

THE EFFECTS OF  
COHESION AND PSYCHOLOGICAL CLIMATE  
ON MALE ICE HOCKEY PLAYERS'  
PERCEIVED EFFORT AND  
INTENTION TO RETURN

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## ABSTRACT

The purpose of this study was to examine the relationship between two group-based perceptions (i.e., cohesion and psychological climate) and two forms of individual adherence behavior (i.e., intention to return and perceived effort). More specifically, the objectives of this thesis were (a) to examine the relationship between perceptions of cohesion and psychological climate and the adherence measurement of intention to return and (b) to examine the relationship between perceptions of cohesion and psychological climate and the adherence measurement of perceived effort.

Male ice hockey players ( $n = 194$ ) were administered the Group Environment Questionnaire to assess cohesion, a modified version of the Psychological Climate Questionnaire to assess psychological climate, a modified version of the Perceived Effort Questionnaire to assess effort and an Intention to Return Questionnaire during the last two weeks of the ice hockey season. Results from a series of multiple regression analyses revealed that selected perceptions of both cohesion and psychological climate predicted perceived effort. Specifically, it was found that the cohesion subscale Group Integration-Task successfully predicted individual perceived effort,  $F(4, 188) = 9.44$ ,  $p < .001$  (accounting for 17% of the total variance), with those ice hockey players reporting a greater attraction to the group's task also being the ones who reported the greatest individual effort. In terms of psychological climate, the subscale of role clarity predicted perceived effort,  $F(4, 187) = 10.66$ ,  $p < .001$  (accounting for 19% of the total variance) with male ice hockey players reporting greater perceptions of role clarity also being the ones indicating greater perceptions of individual effort. Similar to the results for the adherence measurement of perceived effort, both perceptions of cohesion and

psychological climate predicted intention to return. The cohesion subscale of Individual Attractions to Group-Social,  $F(4, 144) = 6.48, p < .001$ , significantly predicted intention to return for another season accounting for 15% of the total variance. Specifically, those ice hockey players reporting a greater attraction to the group socially were the ones indicating a greater intention to return to participate the following season. In terms of psychological climate, the subscales of role clarity and self-expression predicted intention to return,  $F(4, 143) = 6.26, p < .001$ , accounting for 15% of the total variance. This indicates that male ice hockey players reporting greater perceptions of role clarity and self-expression also were the ones who indicated a greater intention to return to participate the following season. As a secondary objective, the relative contributions of cohesion and psychological climate to adherence behavior also were examined. The results indicated that both perceptions of cohesion (i.e., Group Integration-Task) and psychological climate (i.e., role clarity) added unique variance to perceived effort. Similarly, both perceptions of cohesion (i.e., Individual Attractions to Group-Social) and psychological climate (i.e., role clarity) added unique variance to intention to return. These results suggest that both perceptions of cohesion and psychological climate are salient in examining adherence behavior. Practical implications and future directions also are discussed.

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## **Chapter 1**

### **1.1 Introduction**

Adherence to sport has been a topic of interest to coaches, administrators and researchers for many years, and with good reason. The benefits that accrue to participants in sport have been well documented in the literature. For instance, there is evidence that athletes are often healthier psychologically than non-athletes. Specifically, it has been found that athletes tend to have higher levels of self-esteem than non-athletes (Purdon, 1978). Further, it has been documented that children in sport tend to have fewer behavioral problems as adults. That is, they tend to be more sociable, cooperative and confident when they get older (Mehrabian & Bekken, 1986). Sport also involves exercise, which is becoming increasingly recognized as a very important health behavior. The research literature is replete with examples indicating that regular exercise has positive effects on both physical and mental health (McAuley, 1994). In terms of physiological well-being, for example, regular exercise has been found to lower the risk of coronary heart disease (Powell, Thompson, Caspersen, & Kendrick, 1987) and appears to be protective against early mortality (Blair, Kohl, Paffenbarger, & Clarke, 1989). From the perspective of psychological well-being, being physically active has been found to be associated with reduced tension (Balog, 1983), anxiety (Brown, 1990) and depression (Sime & Sanstead, 1987).

For reasons such as these, the examination of factors that address the adherence issue in sport settings has become exceedingly important. Adherence has been

investigated in a number of ways over the years. The most common method of assessing adherence has been to examine some form of membership termination. For the most part, the focus has been on membership factors that reflect the immediate situation such as assessment of withdrawal from the current team (Carron, Widmeyer & Brawley, 1988; Robinson & Carron, 1982). While this is important, the issue of future participation in sport is equally important, but has received much less attention.

