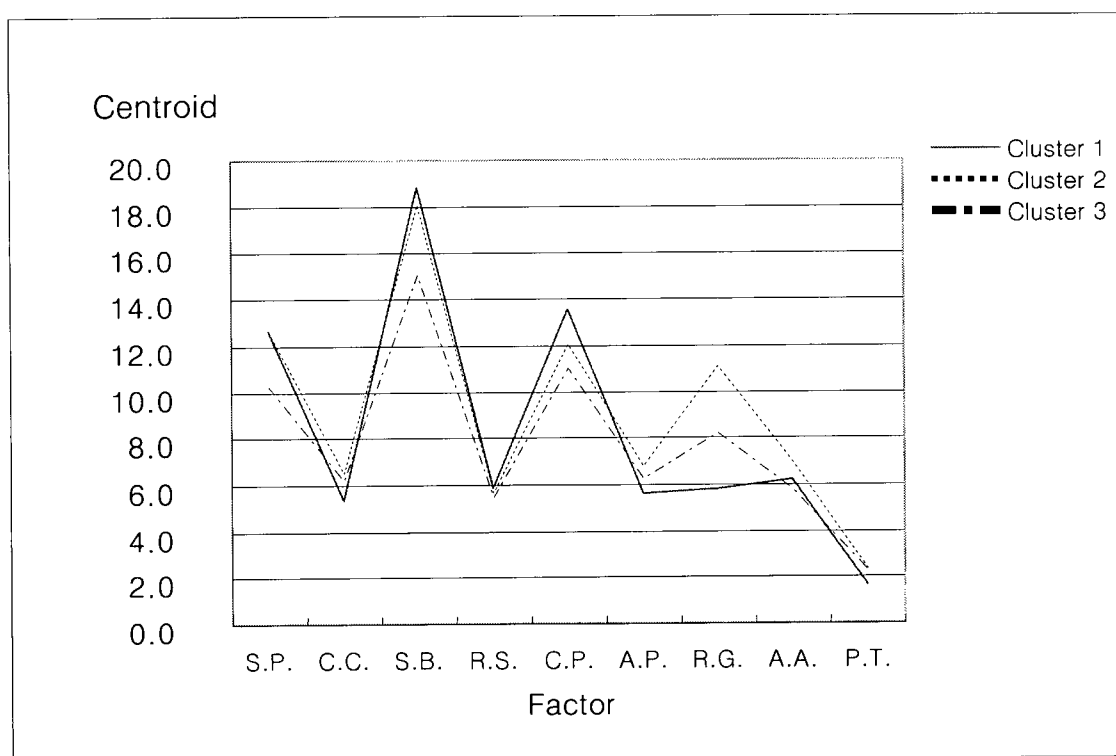
Individuals in cluster 2 represented negative feelings towards professional

sports and athletes. With respect to Sports Benefits and Community Pride, they had less

positive attitudes than people in cluster 1, but still less negative than people in cluster 3.

They expressed little concern over the extent to which government was supporting local

professional franchises, however their attitudes towards amateur sports were very

positive. In terms of Perceived Time cost, they had the highest value among people in

three clusters. Although they tended to have negative attitudes towards professional

sports in general, they were the active individuals in participating in sports.

Individuals in cluster 3 consisted of people who had negative attitudes towards

sports in general (low S.P., S.B., C.P., and A.A.), but somewhat positive attitudes

towards professional sports. Their low values on Sports Benefits and Community Pride

indicated that they probably tended to consider professional sports to be just entertaining

events. In addition, they exhibited the least interest in amateur sports, the lowest

resources and interests in participating in sports among people in three clusters.

Follow-up discriminant analysis of the three-cluster solution revealed that about

95.2 percent of cluster memberships were correctly classified, which suggested that the 9

factors identified from the confirmatory factor analysis were effective tools to predict

cluster memberships based on their opinions about sports (Table 29).

Table 29. Prediction Result from the Discriminant Analysis for Cluster Membership

Predicted cluster / Actual cluster	1	2	3	Total
Cluster 1	278	9	4	291
Row %	95.5 %	3.1 %	1.4 %	100.0 %
Cluster 2	7	221	5	233
Row %	3.0 %	94.8 %	2.2 %	100.0 %
Cluster 3	4	3	154	161
Row %	2.5 %	1.8 %	95.7 %	100.0 %
Total	289	233	163	686

Cluster membership and the frequency of game attendance.

In the previous section, three distinctive spectator groups (clusters 1, 2, & 3)

were identified based on their reported opinions about sports. Using a chi-square, the

relationships between the three identified clusters and the frequency of game attendance

was examined and the results are presented in Table 30. To conduct a chi-square test, the

continuous variable of spectators' frequencies of game attendance (range 0 to 45) was

transformed into a categorical variable. The frequencies of game attendance were

categorized into three groups as in study 1 (i.e., Low Group: 0-1 games, Medium Group:

2-4 games, High Group: more than 4 games), however, the number of cases for each

category were not as symmetrical: 271 (39.5 %), 247 (36.1 %), and 167 (24.4 %),

respectively.

Table 30. Cluster Membership and the Game Attendance Frequency

	0 – 1	*2 – 4*	*>4*	*Observed total*
Cluster 1				
Observed n (%)	96 (14.0)	107 (15.6)	88 (13.0)	291 (42.5)
Row %	33.0	37.0	30.0	100.0
Expected n	115	105	72	
Cluster 2				
Observed n (%)	95 (13.9)	87 (12.7)	51 (7.5)	233 (34.1)
Row %	41.0	37.0	22.0	100.0
Expected n	92	84	56	
Cluster 3				
Observed n (%)	80 (11.7)	53 (7.7)	28 (4.1)	161 (23.5)
Row %	50.0	32.0	18.0	100.0
Expected n	64	58	40	
Expected total	271	247	167	685

The results of chi-square test indicated that the relationship between spectators'

frequencies of game attendance and 3 clusters was significant at alpha .01 with the chi-

square observed value of 16.8 ($df = 4$, $p = .003$). As can be seen from the row percent

values in Table 30, spectators of Cluster 1 exhibited the highest game attendance and the

spectators of Cluster 3 represented the lowest game attendance. Cluster 1 contained 88

(expected $n = 72$) observations in the high frequency category and only 96 (expected $n =$

115) observations in the low frequency category. The results indicated that spectators in

cluster 1 were more likely to be frequent spectators, and individuals in cluster 3 less

likely. Thirty percent in cluster 1 attended more than four games, compared to 18 percent in cluster 3. For the case of cluster 2, the frequency in all three cells was very close to the expected values.

Profiling the cluster solution on additional variables.

In the previous section, 3 distinctive clusters based on their reported opinions about sports were identified by a cluster analysis. The next step was to test the capability of implementation of the cluster measures identified by seeing if each cluster could be linked back to observable activity patterns, ticket information, or demographic variables in a meaningful way.

Sports interests and activity profiles.

The chi-square tests were conducted to reveal spectators' profiles along with their cluster membership. Additional variables for the chi-square tests consisted of items encompassing ticket information, ticket-purchasing patterns, best promotional medium, hobby, favourite activity, game attending colleague, membership in a club, fan history, and demographic information (items under part 2 and 3). The results of the chi-square tests and cluster descriptive statistics are presented in Tables 31 and 32.

Profiles of cluster 1 contained the following characteristics (as supported by p value of less than .01):

(a) the highest mean value for game attendance of 5.3 games

(b) the longest fan history of 14.3 years, on average

(c) tend to attend hockey games with their families

(d) the highest percentage of playing hockey as their hobbies (24.7 %)

(e) the highest percentage of internet users (70.1 %)

(f) the highest percentage of the use of hockey related websites (18.7 %).

Table 31. Profiles of the Three Clusters on Sports Interests & Activities

Cluster Variables	Cluster 1 (n = 291)		Cluster 2 (n = 233)		Cluster 3 (n = 161)		Chi-square or F^a	p
	Mean		Mean		Mean			
Game attendance	5.3		3.5		3.8		F = 5.04	.007
Years of being a fan	14.3		13.7		10.6		F = 8.25	.001
	n	%	n	%	n	%		
Ticket Purchaser Company	23	7.9	39	16.7	12	7.5	12.931	.002
Game colleague								
Child	31	10.7	35	15.0	10	6.2	7.592	.022
Family	101	34.7	53	22.7	39	24.2	10.772	.005
Friends	189	64.9	129	55.4	106	65.8	6.425	.040
Member of sport club							28.988	.001
Yes	153	52.6	94	40.3	43	26.7		
No	138	47.4	139	59.7	118	73.3		
Sport club								
Hockey	49	16.8	29	12.4	13	8.1	7.126	.028
Hobby								
Hockey	72	24.7	24	10.3	28	17.4	18.275	.001
Favourite activity								
Basketball	30	10.3	15	6.4	24	14.9	7.570	.023
Use of internet							9.436	.009
Yes	204	70.1	134	57.5	110	68.3		
No	87	29.9	99	42.5	51	31.7		
Favourite website								
Sport media	33	11.3	10	4.3	13	8.1	8.566	.014
Hockey related	55	18.9	18	7.7	17	10.6	15.386	.001
Play as a child								
Hockey	112	38.5	66	28.3	50	31.1	6.488	.039
Soccer	100	34.4	65	27.9	64	39.8	6.210	.045

Note. Chi-square or F^a : *Reported test statistic is* χ^2 , *unless otherwise noted. The complete table for the three clusters on sports interests and activities is presented in Appendix D.*

Profiles of cluster 2 contained the following characteristics:

(a) the highest percentage (16.7 %) of tickets bought by companies

(b) the lowest percentage (57.5 %) of the use of internet

(c) the oldest group with mean value of 31.0 years old.

Profiles of cluster 3 contained the following characteristics:

(a) the shortest fan history with the mean value of 10.6 years

(b) the lowest percentage (26.7 %) of members of sport clubs

(c) the highest percentage of Asians (30.4 %).

Partial Bonferroni corrections were applied for a priori comparisons which resulted in an alpha of .01. Six predictors were not significant between groups, including accompanied by child, accompanied by friends, member of a hockey club, basketball as a favourite activity, played hockey, and soccer when young.

Demographic profiles.

Table 32 presents the demographic statistics for each of the three clusters. Age and ethnicity were the only variable that exhibited between cluster differences. Cluster 2 individuals were slightly older (by about 3 years) than those in clusters 1 and 3, and cluster 3 was comprised of more Asians and fewer Caucasians that the other 2 clusters.