There are two important reasons for examining future participation as an adherence measure. First, as has been elucidated elsewhere (Spink, 1995), there may be important distinctions between immediate versus delayed exit possibilities from a sport team. For example, athletes who are not happy with their current team may complete that season with the team because of a desire to avoid the social stigma of quitting during the season (i.e., the low regard for quitters in sport) or for pragmatic reasons such as an unwillingness to forgo a financial commitment made to play with the team for the season. However, after the season is complete, they may see not returning to the team as a more socially acceptable form of withdrawal behavior. Second, to accrue the positive physical and mental health benefits noted previously requires that an individual exercise on a regular basis over an extended period of time (Dishman, 1988). For these reasons, the examination of future participation as a form of adherence behavior appears warranted. In the present study, intention to return to the team for the following season will be used as a measure of future participation. Intention to return to a sport team for the following season has been investigated recently (Spink, 1995, 1998) as a form of future adherence behavior in a sport setting using a different sample (i.e., female athletes).

While membership withdrawal is one obvious form of adherence, there are other more subtle forms that also are important. It has been argued elsewhere that individual adherence also can be manifested in behaviors such as apathy and reduced work output (Porter & Steers, 1973; Steers & Rhodes, 1978). This might be particularly germane in a sport setting wherein quitting during a season often has a social stigma attached to it, but reducing effort or work output may serve as a more socially acceptable form of withdrawal behavior. As such, player perceived effort was included as a second measure of adherence in the present study.

In examining adherence behavior in the sport setting, one approach is to adopt the classic Lewinian formulation of  $B = f(P, E)$ , where adherence behavior (B) is a function of the person (P) and the environment (E) (Lewin, 1935). If the Lewinian formula is applied to past adherence research in sport, it is evident that while P, the person dimension, was examined extensively in the early research (cf. Carron, 1984), the current emphasis is being placed upon situations (i.e., the environmental factor E) as the salient factor predicting adherence behavior (Spink, 1995, 1998).

The current study will continue that trend by examining the athlete's environment as a determinant of individual adherence behavior. While there are a number of characteristics present in the athlete's environment that may influence adherence, this study will focus on two situational factors – perceived cohesion and psychological climate. The rationale and underlying conceptual underpinnings for these two situational factors will be presented next in the review of literature. Initially, the theoretical framework of cohesion will be outlined. This will be followed by sections discussing the relationships between cohesion and intention to return, and cohesion and

perceived effort. The theoretical framework of psychological climate will then be outlined. This will be followed by sections discussing the relationships between psychological climate and intention to return, and psychological climate and perceived effort.

## **1.2 Review of Literature**

### **1.2.1 Cohesion**

Group cohesion is a situational factor that has received attention throughout the years in various domains such as social, organizational, counseling, military and educational psychology as well as in sport psychology (Carron & Hausenblas, 1998). In terms of an intuitive definition, cohesion is often seen as the glue that holds a group together. While this intuitive definition would receive tacit approval from most individuals, an accepted scientific definition has been more difficult to find. In fact, in a review spanning 50 years of empirical work on cohesion, Mudrack (1989) concluded that cohesion was difficult to define precisely or consistently. While there were a number of reasons for this difficulty, two of the more salient included the recognition that cohesion was a complex, multidimensional concept and the fact that there was no theoretical or conceptual model in place to help define or operationalize cohesion. In the last decade, movement has been made on both these fronts to the point where cohesion in the sport setting is now defined and measured in a more precise and consistent manner.

In terms of the first reason cited above, the evolution from viewing cohesion as a unidimensional to a complex, multidimensional concept has been extremely

important. In the early years, cohesion was viewed as being a unidimensional concept that could be assessed using singular measurement. Although the type of measurement changed over the years (i.e., from interpersonal attraction (Lenk, 1969) to attraction to the group (Klein & Christiansen, 1969) to commitment to the group (Gruber & Gray, 1982)), the measurement still reflected the fact that cohesion was seen to be unidimensional. However, in more recent times the call has been made both inside (Carron, Widmeyer & Brawley, 1985) and outside (Zaccaro, 1991) the sport setting to consider cohesion as a multidimensional construct.

Although the call to view cohesion as a multidimensional construct is a recent suggestion, there are numerous isolated examples in earlier research where cohesion could be construed as multidimensional in nature. For instance, in one of the earliest definitions of cohesion as the total field of forces that act on members to remain in a group, Festinger, Schacter, and Back (1950) proposed that there were two general types of forces that attract individuals to a group. The first force was the attractiveness of the group representing the social and affiliative aspects of the group. The second force was called means control and it represented the task and productive aspects of the group. Similar distinctions have been noted by other researchers (Hagstrom & Selvin, 1965; Mikalachki, 1969; Peterson & Martens, 1972). While the terminology differs from one researcher to another, it is generally conceded that one of the dimensions outlined above reflects social cohesion while the other reflects task cohesion. More specifically, social cohesion is seen to reflect the degree to which members of a group like each other and enjoy each other's company. Task cohesion, on the other hand, reflects the degree to which members of the group work together to achieve a specific goal.

Over the years, another distinction has emerged with regard to cohesion – the difference between the individual and the group. This distinction is captured by Cattell (1948) who described a group as existing at different levels. Two of these levels included a focus on individual group member's motives, attributes and so on (population level) and the second on a focus on the group as a whole (syntality level). This distinction between the individual and group also was captured in some other early cohesion research (Evans & Jarvis, 1980; Van Bergen & Koekebakker, 1959).

With the distinctions between task and social cohesion, and between the individual as well as the group, Carron and his colleagues (1985) developed a conceptual model of group cohesion drawing on these distinctions (see Figure 1). As can be seen in Figure 1, cohesion is portrayed as a multidimensional construct focusing on the distinction between the individual and group. Within this distinction, they also have differentiated between the task and social dimensions within a group. The individual and group are represented by the dimensions Individual Attractions to the Group (ATG) and Group Integration (GI), respectively. Individual Attractions to the Group is the individual focus and refers to perceptions of what personally attracts a team member to the group and the quality of interaction among group members. Group Integration represents the group focus and refers to the individual members' perceptions of how the group functions as a total unit.

Drawing on past research, Carron and his colleagues (1985) also proposed that task (subgoals) and social aspects (group relationships) emerge from each of the two dimensions of cohesion outlined above, Individual Attractions to the Group (ATG) and Group Integration (GI). Task cohesion is reflected in the degree to which team

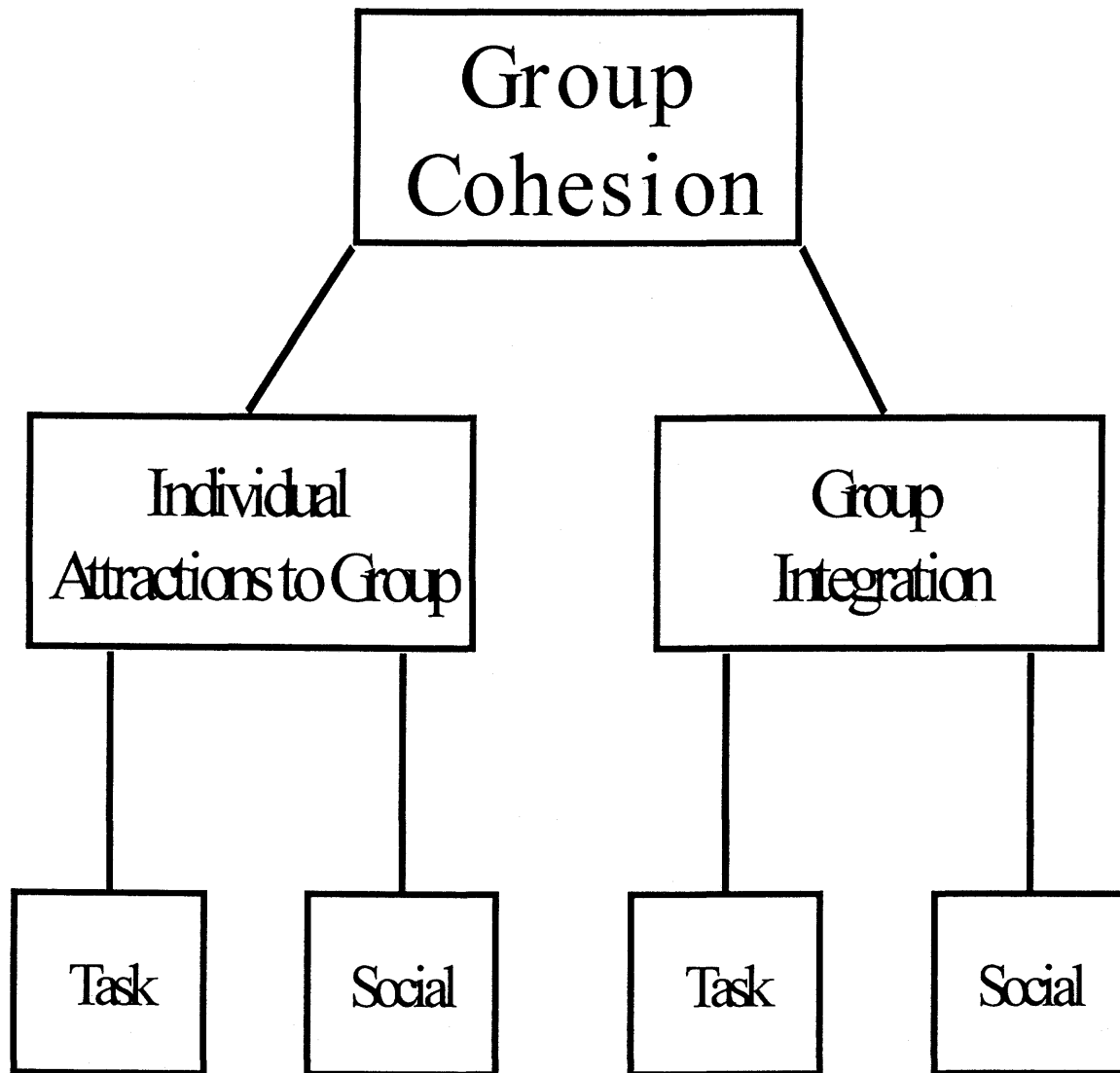


Figure 1: The Conceptual Model of the Group Environment Questionnaire  
(Carron, Widmeyer & Brawley, 1985)