Table 32. Demographic Profiles of the Three Clusters

Cluster Variables	Cluster 1 (n = 291)		Cluster 2 (n = 233)		Cluster 3 (n = 161)			
	Mean		Mean		Mean			
Age	27.7		31.0		27.8			
	n	*%*	*n*	*%*	*n*	*%*	Chi-square	*p*
Age category							28.440	.005
21 >	71	24.4	41	17.6	41	25.5		
21 – 25	65	22.3	33	14.2	36	22.4		
25 – 30	47	16.2	30	12.9	23	14.3		
31 – 40	52	17.9	43	18.5	28	17.4		
40 – 50	23	7.9	41	17.6	15	9.3		
50 <	19	6.5	25	10.7	10	6.2		
Missing	14	4.8	20	8.6	8	5.0		
Gender							4.261	.372
Male	190	65.3	155	66.5	103	64.0		
Female	87	29.9	59	25.3	50	31.1		
Missing	14	4.8	19	8.2	8	5.0		
Residence							12.728	.548
Area 1	70	24.1	50	21.5	48	29.8		

Area 2	20	6.9	14	6.0	12	7.5	
Area 3	43	14.8	21	9.0	16	9.9	
Area 4	21	7.2	18	7.7	14	8.7	
Area 5	21	7.2	14	6.0	10	6.2	
Area 6	26	8.9	27	11.6	13	8.1	
Area 7	33	11.3	28	12.0	16	9.9	
Missing	57	19.6	61	26.2	32	19.9	
Ethnicity						28.198	.001
Caucasian	224	77.0	182	78.1	101	62.7	
African Canadian	2	0.7	2	0.9	1	0.6	
Asian	46	15.8	29	12.4	49	30.4	
Natives	4	1.4	0	0.00	1	0.6	
	15	5.2	20	8.6	9	5.6	
Job						31.485	.211
Managerial	37	6.5	37	15.9	20	6.8	
Social science	13	12.7	17	7.3	10	12.4	
Business & finance	25	4.5	28	12.0	19	6.2	
Sales & service	32	8.6	20	8.6	10	11.8	
Applied science	14	11.0	10	4.3	5	6.2	
Manufacturing	5	4.8	2	0.9	1	3.1	
Retired	5	1.7	5	2.1	2	0.6	
Trade & transportation	9	1.7	14	6.0	7	1.2	
Primary industry	3	3.1	2	0.9	68	4.3	
Student	110	37.8	59	25.3	4	42.2	
Unemployed	5	1.7	6	2.6	3	2.5	
Art recreation &sport	11	3.8	5	2.1	1	1.9	
Health related	3	1.0	7	3.0	1	0.6	
Missing	19	6.5	21	9.0	11	6.8	
Household income						18.856	.276
< C$ 10,000	31	10.7	17	7.3	19	11.8	
10,000 – 19,999	16	5.5	7	3.0	17	10.6	
20,000 – 29,999	20	6.9	12	5.2	10	6.2	
30,000 – 39,999	19	6.5	17	7.3	7	4.3	
40,000 – 59,999	44	15.1	33	14.2	23	14.3	
60,000 – 79,999	44	15.1	36	15.5	20	12.4	
80,000 – 99,999	34	11.7	29	12.4	14	6.7	
> C$ 100,000	52	17.9	48	20.6	27	16.8	
Missing	31	10.7	34	14.6	24	14.9	
Education level						20.825	.185
Some high school	8	2.7	3	1.3	4	2.5	
High school degree	60	20.6	48	20.6	33	20.5	
Some college	93	32.0	56	24.0	32	19.9	
Two-year college diploma	29	10.0	24	10.3	19	11.8	
Bachelor's degree	52	17.9	49	21.0	39	24.2	
Some graduate school	12	4.1	17	7.3	5	3.1	
Master's degree	12	4.1	13	5.6	16	9.9	
Doctoral degree	4	1.4	3	1.3	2	1.2	
Missing	21	7.2	20	8.6	11	6.8	

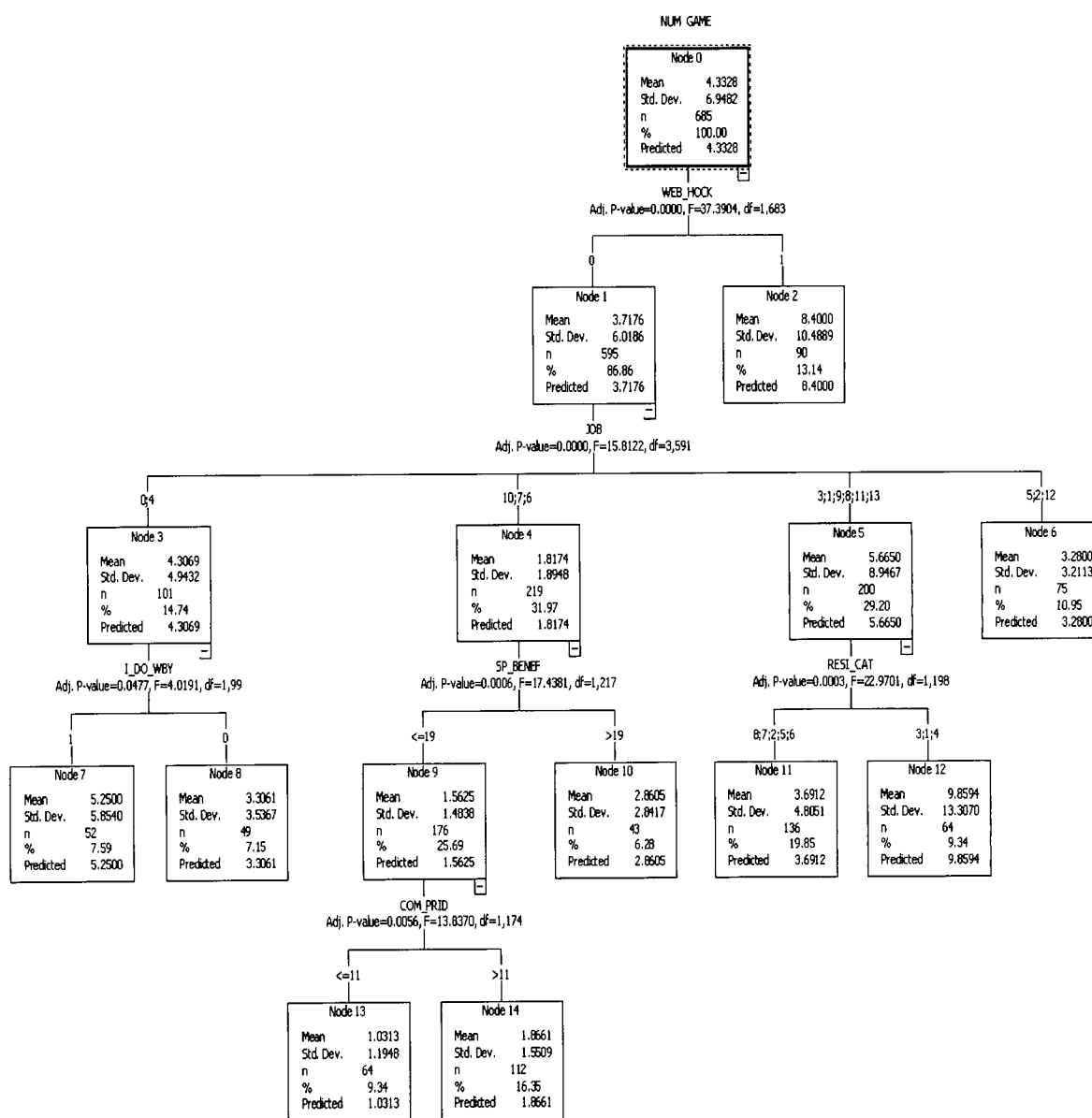*Predicting Game Attendance using Decision Tree Analysis*

The purpose of the cluster analysis in the previous section was to identify segments underlying spectators' reported opinions about sports. Three distinctive clusters were identified and distinctive characteristics of each cluster were presented on additional variables. A decision tree analysis is similar to a cluster analysis in that both methods minimize differences within nodes or clusters, and maximize differences between nodes or clusters on a given dependent variable. However, the two methods use totally different approaches to achieve this purpose. In this study, the cluster analysis began with identifying clusters based on reported opinions about sports and predicted game attendance behaviours, and then examined the relationships between clusters and reported game attendance. On the other hand, a decision tree analysis begins with the reported game attendance behaviours (frequency of game attendance), and maximizes differences over branched nodes. Comparing the results of these two different methods of analysis has the potential to provide a richer and deeper understanding of how professional sports spectators differ and to facilitate segmenting spectators and predicting game attendance.

Accordingly, a decision tree analysis was conducted with the 39 predictive variables used in the final tree analysis of Study 1 and the nine factor raw score totals identified by the confirmatory factor analysis in Study 2. This analysis was identical to the final decision tree analysis in Study 1 except that the nine opinion factor scores were added and the data were taken from data sets 2 and 3 only. The tree diagram is presented in Figure 8.

The full tree diagram was classified by six predictors including WEB_HOCK, JOB, I_DO_WBY, SP_BENEF (Sport Benefit), RESI_CAT, and COM_PRID (Community Pride). There were nine terminal nodes with three of them (nodes 2, 7, and 12) representing groups of spectators who reported attending more than 4.3 games (the mean for the total sample). Node 2 represented 90 individuals whose favourite internet websites were hockey related sites, with a mean frequency of game attendance of 8.4 games. Node 7 represented 52 individuals with jobs in sales and service who reported that they were the actual ticket purchasers. Their frequency of game attendance was 5.2 games. Node 12 consisted of 64 individuals who had jobs in management, business, trades, and the health sector or were unemployed. Their residence areas were Vancouver, Richmond, New Westminster, North Vancouver, and West Vancouver and their game attending frequency was 9.8 which was the highest of all nodes. The individuals reporting the lowest attendance (1.6 games), represented by node 9 (with a further, but trivial, breakdown to nodes 13 and 14), were characterized by a mixture of job categories (manufacturing, retired, student), were non-users of hockey websites, and had lower than average scores on Sports Benefits.

The most important segment was node 12 with an index of 227.5 %, which implied that targeting an individual in node 12 would be expected to increase the frequency of game attendance 2.27 times over a random selection. If a franchise targeted people belonging to the top three segments (nodes 2, 7, & 12), the frequency of game attendance would be expected to increase by a range of 121.2 to 227.5 percent.

Figure 8. Tree Diagram on Activity Pattern and Opinions about Sports

NUM GAME

```
                              Node 0
                        Mean      4.3328
                        Std. Dev. 6.9482
                        n         685
                        %         100.00
                        Predicted 4.3328
```

WEB_HOCK
Adj. P-value=0.0000, F=37.3904, df=1,683

```
         0                                              1
   Node 1                                          Node 2
Mean      3.7176                                Mean      8.4000
Std. Dev. 6.0186                                Std. Dev. 10.4889
n         595                                   n         90
%         86.86                                 %         13.14
Predicted 3.7176                                Predicted 8.4000
```

JOB
Adj. P-value=0.0000, F=15.8122, df=3,591

```
     0;4                  10;7;6                3;1;9;8;11;13              5;2;12
   Node 3                Node 4                  Node 5                  Node 6
Mean    4.3069        Mean    1.8174         Mean    5.6650         Mean    3.2800
Std.Dev 4.9432        Std.Dev 1.8948         Std.Dev 8.9467         Std.Dev 3.2113
n       101           n       219            n       200            n       75
%       14.74         %       31.97          %       29.20          %       10.95
Predicted 4.3069      Predicted 1.8174       Predicted 5.6650       Predicted 3.2800
```

I_DO_WBY   SP_BENEF   RESI_CAT
Adj. P-value=0.0477, F=4.0191, df=1,99   Adj. P-value=0.0006, F=17.4381, df=1,217   Adj. P-value=0.0003, F=22.9701, df=1,198

```
    1            0             <=19         >19            8;7;2;5;6        3;1;4
 Node 7       Node 8        Node 9       Node 10        Node 11        Node 12
Mean 5.2500  Mean 3.3061   Mean 1.5625  Mean 2.8605    Mean 3.6912    Mean 9.8594
Std.Dev 5.8540 Std.Dev 3.5367 Std.Dev 1.4838 Std.Dev 2.8417 Std.Dev 4.8051 Std.Dev 13.3070
n    52       n    49       n    176     n    43        n    136       n    64
%    7.59     %    7.15     %    25.69   %    6.28      %    19.85     %    9.34
Predicted 5.2500 Predicted 3.3061 Predicted 1.5625 Predicted 2.8605 Predicted 3.6912 Predicted 9.8594
```

COM_PRID
Adj. P-value=0.0056, F=13.8370, df=1,174

```
      <=11          >11
   Node 13       Node 14
Mean 1.0313    Mean 1.8661
Std.Dev 1.1948 Std.Dev 1.5509
n    64        n    112
%    9.34      %    16.35
Predicted 1.0313 Predicted 1.8661
```

WEB_HOCK was identified as the best predictor, which was consistent over both the cluster analysis and the decision tree analysis. Among the nine factors identified from the confirmatory factor analysis, Sport Benefit and Community Pride were two factors included in the tree analysis as predictors. Compared to the results of the first tree analysis of Study 1 where none of the 33 game attribute items were

significant, the seven identified factors from the confirmatory factor analysis in Study 2

had better predictability.

Chapter 5. Discussion and Implications

The research for this dissertation had two inter-related objectives. One was to investigate the consumer profiles of sport spectators associated with a specific NHL franchise, the Vancouver Canucks, and to relate these to game attendance. The second objective was to develop, test and evaluate a questionnaire designed to incorporate recent research on variables that affect professional sports game attendance. These two objectives were operationalized in the questionnaire design and the research methodology of the study and were also reflected in the two studies that were reported in the previous chapter. Study 1 focused on evaluating game attribute items that had been identified as important variables affecting hockey game attendance in previous research, and also on revealing the interactions between identified game attribute items and lifestyle related variables (game attendance behaviours, sports interests, and activity patterns), and demographic information. Study 2 focused on investigating spectators' opinions and investigating the linkages between identified opinions and lifestyle related variables and demographic information.

In this chapter I discuss the findings from these two studies in light of the objectives of the research and what was learned. The chapter is organized in the following sections: (a) examination of study 1, (b) examination of study 2, (c) short-term marketing implications, (d) long-term marketing implications, (e) limitations, and (f) future research.

Examination of Study 1

In study 1, questionnaire validity for the 33 game attendance items was accomplished using a confirmatory factor analysis. The final model that resulted

contained 19 items and seven factors (Overall Performance, Uniqueness of Hockey,

Facility Convenience, Schedule Convenience, Game Promotion, Advertising, and

Excitement), and the model fit indices revealed a good fit to the data.

Table 33 lists the mean scores of all 33 items for part 1 of the questionnaire.

Table 33. Descriptive Statistics of 33 Items for Part 1

Items	*M*	*S.D.*
1. Behaviours of fans during games	3.44	1.16
2. Special events	2.97	1.22
3. Accompanied by friends	4.12	1.02
4. Excitement	*4.34	.84
5. The Canucks' win/loss records	*3.29	1.20
6. Visiting teams' win/loss records	2.76	1.17
7. The Canucks' superstars	*3.41	1.07
8. Visiting teams' superstars	3.22	1.14
9. Record breaking performance of the Canucks	*3.25	1.17
10. Record breaking performance of visitors	2.69	1.16
11. Rivalry of the Canucks and visiting teams	3.76	1.06
12. Frequent fights and penalties	3.12	1.28
13. Offensive output of the Canucks	*4.02	.94
14. Defensive output of the Canucks	*3.50	1.05
15. Closeness of competition	3.76	1.02
16. Unobstructed view from seats	4.41	.84
17. Comfortable seats	*4.13	.93
18. Easy accessibility to facility	*3.78	1.09
19. Availability of parking	3.38	1.33
20. Seating capacity of facility	3.09	1.27
21. Cleanliness of facility	*3.82	1.02
22. Game time	*3.56	1.08
23. Game day	*3.36	1.14
24. Advertising through T.V.	*2.46	1.14
25. Advertising through newspapers	*2.39	1.08
26. Advertising through magazines	*2.16	1.02
27. Advertising through radio	*2.51	1.15
28. Advertising through internet	*2.23	1.11
29. Direct mail & notification for ticket discount	2.20	1.10
30. Giveaway and prize	2.87	1.28
31. Ticket discount	*3.94	1.14
32. Price of season ticket	*3.73	1.41
33. Price of game ticket	*4.27	.99
Total	*N* = 628	

*Note. *: items in the final model of confirmatory factor analyses.*

The mean values of the 19 items were all of a magnitude of 3.0 or greater (on a

5-point Likert scale), except for the five items belonging to ADVT (advertising) whose

values were 2.51 and less. The item, 'unobstructed view from the seats' represented the

highest mean (4.41) among all 33 items. The high mean values suggest that all 33 items

are important game attributes considered by spectators when they decide to attend

hockey games, however, the low correlation coefficient between the criterion variables

(game attendance frequencies in the last and next 12 months, and spectators' ticket

information) and the seven predictive constructs indicated that the game attribute items

did not distinguish spectators according to their game attendance frequencies. Thus the

questionnaire may be of little use in segmenting spectators or predicting game

attendance. Even if the predictability of the final model was lower than expected, it did

not necessarily mean that the 14 excluded and 19 included items from the final model

were not important factors in why spectators decide to attend hockey games. For

instance, the mean value of the item, 'comfortable seats' was 4.13, which indicates most

individuals in this study believed a comfortable seat was a very important consideration

when they decided to a attend hockey game, whether they were frequent attendees or

infrequent attendees.

The low predictability for game attendance found in this research is not

consistent with the findings from the previous studies reported in Chapters 2 and 3 that

focused on minor league hockey games (Smith, 1995; Zhang et al., 1997a, 1999) or on

other major professional sports (Greenstein & Marcum, 1985; Hansen & Gauthier, 1989;

Zhang et al, 1995). These studies showed statistically significant relationships between

the frequency of game attendance and the identified reasons for game attendance.

Although profound and somewhat unexpected, the differences between the findings of the present study and earlier studies can at least partially be accounted for on the basis of three conditions which I discuss below: (a) different market characteristics or spectator characteristics between NHL and minor league hockey; (b) Canadians' unique attitudes towards hockey; (c) availability of alternative professional sporting events.

First, there may well be differences between major league (NHL) and minor league hockey markets and spectators. This possibility was initially raised in Chapter 2 when I discussed the applicability of previous research on minor hockey to major league hockey. In the research done by Zhang et al. (1997a), three factors (game attributes, home team, and economic consideration) were identified as principally affecting game attendance levels of minor league hockey spectators. Zhang et al. used a multiple regression analysis, and found that a total of 28.8 percent of the variance was explained by these three factors (6 %, 14.8 %, 8 % respectively). By comparison, in this dissertation only 2.1 percent of total variance regarding the dependent variable "frequency of game attendance" was explained by two (uniqueness of hockey and game promotion) of the seven factors. The two factors (game attributes and economic consideration) from Zhang et al.'s study and the two factors (uniqueness of hockey and game promotion) from this dissertation, cover almost the same items; however, the total variance explained in the two studies (14 % versus 2.1 %) are significantly different, which implies that major and minor league markets may be quite different.

Canadians' unique attitude towards hockey is a second consideration in explaining the findings from this study. In an early study focusing on the NHL, Jones

(1984) insisted that Canada was different in that spectators' game attendance levels were affected by the variable, 'game played or team located in a Canadian city'. Jones explained that winning-related variables were closely related to spectators' attendance levels, but they did not affect the game attendance levels of franchises located in Canadian cities. Carter (1996) reported a similar finding in his study dealing with 251 game attendees of the four Toronto professional sports franchises (CFL Argonauts, NBA Raptors, NHL Maple Leafs, MLB Blue Jays). Carter identified three distinctive clusters based on their psychographic information, and examined the linkages between cluster memberships and game attendance levels for the four professional sports. The three clusters demonstrated significant game attendance differences for three of the professional sports (Argonauts, Raptors, Blue Jays), but Carter found there was not much difference in game attendance frequencies between the three clusters for the Maple Leafs' games. Both Jones and Carter felt that their findings were related in part to Canadian culture and Canadians' unique attitudes towards hockey.

The absence of a professional sport substitute may be a third factor. According to Zhang et al. (1997b), the presence of other professional sporting events, especially major league basketball and football games, affected hockey spectators' frequencies of game attendance because their seasons overlapped. Due to the absence of other substitute forms of professional sports in the Vancouver area, the spectators of the Vancouver Canucks did not have any other choices to attend other professional sporting events even when the performance of the local team was lower than what they would have liked.