members work together to achieve group goals and objectives, whereas social cohesion is reflected in the degree to which team members share feelings of togetherness, friendship, closeness and affiliation within the group. Based on these important distinctions between the individual and group focus, as well as the task versus social distinction, Carron and his colleagues (1985) identified four dimensions of cohesion. These included Individual Attractions to the Group -Task (ATG-T), Individual Attractions to the Group-Social (ATG-S), Group Integration -Task (GI-T), and Group Integration- Social (GI-S).

According to these researchers, these four dimensions act together to create an integrated perception of cohesion. It is also thought that these four dimensions account for most of the reasons for cohesion in sport groups (Brawley, 1994). It also is recognized that the relative contribution of each dimension to cohesion varies over time (e.g., ATG-Task may predict early in team development whereas GI-Task may predict better in later team development) (Brawley, 1994).

In addition to the model, these researchers also formulated an appropriate constitutive definition of cohesion, which was used in the current study, as “a dynamic process which is reflected in the tendency for a group to stick together and remain united in the pursuit of its instrumental objectives and/or for the satisfaction of member affective needs” (Carron, Brawley & Widmeyer, 1998, p. 213). While this definition was developed for a sport setting, it is worth noting that it has the general acceptance of researchers in the group dynamics area (Cota, Evans, Dion, Kilik, & Longman, 1995; Mudrack, 1989).

### 1.2.2 Cohesion and Intention to Return

Although cohesion is often linked with performance in sport (Widmeyer, 1994) as well as other settings (Mullen & Cooper, 1994), it also has been associated with other factors that are critical to the existence of a team, such as adherence (Carron et al., 1988). Given the definition of cohesion as “the tendency for a group to stick together...” (Carron et al., 1998), it may not be surprising that group cohesion has been associated with individual adherence. Further, the suggestion by Baumeister and Leary (1995) that the “need to belong” is an innate feature of human nature adds credence to the group cohesion-adherence link.

Research has tended to support this speculation. For example, Robinson and Carron (1982) examined the perception of team cohesiveness of players who remained with a team versus those who left the team. They found that specific cohesion factors differentiated between the dropouts and the adherers, with the dropouts reporting a very minimal sense of belonging to the team, which they perceived to be very cohesive. Using another measure of adherence, attendance, Carron and his colleagues (1988) examined the level of cohesion between good and poor adherers participating on summer recreational sport teams. Similar to the previous study, those who exhibited poorer attendance also reported significantly lower levels of perceived team cohesion.

More recently, these results have been extended to a measure of future participation-intention to return to the team. For example, Spink (1995) examined whether perceptions of group cohesion could predict intentions to return for the following season in groups of recreational and elite level female ringette players. For both levels, it was found that the players’ perceptions of social cohesion were positively

related to intention to return the following season. The recreational athletes intending to return showed higher levels of the Individual Attractions to the Group-Social factor of cohesion than those not likely to return. Elite level athletes intending to return scored higher on the Individual Attractions to the Group-Social and Group Integration-Social factors of cohesion than those not likely to return. In another sport study with female ringette players examining intention to participate in the future, Spink (1998) found a similar relationship in that higher social cohesion predicted these female players' intention to return for another season.

In both of these studies (Spink, 1995, 1998), it is worth noting that female athletes were used. Given the fact that it has been suggested elsewhere that factors affecting adherence may differ by gender (Duda & Tappe, 1989), the extension of these results to male team athletes appears warranted. Therefore, one of the objectives of the current study was to examine the relationship between the perception of cohesion and the intention to return to a sport team for another season for male ice hockey players.

### 1.2.3 Cohesion and Perceived Effort

As suggested previously, adherence behavior can take many forms. While withdrawal behavior in the form of measures such as attendance (Carron et al., 1988), dropping out (Robinson & Carron, 1982) and intention to return (Spink, 1995, 1998) has received most of the research attention, there are other measures of adherence that are worth investigating. For instance, it has been suggested that individual adherence can manifest itself in apathy and reduced work output, a form of effort (Porter & Steers, 1973; Steers & Rhodes, 1978).