Because of the poor predictive probability identified in study 1, a decision tree analysis was conducted in order to classify spectators and relate their characteristics to game attendance. In the final decision tree analysis in study 1, 10 items (income, the use of hockey websites, played baseball when young, type of job, accompanied by co-workers, ethnic background, T.V. as the best promotional medium, fan history, and played hockey when they were young) were identified as the most important predictors that discriminated spectators based on their game attendance frequencies.

The use of professional hockey-related websites was identified as one of the most important predictors for discriminating spectators according to their game attendance levels. Duncan & Campbell (1999) have noted that sport organizations could achieve many competitive advantages by identifying appropriate uses of the internet for their customers including improved customer service, improved advertising, creation of a distribution channel, better communications, low cost entertainment, and better information management.

According to CyberAtlas (2003), 580 million people worldwide used the internet in 2002, and this number will reach 709.1 millions in 2004. In the case of Canadians, 16.84 million people (52.8 % of 31.9 million Canadians) used the internet in 2002 with internet use reported as highest in Alberta and British Columbia with a rate of 61 percent of the population. In this study, 703 (63.3 %) of 1,110 individuals were identified as internet users, and 152 (21.6 %) of the 703 individuals replied that professional hockey-related websites were their favourite sites. Use of the internet was significantly related to the frequency of game attendance. Internet users had higher game

attendance (mean score 5.5 games) than non-users (4.2 games). In addition, use of the internet also showed significant relationships with age, income, and education level. In this study, participants in the younger age groups and those with higher incomes and more education reflected higher internet use rates.

With respect to participants' personal sports histories, two items, playing baseball or playing hockey when young, were identified as important predictors for discriminating between spectators based on their game attendance frequencies. Overall, 377 individuals (34.0 %) reported that they played hockey when they were young and the mean attendance frequency of this group was higher than those of other sport groups (soccer, 365; baseball, 277; basketball, 201). This finding is reminiscent of the niche analysis research done by Milne et al. (1996). They evaluated niche market overlap between four spectator sports (college basketball, pro basketball, golf, and tennis) and three participant sports (basketball, golf, and tennis) using both demographic and psychographic criteria. Whereas the demographic criteria (age, gender, education, income and race) showed significant overlap for sports participant and spectator niches (e.g., 84% of the golf participant niche overlapped the golf spectator niche, meaning golf spectators tended to be demographically similar to golf players), the psychographic criteria showed higher correlations among the participant sports and among the spectator sports than between (e.g., golf and tennis participants overlapped 74% psychographically and spectators 92%, but golf participants only overlapped 31% psychographically with tennis spectators and 28% with golf spectators). This can partially be explained by the psychographic criteria used in their study which focused on personal motivation factors

for why people participate in activities (Personal Improvement, Sport Appreciation, and Social Facilitation) making similarities between sports participants more likely than between participants and spectators. Nevertheless, even if a direct comparison between their study and the research reported in this dissertation is not appropriate due to the different research methods and samples, a similar pattern between hockey spectators and participants is evident.

The limited niche overlap between hockey spectators and participants in the dissertation findings indicates that hockey spectators did not need to be hockey participants. That only 343 (30.9 %) of 1,110 spectators reported they played hockey as a favourite activity and that only 377 spectators (34 %) replied that they played hockey when they were young, confirmed the lack of a strong niche overlap between hockey spectators and participants. On the other hand, some of the remaining 767 spectators (69.1 %) who did not list hockey as a favourite activity, reported playing other sports, and in this sense they are active sport participants. For example, among other sports activities currently pursued golf ($n = 178$; 16 %) was the second most reported activity. Ironically, in terms of game attendance levels for Canucks games, spectators who reported that they currently played golf had a marginally higher game attendance average (6.3 games) than spectators who reported playing hockey (6.0 games).

With respect to participants' sports history profiles in their youth, hockey ($n = 377$, 34 %, $m = 5.8$) was the most and baseball ($n = 277$, 25 %, $m = 5.7$) the second most reported sport played by participants when they were young. While hockey is perhaps understandable, it is not clear why baseball ranked so highly. Perhaps this is

simply a factor of the popularity of baseball as an organized youth sport, however, it would be interesting to explore this association more closely. Compared to other participant sports including soccer ($n = 365$, $m = 4.8$), basketball ($n = 201$, $m = 4.8$) football ($n = 122$, $m = 5.4$), and volleyball ($n = 102$, $m = 5.2$) having a background of playing baseball correlated with a high Canucks game attendance frequency, second only to playing hockey.

This study also found that fan history is positively related to frequency of game attendance. Spectators who attended more Canucks hockey games tended to have longer fan histories than those attending fewer games. This pattern was consistent from the youngest age group to the oldest group when all other item effects were controlled.

With respect to promotional media, the ranking of newspapers as an information source was seen to vary according to participants' game attendance levels. Although TV was considered as the best medium among all spectators in this study, more of the spectators who attended a greater member of hockey games tended to believe newspapers were the best medium than those who did not. As indicated in the previous chapter, 48 and 50 percent of individuals in the Low and Middle game frequency Groups believed TV was the best promotional medium. In the case of the High game frequency Group, 37 percent of individuals identified TV and 35.1 percent identified newspapers. This pattern reinforces the notion that television is a low-involvement medium because it requires only a passive viewer who exerts relatively little control over content whereas print media requires higher involvement, i.e., highly involved fans tended to use print media.

Income was also an important predictor for discriminating between spectators based on their game attendance levels. Spectators who attended more hockey games tended to have higher income levels than those who did not. This result was in-keeping with previous studies (Greenstein & Marcum, 1985; Hansen & Gauthier, 1989; Zhang et al., 1995). With respect to game attendance colleagues, spectators who attended more games tended to go with their co-workers than those who attended fewer games.

Examination of Study 2

In study 2, an evaluation of the questionnaire validity of 33 spectators' opinion items was accomplished using a confirmatory factor analysis. The final model contained 22 items and nine factors (Self participation in sport, Cynicism, Sports Benefits, Resource, Community Pride, Attitude towards Pro-athletes, Role of Government, Attitude towards Amateur sports, and Perceived Time cost). The model fit indices indicated a good fit for the final model. Based on the identified nine factor score totals, a cluster analysis was conducted to uncover segments underlying the survey participants' reported opinions about sports.

The cluster analysis yielded three distinctive clusters with 291, 233, and 161 respondents in clusters 1, 2 and 3, respectively. Cluster 1 differed from cluster 2 along 5 dimensions including Cynicism, Attitude towards Pro-athletes, Role of Government, Attitude towards Amateur sports, and Perceived Time cost. While individuals in cluster 1 expressed low cynicism, positive attitudes towards professional athletes and towards the role of government in sports, less preference for amateur sports, and less perceived time cost, individuals in cluster 2 demonstrated high cynicism, negative feelings towards

professional athletes and the role of government in sports, high preference for amateur sports, and greater perceived time cost. Individuals in both clusters were active sport participants.

Unlike the other two clusters, individuals in cluster 3 were not active in participant sports. In addition, individuals in cluster 3 demonstrated negative reactions to benefits given by sports and to the idea of community pride through sports, the lowest resources, and the lowest preference for amateur sports among individuals in all three clusters. In terms of values on other factors, cluster 3 lay between clusters 1 and 2 on Cynicism, Attitude towards Pro-athletes, Role of Government, and Perceived Time cost.

Regarding a link between the clusters and the frequency of game attendance, individuals in cluster 1 were more likely to be frequent spectators. On the other hand, individuals in cluster 3 were less likely to be frequent spectators and cluster 2 was in between cluster 1 and 3.

The three clusters were profiled using additional variables including activity patterns, fan history, and demographic information, as noted below.

Cluster 1

Compared to clusters 2 and 3, spectators in cluster 1 had the longest fan history and this was positively related to the frequency of game attendance. In terms of game colleagues, they tended to attend games with their family, and more spectators in cluster 1 tended to be members of sport clubs than in the other clusters. Among a variety of sport clubs, hockey clubs were a favourite for this group and their most popular activity was playing hockey. More spectators in cluster 1 tended to use the internet and this was

positively related to the frequency of game attendance. The differences between cluster 1 and the other two clusters on the use of the internet were in the use of sport media and hockey related websites. More spectators in cluster 1 tended to use sports-related media and to identify hockey websites as their favourite sites than the other two clusters. Among spectators in cluster 1, hockey was the favourite sport to play when they were young. Cluster 1 was also marginally the youngest group (average 27.7 years old) compared with the other two clusters (cluster 2, 31.0 years; cluster 3, 27.8 years). Although their income levels were not high, individuals in this cluster highly valued attending hockey games and considered that their income levels were high enough to justify the cost. Similarly, they felt that the time spent watching professional sports was justifiable.

Cluster 2

Spectators in cluster 2 were the second most frequent game attendees compared to cluster 1. In terms of ticket sources and purchasing, more spectators received their tickets from companies than spectators in clusters 1 and 3, which indicates that there was a possibility for them to use hockey games for their business purposes. More spectators in cluster 2 tended to attend hockey with their kids or co-workers than spectators in the other clusters. Fewer people in this cluster used the internet compared to the other clusters, and they were the oldest with an average age of 31 years. Spectators in cluster 2 had relatively higher household income levels than spectators in the other two clusters.

Although they had relatively higher income levels than people in cluster 1 and 3, their perceived time cost was the highest among the three clusters. Due to their

negative attitudes towards professional sports and athletes, they probably tended to attend hockey games to spend time with their kids or for business purposes.

Cluster 3

Spectators in cluster 3 had the shortest fan histories and the lowest household income levels among the three clusters. Due to their very negative attitudes towards the benefits of sports, they tended to be very inactive in participating in sports, and they had slightly higher education levels than people in the other clusters. In terms of ethnic background, cluster 3 contained more Asians than clusters 1 and 2. Due to the lowest resource value (lower income and having less time to watch hockey games), spectators in cluster 3 tended to have the highest perceived time cost.

In the decision tree analysis (Figure 8) in study 2, six predictors including the use of hockey related websites, job, ticket buyer, residence areas, sports benefit, and community pride were identified as significant predictors related to spectators' game attendance levels. The result of the tree analysis was not consistent with the result of the cluster profiling using chi-square analysis, however, due to the different algorithms in the two methods, this is not unexpected. Nevertheless, it is possible that some important interactions between items were missed in the decision tree analysis due to the small sample size ($n = 685$) and the stopping rules that were applied. As described earlier, one of the accepted stopping rules in decision tree analysis is that a parent node must contain a minimum of 100 cases and a branch node must contain a minimum of 40 cases. Using this rule, smaller segments are lost from analysis even though they might have descriptive and explanatory power.

Figure 9. Tree Diagram on Activity Pattern and Opinions about Sports_01

NUM_GAME

Node 0
Mean	4.3328
Std. Dev.	6.9482
n	685
%	100.00
Predicted	4.3328

WEB_HOCK
Adj. P-value=0.0000, F=37.3904, df=1,683

Node 1
Mean	3.7176
Std. Dev.	6.0186
n	595
%	86.86
Predicted	3.7176

Node 2
Mean	8.4000
Std. Dev.	10.4899
n	90
%	13.14
Predicted	8.4000

JOB
Adj. P-value=0.0000, F=15.8122, df=3,591

JOB
Adj. P-value=0.0001, F=30.0885, df=1,88

Node 3
Mean	4.3069
Std. Dev.	4.9432
n	101
%	14.74
Predicted	4.3069

Node 4
Mean	1.8174
Std. Dev.	1.8948
n	219
%	31.97
Predicted	1.8174

Node 5
Mean	5.6650
Std. Dev.	8.9467
n	200
%	29.20
Predicted	5.6650

Node 6
Mean	3.2800
Std. Dev.	3.2113
n	75
%	10.95
Predicted	3.2800

Node 7
Mean	18.2500
Std. Dev.	16.6318
n	20
%	2.92
Predicted	18.2500

Node 8
Mean	5.5857
Std. Dev.	5.4387
n	70
%	10.22
Predicted	5.5857

YSP_SOCC
Adj. P-value=0.0081, F=7.2945, df=1,99

SP_BENEF
Adj. P-value=0.0006, F=17.4381, df=1,217

RESI_CAT
Adj. P-value=0.0003, F=22.9701, df=1,198

OUT_CONC
Adj. P-value=0.0306, F=4.8597, df=1,73

OUT_CONC
Adj. P-value=0.0005, F=13.1773, df=1,68

Node 9
Mean	3.6667
Std. Dev.	3.8471
n	81
%	11.82
Predicted	3.6667

Node 10
Mean	6.9000
Std. Dev.	7.5804
n	20
%	2.92
Predicted	6.9000

Node 11
Mean	1.5625
Std. Dev.	1.4038
n	176
%	25.69
Predicted	1.5625

Node 12
Mean	2.8605
Std. Dev.	2.9417
n	43
%	6.28
Predicted	2.8605

Node 13
Mean	3.6912
Std. Dev.	4.8051
n	136
%	19.85
Predicted	3.6912

Node 14
Mean	9.8594
Std. Dev.	13.3070
n	64
%	9.34
Predicted	9.8594

Node 15
Mean	2.7500
Std. Dev.	2.3588
n	52
%	7.59
Predicted	2.7500

Node 16
Mean	4.4783
Std. Dev.	4.4300
n	23
%	3.36
Predicted	4.4783

Node 17
Mean	4.0638
Std. Dev.	4.5312
n	47
%	6.86
Predicted	4.0638

Node 18
Mean	8.6957
Std. Dev.	5.8654
n	23
%	3.36
Predicted	8.6957

COM_FRID
Adj. P-value=0.0427, F=10.1836, df=1,79

H_HOCKEY
Adj. P-value=0.0014, F=10.5382, df=1,174

AC_CWORK
Adj. P-value=0.0012, F=10.8746, df=1,134

AC_FRIEN
Adj. P-value=0.0399, F=4.4518, df=1,50

Node 19
Mean	2.2222
Std. Dev.	1.8839
n	36
%	5.26
Predicted	2.2222

Node 20
Mean	4.8222
Std. Dev.	4.5840
n	45
%	6.57
Predicted	4.8222

Node 21
Mean	1.4359
Std. Dev.	1.4013
n	156
%	22.77
Predicted	1.4359

Node 22
Mean	2.5500
Std. Dev.	1.7614
n	20
%	2.92
Predicted	2.5500

Node 23
Mean	3.1466
Std. Dev.	3.9612
n	116
%	16.93
Predicted	3.1466

Node 24
Mean	6.8500
Std. Dev.	7.5343
n	20
%	2.92
Predicted	6.8500

Node 25
Mean	2.0000
Std. Dev.	1.4771
n	23
%	3.36
Predicted	2.0000

Node 26
Mean	3.3448
Std. Dev.	2.7552
n	29
%	4.23
Predicted	3.3448

RESOURCE
Adj. P-value=0.0022, F=16.8363, df=1,114

Node 27
Mean	2.4239
Std. Dev.	2.0286
n	92
%	13.43
Predicted	2.4239

Node 28
Mean	5.9167
Std. Dev.	7.2166
n	24
%	3.50
Predicted	5.9167

TIMECOST
Adj. P-value=0.0442, F=7.5207, df=1,90

Node 29
Mean	3.0488
Std. Dev.	2.5194
n	41
%	5.99
Predicted	3.0488

Node 30
Mean	1.9216
Std. Dev.	1.3542
n	51
%	7.45
Predicted	1.9216

107

To check for the possibility of more detailed interactions among items, a further tree analysis was conducted after the main analysis reported in Chapter 4 using a less restrictive stopping rule with the software set for a minimum of 50 cases for a parent node and a minimum of 20 cases for a branch node. A diagram of the tree analysis is presented in Figure 9. Although the result is less reliable than that of the previous tree analysis, it is more revealing and corroborates the findings from the cluster analysis. Four predictors (WEB_HOCK, H_HOCKEY, AC_CWORK, & AC_FRIEN) show significant differences among the three clusters, and four factors (Sports Benefit, Resources, Community Pride, and Perceived Time cost) are identified as significant predictors, thus supporting the effectiveness of the discriminant functions of the nine factors originally identified in study 2.

In this dissertation, the main focus was on uncovering factors affecting ticket purchases. As described in Chapter 2, the two theories, the theory of reasoned action and means-end theory, provided an important basis for understanding hockey spectators, however, the purpose of this dissertation was not to evaluate these two theories, but to construct a questionnaire and conduct a survey to evaluate current research and thought concerning factors that influence game attendance. Using one (attitude toward buying) of three core concepts of the theory of reasoned action, game-attending spectators were surveyed and evaluated based on 33 game attribute items (part 1 of the questionnaire) to identify attraction factors and potential issues in game attendance. As explained above, the results show that all 33 game attribute items were important for the respondents in their decisions to attend games, but there was no statistically significant correlation

between the 33 items and game attendance frequencies. With respect to the concepts of means-end theory, spectators in this research appeared to attend hockey games as a means of obtaining pleasure and personal value from the product (the game itself) and its associated attributes and consequences (e.g., source of entertainment, social atmosphere, family fun, save money from game promotion, save time via the convenient game schedule and easy accessibility to facility). Although the opinions and attitudes findings support means-ends theory as a framework and reflect a variety of possible means-ends chains and end values (e.g., sense of belonging, sense of accomplishment, security, fun and enjoyment in life, excitement, self-respect), defining respondents' personal values in detail using means-end theory was beyond the scope of this study.

In both study 1 and 2, meaningful predictive variables and distinctive clusters were identified that relate to the frequency of game attendance levels. Based on the predictive variables for game attendance, spectators' attitudes towards sports, and their lifestyle profiles found in these analyses, several short and long term marketing strategies can be identified that could help professional hockey clubs better identify and retain their core spectators (frequent attendees), increase game attendance levels of infrequent attendees, and attract new spectators.

Short-term Marketing Implications

To retain loyal spectators and to increase the game attendance levels of infrequent spectators, several short term marketing strategies can be undertaken focusing on the internet, ticket prices, and image modification through supporting the local community.

The Use of Internet

In study 1 and 2, the use of internet and particularly hockey related websites and sports-related media sites were strongly related to the frequency of game attendance. Because British Columbia together with Alberta ha

ve the highest internet use rates in Canada, the internet potentially is an important marketing channel for reaching fans. One strategy would be to promote the existing website of a franchise (such as the Canucks) in order to increase the number of regular users. A second would be to redesign the site to attract a broader user group. In either case, the site could be used to advertise ticket promotions and sell tickets, and to collect information about fans, spectators and site users. This information could then be used to improve communications and services by identifying what the highly committed fans already using the website want and need, and, where possible, providing these services through the website or improving extant services.

According to CyberAtlas (2003), about 84 percent of internet users connect to email, and many use it daily. In this study, approximately 40 percent of the participants who used the internet identified an email related website (e.g., Yahoo, MSN, Hotmail) as a favourite website. This is potentially valuable information for a professional sports franchise or league. For example, some fans might welcome having an email account offered through the Canucks' website. Offering a franchise-branded service might increase the number of spectators visiting the site, the number of overall site visitors, and the length of time visitors spend on the site. It might also help convert some occasional spectators into fans.

Ticket Prices

Ticket prices have long been an issue in professional sports markets and a number of spectators in this study reported that ticket prices and ticket discounts were very important criteria in their decision to attend hockey games. Ticket prices logically are more sensitive for spectators whose income levels are relatively low or spectators who have high perceived time costs. For the case of spectators in cluster 2 who had relatively higher income levels, but represented a higher perceived time cost, marketers could try to change their negative perceptions of the value of hockey games and tickets.

As described earlier, spectators in cluster 2 tended to go to games with their co-workers and to obtain more game tickets from their companies than other people did. For this group of people, marketers need to improve the value of hockey games from a business standpoint and communicate this possibility to business spectators. One way to do this would be to provide examples of companies that successfully use hockey games for business.

Considering spectators' reported activity patterns, marketers might consider promoting ticket packs jointly with other sports activities. For instance, 178 of the 1,110 survey participants identified golf as a favourite sport activity. These individuals had an average game attendance of 6.3 games. There would be a possibility of attracting more golfers who like to attend hockey games, if a joint ticket package (playing golf and watching hockey games) could be provided at a reasonable price.