While the relationship between perceptions of team cohesion and adherence measurements such as effort are limited, one sport study has been done, which examined the relationship between group cohesion and reduced work output (effort) in a variety of sport teams (Prapavessis and Carron, 1997). It was hypothesized in that study that if cohesion influences adherence behavior (Carron et al., 1988), and work output is a measure of short-term adherence, then members of more cohesive groups would put forth greater effort during practice than members who perceived their team to be less cohesive. Prapavessis and Carron (1997) reported that work output (measured as a percentage of Max VO<sub>2</sub>) was greater for participants who held higher perceptions of task cohesiveness of the team. In effect, those athletes who perceived their team to be more task cohesive were more likely to work hard (i.e., exert effort) during a practice than those perceiving less task cohesion on their teams.

In the Prapavessis and Carron (1997) study, work output (effort) was assessed once during practice using a specific fieldwork-task protocol. The protocol was presented ostensibly to the participants as a test to assess individual fitness levels. As this was a singular test, one wonders whether a similar relationship would exist if effort was assessed over a longer period of time. Also, as this was a rather indirect measure of effort (i.e., as it relates to the competitive situation), one wonders whether a similar relationship would hold under assessments of effort that are more directly related to the competitive situation itself. This formed another objective of the current study – to examine the relationship between perceptions of task cohesion and perceived effort over the course of a season of games and practices.

#### 1.2.4 Psychological Climate

As mentioned previously, the second situational factor to be investigated in this study vis-à-vis adherence was psychological climate. Psychological climate refers to how group environments are perceived and interpreted by their members (Jones & James, 1979). The most accepted formal definition of psychological climate appears to be, “the individual’s cognitive representations of relatively proximal situational conditions, expressed in terms that reflect psychological meaningful interpretations of the situation” (James, Hater, Gent, & Bruni, 1978, p. 786). While the concept of psychological climate is new to the sport setting, it has been examined in the work setting for a number of years. In fact, psychological climate was developed primarily to examine the individual’s perceptions of the work environment (James & Jones, 1976), but as noted by James and Sells (1981) the implications drawn from the concept are extended easily to other settings (e.g., sport).

There is a twofold importance for an extension of the examination of the psychological climate construct to the sport setting. First, it has been established that perceptions of the group environment often influence individual behavior in the sport setting (Carron & Hausenblas, 1998). Therefore, psychological climate could potentially provide a means of examining important individual-group relationships. Second, positive outcomes that have been associated with psychological climate such as greater job involvement and commitment of time and energy in the work of an organization (Brown & Leigh, 1996) have parallel outcomes that are valued in the sport setting.

Two points about the formal definition outlined previously are worth noting at this time. First, psychological climate is viewed as an individual versus an organizational attribute. That is, it is concerned with perceptions that are meaningful to the individual rather than in terms of concrete organizational features (e.g., group size) (James et al., 1978). In other words, psychological climate assumes that it is the individual's perceptions and valuations of the environment rather than the environment itself that will impact upon the individual's behavior (James & Jones, 1974).

Second, psychological climate is viewed as multidimensional. While there is general consensus that psychological climate includes multiple dimensions, there is less certainty as to which are the most important dimensions (James & James, 1989; James, James, & Ashe, 1990; Kahn, 1990). In the present study, the six dimensions identified by Brown and Leigh (1996) were used to operationalize psychological climate. The rationale for selecting Brown and Leigh's (1996) dimensions was predicated upon the fact that their dimensions were based on the earlier theoretical work of Kahn (1990). Kahn's (1990) work was based on identifying dimensions that influenced individuals' tendencies to engage themselves personally or disengage themselves personally from their work. As a parallel might be drawn between engagement/disengagement and adherence behavior as assessed in this study (i.e., both involve forms of withdrawal), Kahn's (1990) model and Brown and Leigh's (1996) dimensions were deemed appropriate to capture psychological climate.

As noted, Brown and Leigh (1996) identified six dimensions of psychological climate (i.e., the extent to which leadership is supportive, role clarity, freedom of self-expression, the individual's contribution toward organizational goals, adequacy of

recognition received from the organization, and job challenge). The basic model is presented in Figure 2. The first dimension of psychological climate is support and refers to whether the leader expects highly organized and disciplined behavior or permits flexibility with respect to how tasks are accomplished. Kahn (1990) reported that a supportive management which produced an atmosphere based on freedom of choice and sense of security enhanced motivation and involvement. The second dimension of psychological climate identified by Brown and Leigh (1996) is role clarity. Clarity of an individual's role in the organization with clear expectations and consistent predictable task norms create a psychologically safe environment and increases involvement (Kahn, 1990). The third dimension of psychological climate involves self-expression. The freedom to express one's self allows individuals to introduce their personalities, creativity, feelings and self-concepts into their roles on the team (Brown & Leigh, 1996). People are more involved in their roles when they feel safe in expressing themselves (Kahn, 1990). The next dimension of psychological climate is the perception that one's contribution to a task is meaningful. This positive perception of contribution can enhance the individual's involvement and identification with his/her role on the team (Kahn, 1990). The fifth dimension of psychological climate is recognition. Individuals who feel that their contributions are properly recognized will come to identify with their role and be more involved (Kahn, 1990). The last dimension of psychological climate is challenge. A challenging task influences individuals to invest more physical, cognitive and emotional energy in the task and will likely result in a greater perceived meaningfulness of the experience (Brown & Leigh, 1996).