Perceptions of Pro-sports and Athletes

One of the major differences between cluster 1 and the other two clusters lay in

their perceptions of professional sports and athletes. Spectators who had positive attitudes towards professional sports and athletes tended to have higher game attendance levels in this study, and vice versa, spectators who had negative attitudes towards professional sports and athletes attended fewer more games. This raises the possibility that some of the more negative spectators might attend more games if their perceptions could be changed to be more positive. Sports marketers are well aware that they need to build a positive public image of their athletes and their sport, however, this finding identifies a concrete relationship between negative perceptions and attendance rates among people who are already attending games. In response, marketers might consider a series of campaigns that build public good will and communicate good will via various promotional media. Television would be particularly important in this mix, because it was identified as the most preferred promotional medium among infrequent spectators. In addition, supporting local amateur sports could be helpful for building positive perceptions of professional athletes and the sports organization. If an NHL franchise decided to support a local amateur sports team or league, the sports fixture would not need to be hockey or hockey-related. As noted above in Chapter 4, spectators in this study included people who had a variety of sports backgrounds and activity patterns, including golf and tennis, and, in their youth at least, baseball.

Long-term Marketing Implications

Fan history was strongly connected to frequency of game attendance levels in both studies 1 and 2. One way to increase fan association with a professional hockey franchise over time would be to support local youth's sporting events. As just noted, the

youth's sports would not need to be hockey-related. Involvement with youth's sports would not only reach the youth themselves who are potential future spectators, but also their parents and the sports officials (coaches, leaders, members of the youth sports organization). Further to establishing long-term relationships with the young people who are the fans of the future, supporting youth sports might lead adults to develop more positive perceptions of professional sports, the franchise and the athletes which potentially could result in higher game attendance rates.

Attracting spectators to the Canucks' website and providing email accounts to the public also has the potential to build long-term relations with fans which, if handled properly, could lead them to become loyal customers. Through the internet, fans can obtain their needed information and marketers can create a database of their customers via on-line surveys and from information collected directly from their site-use patterns. Based on a database of customers, marketers could track market trends and set both short and long-term marketing plans as appropriate.

With attractive domain names such as canucks.com or gocanucks.com, Canucks email users, especially young users, could feel that they belong to a fan community whenever they use their emails and that they are also supporting their team. In addition, this might lead them to form positive perceptions about hockey and become members of a larger hockey community. According to Zhang et al. (1996), knowledge of hockey was a significant predictor of hockey game attendance. Using the internet, marketers can reach both current and potential spectators, and they can educate them and improve their knowledge and understanding of hockey, which may help infrequent spectators to

become frequent spectators. Exploiting local communications channels to foster strong associations between the franchise and the local community could reduce the number of people who hold negative attitudes towards community pride and increase the number of loyal fans.

This study evaluated the validity of a spectator questionnaire containing variables identified in previous research as affecting spectators' game attendance. It also investigated the demographic and psychographic profiles of spectators of a major league hockey franchise, the Vancouver Canucks, and related these findings to game attendance. The study was intended to make a novel contribution to the literature and hopefully on a small scale it has done so. Little previous research had focused on profiling NHL fans, and none had been undertaken to holistically test the different attendance-related variables identified in prior research using confirmatory factor analysis. This step has now been taken, although the study had limitations and there is much more that can be done.

Limitations

Due to several limitations of this study, a number of important issues regarding professional sport markets were not examined.

1. Due to the large number of questionnaire items and limited time for data collection, the questionnaire was split into two different forms for the majority of respondents. This limited the examination of the relationships among some of the variables.

2. Questionnaire items concerning game attributes and opinions about sports were

derived from previous studies, and therefore the results of this dissertation research was constrained by these variables.

3. Because this study was conducted in a single market area (Vancouver, a western Canadian city) and the participants were all spectators at games of only one NHL franchise (Vancouver Canucks), the generalizability of the findings is limited.

Future Research

1. Due to the differences between the findings of this study and previous research in the United States, future research should focus on differences between spectators in different regions and investigate and compare a variety of market environments in terms of cultural differences, minor or major league games, and market competition. In particular future research should be expanded to various regions of Canada and the United States to investigate the cultural differences between Canadian and American hockey spectators. With respect to the difference between minor and major league games, future study should investigate spectators of both minor and major league games to look for possible differences. In terms of market competition, future study should compare the profiles of spectators living in a more versus less completive market area to uncover if there are any differences between spectators from these two regions.

2. A future study should utilize a qualitative research design to further identify psychographic information and factors related to consumer buying behaviours. As described in the result chapter of this study, there were no significant relationships between the 33 game attribute items and spectators' game

attendance levels, which meant game attribute related items did not predict well spectators' game attendance levels. For instance, to identify spectators' psychographic informational dimensions, qualitative research including focus groups and comprehensive interviews with spectators should be conducted.

3. According to Dick and Sack (2003), online ticket sales using the internet were starting to be viewed as an effective tool by NBA marketing directors in the middle 1990s, and have since become an integral part of the ticket sales process. The data they report demonstrate the importance of the use of internet in ticket sales, in that online ticket sales in the NBA rose 48 percent from the 1999-2000 season to 2000-2001. As indicated earlier, the use of hockey-related websites and sports-related websites were identified as important predictors affecting spectators' game attendance levels in this study. Duncan and Campbell (1999) outlined six fundamental functions for use of the internet that could help set a firm's marketing strategy for satisfying the wants and needs of consumers. The six functions for using the internet were improving customer service, improving advertising, creating a distribution channel, handling communications, providing low cost entertainment, and managing information systems. A future study should not only focus on marketing strategies using the internet for professional sport consumers, but also evaluate the effectiveness of those marketing strategies particularly with respect to increasing game attendance levels.

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Appendix A

Questionnaire

The University of British Columbia

NHL SPECTATOR SURVEY

This questionnaire is intended to investigate NHL
spectators' profiles (activities, interests, and opinions).

It takes about 20 minutes to complete.

Dear Madame/Sir:

The **purpose of the survey** is to **describe the activities and interests of hockey fans and poll opinions about why people attend NHL games. You have been randomly selected as a Canucks spectator.**

If you are an <u>adult</u> (19 years of age or older) and willing to participate in the survey, you will need to fill out as much of the questionnaire as you can.

Please don't put your name on the questionnaire. In accordance with UBC policy, all paper materials and data files will be **maintained anonymously in locked files for five years and then destroyed by shredding (paper) and erasing (data files).**

Participation in the survey is strictly voluntary, and you may withdraw at any time. If the questionnaire is completed and returned, it will be assumed that you have given consent to participate in the survey.

If <u>you have any questions</u> about this study, **please contact me at 822-9156 or Dr. Robert Sparks at 822-6515.** If you have **any concerns about your right or treatment** as a research subject, you may contact **Dr. Richard Spratley, Direct of the UBC Office of Research Services and Administration, at 822-8598.**

<u>*You may separate this letter from the questionnaire and keep it for your records if you wish.*</u>

Thank you very much for your help!

Sang Woo Bae, Graduate student　　　　　**Robert Sparks, Ph.D., Supervisor**
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Vancouver, BC V6T 1Z2　　　　　　　*Vancouver, BC V6T 1Z2*

Part I. Game Attendance

A. How **important** are the following factors for **your attending Canucks' games**? Please **check one box per item** to indicate their importance. **(See example.)**

	Not important at all				Very important
	1	2	3	4	5
Example	☐	☐	☐	☑	☐
1. Behaviour of fans during games	☐	☐	☐	☐	☐
2. Special events	☐	☐	☐	☐	☐
3. Accompanied by friends	☐	☐	☐	☐	☐
4. Excitement	☐	☐	☐	☐	☐
5. The Canucks' win/loss records	☐	☐	☐	☐	☐
6. Visiting teams' win/loss records	☐	☐	☐	☐	☐
7. The Canucks' superstars	☐	☐	☐	☐	☐
8. Visiting teams' superstars	☐	☐	☐	☐	☐
9. Record breaking performance of the Canucks	☐	☐	☐	☐	☐
10. Record breaking performance of visitors	☐	☐	☐	☐	☐
11. Rivalry of the Canucks and visiting teams	☐	☐	☐	☐	☐
12. Frequent fights and penalties	☐	☐	☐	☐	☐
13. Offensive output of the Canucks (speed of game, minutes of power play, etc.)	☐	☐	☐	☐	☐
14. Defensive output of the Canucks	☐	☐	☐	☐	☐
15. Closeness of competition (Canucks versus visiting teams)	☐	☐	☐	☐	☐
16. Unobstructed view from seats	☐	☐	☐	☐	☐
17. Comfortable seats	☐	☐	☐	☐	☐
18. Easy accessibility to facility	☐	☐	☐	☐	☐
19. Availability of parking	☐	☐	☐	☐	☐
20. Seating capacity of facility	☐	☐	☐	☐	☐
21. Cleanliness of facility	☐	☐	☐	☐	☐
22. Game time (time of day: afternoon/evening)	☐	☐	☐	☐	☐
23. Game day (day of week: weekday/weekend)	☐	☐	☐	☐	☐
24. Advertising through T.V	☐	☐	☐	☐	☐
25. Advertising through newspapers	☐	☐	☐	☐	☐
26. Advertising through magazines	☐	☐	☐	☐	☐
27. Advertising through radio	☐	☐	☐	☐	☐
28. Advertising through internet (websites)	☐	☐	☐	☐	☐
29. Direct mail & notification for game promotions	☐	☐	☐	☐	☐
30. Giveaway and prize	☐	☐	☐	☐	☐
31. Ticket discount	☐	☐	☐	☐	☐
32. Price of season ticket	☐	☐	☐	☐	☐
33. Price of game ticket	☐	☐	☐	☐	☐

Part II. Sports Interests and Activities. Please answer ✍ in the space provided.

34. In the **past 12 months, how many** Canucks' games did you **attend**?

☐

35. In the **past 12 months**, approximately **how much** did you **personally spend** on **tickets** to see Canucks' games?

$.

36. In the **next 12 months, how many** Canucks' games do you **plan** to attend?

☐

37. What **kind(s) of tickets** have you bought (anticipate buying) **this season**? (Check more than one if applicable.)

Season ticket	☐	Game Pak	☐	Half season ticket	☐
11 Game Pak	☐	Group rated ticket	☐	Single game ticket	☐
15 Game Pak	☐				

38. **If** you are a **single game ticket holder, when** do you usually buy your ticket? (Check one.)

Day of the game	☐	Between one week to one month prior to the game	☐
Week of the game	☐	Greater than one month prior to the game	☐

39. **Who** usually **buys** your **tickets**?

I do	☐	Other family member	☐
Spouse	☐	My company	☐
Friend	☐	Other	☐ Specify:

40 Which **promotional medium best informs you** about upcoming Canucks' games?

TV	☐	Newspaper	☐
Radio	☐	Magazine	☐
Website	☐	Other	☐ Specify:

41. With **whom** do you usually **attend** Canucks' games? (Check more than one if applicable.)

Alone	☐	Co-workers	☐
Spouse	☐	Neighbours	☐
Children	☐	Friends	☐
Family (parent, sister, brother)	☐	Other	☐
Relatives	☐	(Specify other):	

42. How many **years** have **you** been a **fan** of the Vancouver Canucks?

43. Are you **currently** a **member** of any **recreation** or **sports clubs**?

Yes ☐   No ☐

If yes, which one(s):

44. In the **next** 12 months, do you **intend** to **participate** in a **new physical activity** (recreation or sport) that you have not previously tried?

Yes ☐   No ☐

If yes, which one(s):

45. What are your **two favourite hobbies or past-times?**

1.	2.

46. What are your **two favourite sports activities** to **participate in?**

47. In **last 12 months**, how **much** have you **spent** on these **sports activities?**

1.	1. $
2.	2. $

48. What are your **two favourite outings** other than attending Canucks' games? (E.g., movies, CFL, amateur sports, art galleries, concerts.)

49. In **last 12 months**, how **much** have you **spent** on each of these?

1.	1. $
2.	2. $

50. What are your **two favourite web sites?**

51. How **many times** do you **visit** these **sites** in an **average week?** How **long** (minutes) **per visit?**

1.	1. Visits/week=	Minutes/visit=
2.	2. Visits/week=	Minutes/visit=

52. What **two favourite sports** did **you play as a child?** (E.g., hockey, football, basketball golf, soccer, tennis.)

1.	2.

53. **If you have children** (18 years and under), what are **their two favourite sports** (if any) to **participate in?**

1.	2.

Part III. Personal Background. Please answer ✍ in the space provided.

54. Your **age** :

years

55. **Gender**:

Male ❏   Female ❏

56. **Postal code**:

57. What is your **first language**? (e.g. English, French, Chinese)

58. What is your **ethnic background**?

59. What **business, industry or service** do you **work in**? (e.g., corner store, travel agent company, secondary school, police, auto-body shop, unemployed etc.)

Please be specific:

60. What is your **occupation**? (e.g., taxi driver, restaurant manager, tour guide, school teacher, auto mechanic, secretary, student, retired, unemployed)

Please be specific:

61. What is your **annual household income**? (Please **check one**.)

Less than C$ 10,000	❏	C$ 40,000 – 59,999	❏
C$ 10,000 – 19,999	❏	C$ 60,000 – 79,999	❏
C$ 20,000 – 29,999	❏	C$ 80,000 – 99,999	❏
C$ 30,000 – 39,999	❏	More than C$ 100,000	❏

62. What is your **highest level of education**? (Please **check one**.)

Some high school	❏	Bachelor's degree	❏
High school diploma	❏	Some graduate school	❏
Some college	❏	Master's degree	❏
Two-year college diploma	❏	Doctoral degree	❏

Part IV. Opinions About Sports. Please check one box per item **to indicate your** level of agreement or disagreement **with each of the following statements.** (See example.)

	Completely Disagree	Somewhat Disagree	Neither Nor	Somewhat Agree	Completely Agree
	1	2	3	4	5
Example	☐	☐	☐	☑	☐
63. Given the choice, participating in sports is more enjoyable than watching.	☐	☐	☐	☐	☐
64. It is always good to try new recreational activities	☐	☐	☐	☐	☐
65. It is difficult to understand how people could just lay around when there are so many recreational activities to do.	☐	☐	☐	☐	☐
66. Individual sports are far superior to team sports like soccer because you don't have to rely on others.	☐	☐	☐	☐	☐
67. Attending a sporting event with a friend is far more enjoyable than attending alone.	☐	☐	☐	☐	☐
68. It is good to see what sports reporters say about the team before deciding whether or not to buy a ticket.	☐	☐	☐	☐	☐
69. Professional sports provides an escape from my home and family pressures.	☐	☐	☐	☐	☐
70. Participation in organized sports is not one of the best ways for kids to spend their free time.	☐	☐	☐	☐	☐
71. Buying professional sport memorabilia is a waste of money.	☐	☐	☐	☐	☐
72. Buying tickets from scalpers is not worth the extra cost, even for excellent seats.	☐	☐	☐	☐	☐
73. Professional sporting events take too much time to watch.	☐	☐	☐	☐	☐
74. For recreation, time is a bigger problem than money.	☐	☐	☐	☐	☐
75. Our income is high enough to satisfy nearly all our desires for sporting event tickets.	☐	☐	☐	☐	☐
76. Belonging to professional sports fan clubs is a waste of time.	☐	☐	☐	☐	☐
77. Parents should always try to attend their children's sport contests.	☐	☐	☐	☐	☐
78. Taking children to professional hockey events is a great way to spend time with them.	☐	☐	☐	☐	☐
79. For children, the positive aspects of participating in sports far outweigh the negative ones.	☐	☐	☐	☐	☐
80. It is important to participate in regular physical activity with your child.	☐	☐	☐	☐	☐
81. Tax dollars should not be spent on building stadiums and arenas for professional sport franchises.	☐	☐	☐	☐	☐
82. Most professional athletes show a genuine caring for the city in which they play.	☐	☐	☐	☐	☐
83. The enthusiasm of the amateur athlete makes amateur sports more enjoyable to watch than professional sports.	☐	☐	☐	☐	☐

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	Completely Disagree	Somewhat Disagree	Neither Nor	Somewhat Agree	Completely Agree
	1	2	3	4	5
Example	☐	☐	☐	☑	☐
84. It would be difficult to live in a city that does not have one or more professional sports teams nearby	☐	☐	☐	☐	☐
85. Amateur sport athletes/teams deserve more funding.	☐	☐	☐	☐	☐
86. Professional athletes are only in it for the money	☐	☐	☐	☐	☐
87. Professional athletes tend to be whine and complain too much.	☐	☐	☐	☐	☐
88. When my home team wins, it really makes me feel good.	☐	☐	☐	☐	☐
89. Government should not assist financially troubled professional sports organizations.	☐	☐	☐	☐	☐
90. The success of a professional sports team brings pride to the city.	☐	☐	☐	☐	☐
91. Professional athletes make good role models.	☐	☐	☐	☐	☐
92. Government should offer tax incentives to keep a team in a city or to encourage another team to relocate there.	☐	☐	☐	☐	☐
93. Attending an amateur sporting event is not as exhilarating as attending a professional sporting event.	☐	☐	☐	☐	☐
94. Being able to cheer for my home professional sports franchise adds to my sense of community.	☐	☐	☐	☐	☐
95. Amateur sporting events are quite often far superior in entertainment value than their professional counterparts.	☐	☐	☐	☐	☐

Thank you very much.

Appendix B

Description of Terminal Nodes of the Final Tree Analysis in Study 1

There were 15 terminal nodes and 7 levels.

(a) Node 0 notified that the sample of 1,110 individuals in total and the average frequency of game attendance was 4.9 games.

(b) 8 terminal-nodes (node 5, 7, 9, 14, 15, 16, 20 & 21) exceeded the mean frequency of game attendance (5.0).

(c) Node 5 represented 65 individuals whose house hold incomes were less than C$ 60,000. Hockey related web-sites were their favourite sites. They have the frequency of game attendance of 7.6 games.

(d) Node 7 represented 51 individuals were internet users and their favourite websites were professional hockey related sites. They had middle to high household income ranged from C$ 60,000 to 99,999. The frequency of game attendance among these individuals was 9.0 games.

(e) Node 9 represented 70 individuals and they had the highest household income of greater than C$ 100,000. Individuals belonging to this node played baseball when they were young. Their frequencies of game attendance levels were the highest with 10.3 games.

(f) Node 11 represented 138 individuals belonging to low to middle house hold income groups. Their job specialties were in sale & services, applied science related, equipment operation related, recreation & sport related, or currently unemployed. Their game attendance frequencies were 4.3 games.

(g) Node 12 represented 126 individuals whose household income level was as same as people in node 11. Their job specialties were in management, social science related,

business & finance, unique processing, or health related. The frequencies of game attendance were 2.8 games.

(h) Node 14 contained 49 individuals with middle to high household income level ranged between C$ 60,000 and 99,999. They preferred being accompanied by their co-workers when they attended hockey games. The frequency of game attendance among these individuals was 7.8 games.

(i) Node 15 represented 51 individuals showing the highest household income (more than C$ 100,000. They played hockey when they were young. Their game attending frequency was 9.0.

(j) Node 16 represented people who had the highest house hold income with game frequencies of 5.4 games.

(k) Node 17 represented 100 individuals whose ethnic backgrounds were in Caucasians. Their household income ranged low to middle and their job specialties in primary industry, student, or retired. The average number of attending hockey games of this group was 2.3.

(l) Node 18 represented 44 individuals whose household income levels and job specialties were the same as individuals in node 17. The difference between node 17 and 18 was ethnicity. They were Asians, African Canadians, or Natives. The frequency of game attendance was 1.04.

(m) Node 20 represented 84 individuals with middle to high household income level ranged between C$ 60,000 and 99,999. They had been fans of the Vancouver Canucks for more than 15, and equal to or less than 28 years. The average frequency of game

attendance among these individuals was 5.3 games.

(n) Node 21 contained 40 individuals who had the greatest fan history, more than 28 years. They had middle to high household income level the same as individuals of node 20. The average frequency of game attendance was 8.1 games.

(o) Node 23 represented 70 individuals who had middle to high income level. They had been fans of Canucks for less than 16 years and they tended to accompanied with their spouse in hockey games. The frequencies of game attendance were 3.7.

(p) Node 24 represented 56 individuals whose household income ranged between C$ 60,000 and 99,999. Their fan history had been fans of Canucks for less than 16 years and believed that TV was the best medium to them for promoting hockey games.