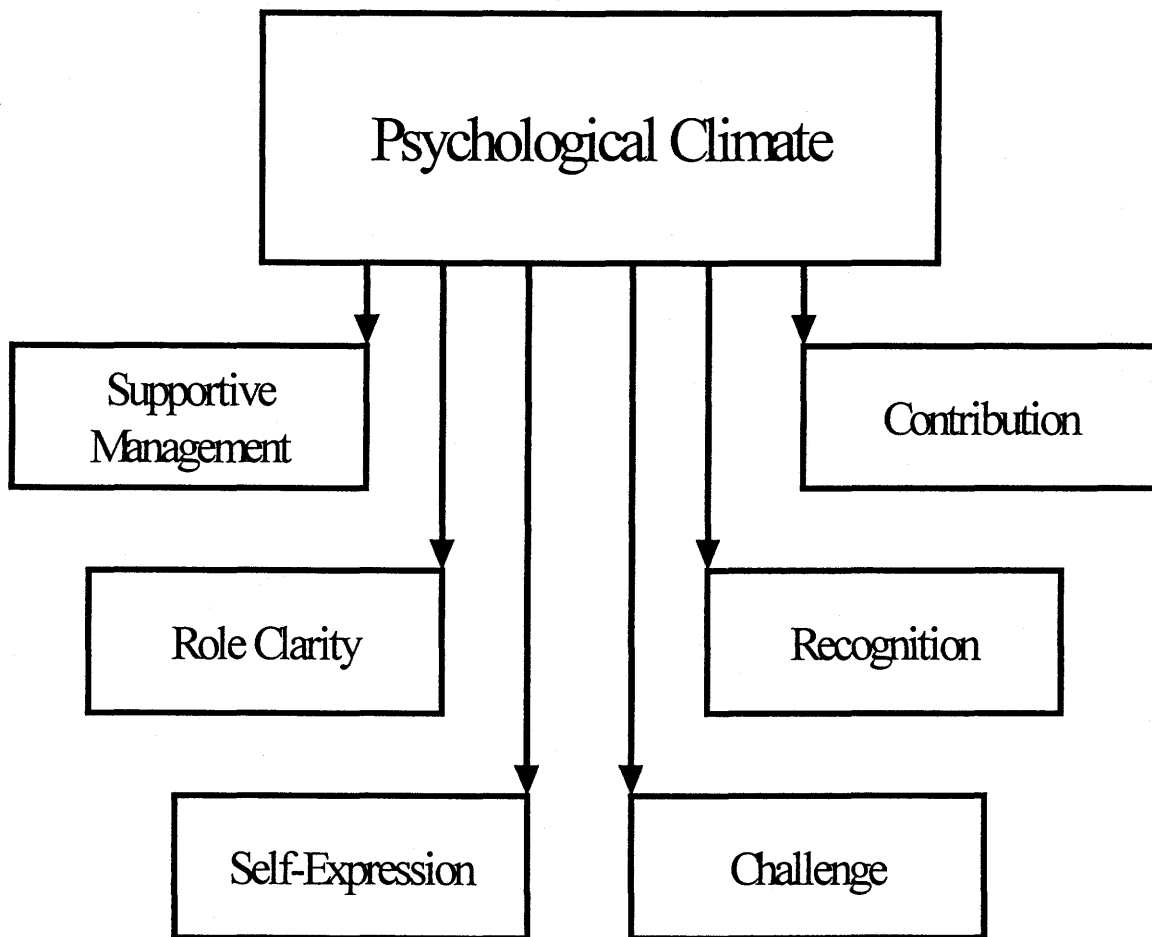


Figure 2: Psychological Climate Model  
(Brown & Leigh, 1996)



### 1.2.5 Psychological Climate and Intention to Return

Although psychological climate has never been linked directly to adherence in either a sport or non-sport setting, there is reason to believe that such a relationship exists. The rationale is based on the following reasoning. It has been suggested that when individuals perceive the psychological climate as positive (i.e., as consistent with their own values and self-interests), they are likely to identify their personal goals with those of the organization, and as such, invest greater effort pursuing them (Kahn, 1990). Conversely, Kahn (1990) also found that individuals tend to disengage from situations characterized by a less positive psychological climate. To summarize, a positive psychological climate has been associated with individuals who invest greater time and effort in the pursuit of the organization's goals (and tend to disengage when psychological climate is less positive). When this is coupled with the suggestion that work output (i.e., effort) may be considered another form of adherence (Porter & Steers, 1973; Steers & Rhodes, 1978), it might be surmised that a positive psychological climate may be linked to individual adherence behavior. Thus, another objective of the current study was to examine the relationship between perceptions of psychological climate and intention to return for another season.