Appendix C

Group Descriptive Statistics of Activity Pattern In Study 1

Group Predictors	Low # Group (n=386) 0 – 1		Middle # group (n=402) 2 – 4		High # group (n=322) > 4		Chi-square or F^a	p
	Mean		Mean		Mean			
Game attendance	0.87		2.7		12.8			
							Chi-square or F^a	p
Years of being a fan	11.2		14.2		16.8		F = 30.681	.001
	n	%	n	%	n	%		
Years of being a fan							71.384	.001
0 – 5	126	32.6	75	18.7	44	13.7		
6 – 10	99	25.6	106	26.4	55	17.1		
11 – 15	42	10.9	59	14.7	49	15.2		
16 – 20	46	11.9	71	17.7	76	23.6		
20 <	65	16.8	82	20.4	96	29.8		
Missing	8	2.1	9	2.2	2	0.6		
Season	10	2.6	13	3.2	90	28.9	156.730	.001
Half season	2	0.5	4	1.0	17	5.2	23.217	.001
11 pack	5	1.3	14	3.5	39	12.1	45.340	.001
15 pack	1	0.3	2	0.5	13	4.0	21.592	.001
22 pack	3	0.8	3	0.7	7	2.2	3.492	.139
Group	26	6.7	35	8.7	42	13.0	7.742	.021
Single	331	85.8	345	85.8	163	40.6	155.514	.001
Best medium								
T.V.	185	47.9	202	50.2	119	37.0	14.043	.001
Radio	80	20.7	91	22.6	78	24.2	1.250	.535
Newspaper	102	26.4	110	27.4	113	35.1	7.488	.024
Website	45	11.7	55	13.7	30	9.3	3.296	.192
Magazine	5	1.3	3	0.7	1	0.3	2.150	.314
Game colleague								
Alone	9	2.3	11	2.7	14	4.3	2.630	.268
Spouse	124	32.1	134	33.3	128	39.8	5.080	.079
Child	43	11.1	49	12.2	53	16.5	4.799	.091
Family	95	24.6	110	27.4	86	26.7	.828	.661
Relatives	17	4.4	22	5.5	21	6.5	1.545	.462
Co-worker	32	8.3	47	11.7	72	22.4	31.531	.000
Neighbour	5	1.3	5	1.2	7	2.2	1.245	.537
Friends	208	53.9	252	62.7	181	56.2	6.690	.035
Sport club							5.506	.064
Yes	138	35.8	161	40	143	44.4		
No	248	64.2	241	60	179	55.6		
Sport club								
Soccer	17	4.4	21	5.2	12	3.7	.946	.623
Hockey	26	6.7	51	12.7	65	20.2	28.476	.001
Golf	6	1.6	11	2.7	14	4.3	5.053	.080
Fitness	15	3.9	14	3.5	11	3.4	.138	.933
Hobby								
Golf	37	9.6	33	8.2	47	14.6	8.380	.016
Hockey	56	14.5	77	19.2	93	28.9	22.935	.001
Ski & Board	24	6.2	37	9.2	16	5.0	5.442	.066

							Chi-square or F^a	
Fitness	25	6.5	25	6.2	20	6.2	.029	.986
Art	17	4.4	18	4.5	19	5.9	1.054	.590
Amateur spots	24	6.2	31	7.7	26	8.1	1.055	.590
Reading	65	16.8	60	14.9	43	13.4	1.682	.431
Favourite activity								
Golf	53	13.7	59	14.7	66	20.5	6.834	.033
Baseball	41	10.6	42	10.4	34	10.6	.006	.997
Hockey	84	21.8	129	32.1	130	40.4	28.895	.001
Ski & Board	43	11.1	44	10.9	30	9.3	.728	.695
Basketball	42	10.9	35	8.7	27	8.4	1.614	.446
Soccer	53	13.7	61	15.2	40	12.4	1.143	.565
Volleyball	26	6.7	40	10.0	28	8.7	2.655	.265
Outing								
Movie	247	64.0	263	65.4	205	63.7	.288	.866
Football	71	18.4	73	18.2	56	17.4	.128	.938
Concert	97	25.1	100	24.9	109	33.9	8.975	.011
Amateur sports	39	10.1	31	7.7	27	8.4	1.484	.476
Dinner	31	8.0	42	10.4	35	10.9	1.980	.372
Drinking	22	5.7	25	6.2	25	7.8	1.308	.520
Favourite website								
Major media	40	10.4	55	13.7	21	6.5	9.799	.007
Sport media	19	4.9	35	8.7	34	10.6	8.165	.017
Computer related	97	25.1	101	25.1	80	24.8	.010	.995
Hockey related	27	7.0	47	11.7	78	24.2	46.229	.001
Play as a child								
Baseball	83	21.5	103	25.6	91	28.3	4.431	.109
Hockey	109	28.2	141	35.1	127	39.4	10.170	.006
Basketball	76	19.7	64	15.9	61	18.9	2.100	.350
Football	40	10.4	49	12.2	33	10.2	.927	.629
Soccer	128	33.2	132	32.8	105	32.6	.025	.988
Volleyball	37	9.6	34	8.5	31	9.6	.404	.817

Note. Chi-square or F^a : Reported test statistic is χ^2, unless otherwise noted. The complete descriptive statistics table for activity pattern is presented in Appendix C.

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Appendix D

Profiles of the Three Clusters on Sports Interests and Activities In Study 2

Cluster Variables	Cluster 1 (n = 291)		Cluster 2 (n = 233)		Cluster 3 (n = 161)		Chi-square or F^a	p
	Mean		Mean		Mean			
Game attendance	5.3		3.5		3.8		F = 5.04	.007
Years of being a fan	14.3		13.7		10.6		F = 8.25	.001
	n	%	n	%	n	%		
Years of being a fan							40.178	.000
0 – 5	48	16.5	59	25.3	49	30.4		
6 – 10	73	25.1	59	25.3	48	29.8		
11 – 15	53	18.2	25	10.7	21	13.0		
16 – 20	61	21.0	27	11.6	22	13.7		
20 <	55	18.9	60	25.8	18	11.2		
Missing	1	0.3	3	1.3	3	1.9		
Season	31	10.7	16	6.9	12	7.5	2.716	.257
Half season	5	1.7	4	1.7	2	1.2	.176	.916
11 pack	21	7.2	14	6.0	7	4.3	1.491	.474
15 pack	2	0.7	3	1.3	4	2.5	2.584	.275
22 pack	2	0.7	3	1.3	1	0.6	.694	.707
Group	24	8.2	20	8.6	22	13.7	3.942	.139
Single	221	75.9	176	75.5	128	79.5	.974	.614
Ticket Purchaser								
I do	162	55.7	110	47.2	85	52.8	3.750	.153
Spouse	23	7.9	14	6.0	7	4.3	2.282	.320
Friend	31	10.7	34	14.6	30	18.6	5.681	.058
Family	53	18.2	32	13.7	20	12.4	3.370	.185
Company	23	7.9	39	16.7	12	7.5	12.931	.002
Best medium								
T.V.	141	48.5	110	47.2	77	47.8	.080	.961
Radio	51	17.5	54	23.2	30	18.6	2.764	.251
Newspaper	102	35.1	61	26.2	45	28.0	5.396	.067
Website	35	12.0	32	13.7	18	11.2	.639	.727
Magazine	4	1.4	0	0.00	3	1.9	3.890	.143
Others	17	5.8	13	5.6	7	4.3	.475	.789
Game colleague								
Alone	11	3.8	9	3.9	6	3.7	.005	.997
Spouse	88	30.2	80	34.3	38	23.6	5.222	.073
Child	31	10.7	35	15.0	10	6.2	7.592	.022
Family	101	34.7	53	22.7	39	24.2	10.772	.005
Relatives	18	6.2	11	4.7	8	5.0	.620	.733
Co-worker	28	9.6	33	14.2	20	12.4	2.631	.268
Neighbour	5	1.7	4	1.7	1	0.6	1.029	.598
Friends	189	64.9	129	55.4	106	65.8	6.425	.040
Others	11	3.8	16	6.9	5	3.1	3.928	.140
Member of sport club							28.988	.000
Yes	153	52.6	94	40.3	43	26.7		
No	138	47.4	139	59.7	118	73.3		
Sportclub (which one?)								
Soccer	16	5.5	14	6.0	3	1.9	4.079	.130
Hockey	49	16.8	29	12.4	13	8.1	7.126	.028

Golf	8	2.7	6	2.6	4	2.5	.032	.984
Fitness	12	4.1	9	3.9	5	3.1	.299	.861
Hobby								
Golf	24	8.2	26	11.2	13	8.1	1.631	.442
Hockey	72	24.7	24	10.3	28	17.4	18.275	.000
Ski & Board	25	8.6	18	7.7	11	6.8	.454	.797
Fitness	28	9.6	15	6.4	6	3.7	5.696	.058
Art	7	2.4	13	5.6	5	3.1	3.884	.143
Amateur spots	34	11.7	14	6.0	14	8.7	5.095	.078
Reading	39	13.4	39	16.7	22	13.7	1.302	.521
Favourite activity								
Golf	44	15.1	32	13.7	23	14.3	.206	.092
Baseball	34	11.7	27	11.6	9	5.6	4.917	.086
Hockey	101	34.7	63	27.0	42	26.1	5.209	.074
Ski & Board	35	12.0	26	11.2	27	16.8	2.981	.225
Basketball	30	10.3	15	6.4	24	14.9	7.570	.023
Soccer	48	16.5	34	14.6	21	13.0	1.021	.600
Volleyball	27	9.3	13	5.6	13	8.1	2.514	.285
Outing								
Movie	194	66.7	135	57.9	104	64.6	4.411	.110
Football	45	15.5	36	15.5	36	22.4	4.143	.126
Concert	84	28.9	61	26.2	38	23.6	1.518	.468
Amateur sports	31	10.7	22	9.4	14	8.7	.496	.780
Dinner	33	11.3	23	9.9	10	6.2	3.154	.207
Drinking	23	7.9	17	7.3	7	4.3	2.155	.340
Use of internet							9.436	.009
Yes	204	70.1	134	57.5	110	68.3		
No	87	29.9	99	42.5	51	31.7		
Favourite website								
Major media	23	7.9	20	8.6	22	13.7	4.342	.114
Sport media	33	11.3	10	4.3	13	8.1	8.566	.014
Computer related	88	30.2	54	23.2	37	23.0	4.427	.109
Hockey related	55	18.9	18	7.7	17	10.6	15.386	.000
Play as a child								
Baseball	72	24.7	65	27.9	28	17.4	5.865	.053
Hockey	112	38.5	66	28.3	50	31.1	6.488	.039
Basketball	52	17.9	40	17.2	33	20.5	.756	.685
Football	37	12.7	23	9.9	12	7.5	3.204	.201
Soccer	100	34.4	65	27.9	64	39.8	6.210	.045
Volleyball	30	10.3	17	7.3	11	6.8	2.242	.326

Note. Chi-square or F^a : Reported test statistic is χ^2, unless otherwise noted. The complete table for the three clusters on sports interests and activities is presented in Appendix D.