### 1.2.6 Psychological Climate and Perceived Effort

Given that this is the first use of the psychological climate concept in the sport setting, there is no empirical evidence linking psychological climate to the amount of effort expended by athletes. However, there is an underlying assumption that when individuals perceive that their organization satisfies their psychological needs (i.e., a

positive psychological climate) they are likely to respond by investing time and effort in attaining the organization's goals. This suggests that a positive psychological climate may be associated with increased individual effort (Kahn, 1990). Research in a non-sport setting has supported this speculation (Brown & Leigh, 1996). In that study, it was found that a positive psychological climate was associated with greater job involvement and commitment of time and effort in the work of the organization (Brown & Leigh, 1996). Given that this relationship has not been examined in the sport setting, another purpose of the current study was to examine the relationship between psychological climate and an individual's level of perceived effort over the course of the season.

#### 1.2.7 Summary

The general purpose of this study is to examine the independent effects of two situational variables on two forms of adherence behavior in male ice hockey players. Specifically, the effects of both perceptions of cohesion and psychological climate will be used to independently predict two forms of adherence – intention to return to playing for another season and perceived effort. A secondary purpose involves examining the joint effect of perceptions of cohesion and psychological climate on both intention to return to playing the next season and perceived effort. The intention here is to be able to examine the relative contribution of cohesion and psychological climate perceptions to both intention to return for another season and perceived effort. Considering the importance of understanding the differential antecedents of various forms of adherence (Fraser & Spink, 1999), it may be important to understand which situational factors are

more salient to each form of adherence. For example, if group cohesion factors are more relevant than psychological climate factors, then team-building interventions to enhance cohesion could be used to improve adherence (cf. Carron & Spink, 1993; Spink & Carron, 1993). However, if the opposite is true, psychological climate factors could be maximized in any intervention designed to improve adherence. Of course, if both are important, then perhaps two types of interventions will be needed.

#### 1.2.8 Hypotheses

Based on the preceding review of literature, the following hypotheses will be examined in the present study:

1. Perceptions of task cohesion will be positively related to levels of perceived effort.

The support for this hypothesis emanates from the study by Prapavessis and Carron (1997) examining the relationship between group cohesion and individual work output (effort) in sport teams. In that study, using athletes from a variety of sports, it was found that perceptions of task cohesion were positively associated with individual work output.

2. Perceptions of psychological climate will be positively associated with levels of perceived effort.

Support for this hypothesis comes from the study by Brown and Leigh (1996) who examined the link between psychological climate and perceived effort in a work environment. They found that perceived psychological climate in a work environment was related to job involvement, which in turn, was related to perceived effort.

3. Perceptions of task cohesion and psychological climate will be positively associated with levels of perceived effort.

As these two constructs have not been examined concurrently before, the relative contribution of each to perceived effort has not been examined. Therefore, this hypothesis is exploratory. As such, there is no specific hypothesis pertaining to the relative contribution of each to perceived effort.

4. Perceptions of social cohesion will be positively associated with an athlete's intention to return to play for another season.

Although there is no empirical evidence linking cohesion to intention to return for male athletes, evidence exists for female athletes. Spink (1995, 1998) found that perceptions of social cohesion were associated positively with the intention of female team athletes to return to play for another season.

5. Perceptions of psychological climate will be positively associated with an athlete's intention to return to play for another season.

The basis for the hypothesis was conceptual in nature in that if psychological climate influences a greater investment of time and effort into attaining organizational goals (Kahn, 1990), and if investment of time is viewed as a form of adherence, then it would follow that individuals perceiving a more positive psychological climate would be more likely to want to return to play for another season.

6. Perceptions of social cohesion and psychological climate will be positively related to an athlete's intention to return to play for another season.

The intention of this hypothesis is to examine the relative contribution of each situational factor to intention to return. As perceptions of cohesion and psychological

climate have not been examined together before, no specific hypothesis for the relative contribution of each to intention to return was formulated.

## **Chapter 2**

### **Methods**

#### **2.1 Participants**

The participants were 194 male ice hockey players, participating on 10 teams in major junior hockey in western Canada, who volunteered to participate in this study (mean age 18.67 years, SD +/- 1.07). This is a very competitive level of hockey, and as such, a large time commitment is expected of all players including approximately three games and three practices per week. The hockey season runs for approximately eight months consisting of approximately 75 games, including playoffs. As the observation of natural groups was a purpose of this field study, random assignment of individuals to groups was not possible.

#### **2.2 Measures**

##### **2.2.1 Cohesion**

Perceptions of team cohesion were assessed using the Group Environment Questionnaire (GEQ), which was developed by Carron et al. (1985). It is an 18-item questionnaire, with responses made on a 9-point Likert-type scale ranging from (1) “strongly disagree” to (9) “strongly agree”. The GEQ is based on the conceptual model of cohesion developed by Carron and his colleagues (1985), which was outlined previously (see Figure 1). The model presents cohesion as a multidimensional construct focusing on individual and group aspects, each of which contain social and task aspects.

Based on these distinctions, the GEQ is separated into four subscales: Individual Attractions to the Group-Social (ATG-Social – 5 items), Individual Attractions to the Group-Task (ATG-Task – 4 items), Group Integration-Social (GI-Social – 4 items), and Group Integration-Task (GI-Task – 5 items). ATG-Social measures those feelings of personal involvement regarding individual acceptance within the group and social interactions arising from being a group member (e.g., “Some of my best friends are on this team”). ATG-Task, on the other hand, taps into how individual members feel about their personal involvement regarding the group task, group productivity and group goals and objectives (e.g., “I’m unhappy with my team’s level of desire to win”-reverse scored). GI-Social measures how a member feels about team closeness and bonding, focusing on the group as a whole unit (e.g., “Our team would like to spend time together in the off season”). Finally, GI-Task is a measure of individual feelings about the task oriented similarity, closeness, and bonding with the team as a whole unit (e.g., “Our team is united in trying to reach its goals for performance”). In summary, the two Individual Attractions to the Group subscales (i.e., ATG subscales) focus the athlete on **his/her** attractions to both the team’s task and social aspects. On the other hand, the two Group Integration subscales (i.e., GI subscales) focus the athlete on the **team’s** coherence around its task and social aspects.

Numerous studies have demonstrated that the GEQ possesses adequate factor validity and reliability as a measure of team cohesion for age samples similar to the one used in the present study (Brawley, Carron, & Widmeyer, 1987; Carron et al., 1985; Li & Harmer, 1996). A copy of the GEQ appears in Appendix A.

### 2.2.2 Psychological Climate

Perception of psychological climate was assessed using a modified version of the Psychological Climate Questionnaire (PCQ) developed by Brown and Leigh (1996). The PCQ is a 21-item measure, which assesses six dimensions of psychological climate including supportive management (5 items), contribution (4 items), role clarity (3 items), recognition (3 items), self-expression (4 items) and challenge (2 items) (see Figure 2). Responses to the items are made on a 7-point Likert-type scale anchored by (1) “Strongly disagree” and (7) “Strongly agree”. Using a confirmatory factor analysis, Brown and Leigh (1996) found that the six dimensions noted above captured the psychological climate construct accurately and parsimoniously.

The PCQ was originally written for the work environment. For the purposes of this study, the individual items were modified slightly to reflect the sport environment. The decision to modify the original PCQ was based on two factors. First, no other instrument exists at the present time to assess psychological climate in the sport setting. Second, it has been suggested that minor changes to items to reflect things such as the situational frame of reference are acceptable and have little effect on the internal consistency or validity of an instrument (cf. Schutz, 1966). Examples reflecting the changes made to specific items in the PCQ follow. In the supportive management dimension, for example, an item that stated, “My boss is flexible about how I accomplish my job objectives” was changed to read, “My coach is flexible about how I play my position”. An example item from the contribution dimension that originally stated, “I feel very useful in my job” was changed to read, “I feel very useful in my role on the team”. From the role clarity dimension, the item stating, “Management makes it



perfectly clear how my job is to be done” was changed to, “The coach makes it perfectly clear how my job is to be done”. From the self-expression dimension, an item originally stating, “The feelings I express at work are my true feelings” was changed to read, “The feelings I express around the team are my true feelings”. In the recognition dimension the item stating, “I rarely feel my work is taken for granted” was changed to “I rarely feel that my skill is taken for granted”. Finally, from the challenge dimension, an item stating “My job is very challenging” was changed to, “My position is very challenging”. Composite measures of each of the six dimensions were used as observed indicators of the psychological climate construct. The modified PCQ appears in Appendix B.

### 2.2.3 Perceived Effort

Perceived effort was assessed using a modified version of a five-item questionnaire developed by Brown and Leigh (1996). The intent of the scale was to assess an individual’s tendency to work long and hard as a means of achieving success. The response format for the five items was a 7-point Likert-type scale anchored by (7) “strongly agree” and (1) “strongly disagree”. The results of a confirmatory factor analysis on the original instrument by Brown and Leigh (1996) revealed that the five items adequately represented the construct, with a coefficient  $\alpha \geq .82$  in two samples.

In the present study a modified version of the Brown and Leigh (1996) instrument was used to assess the athlete’s perceived effort. The modification involved making the items situationally relevant. As noted previously, minor changes to wording

to reflect a more appropriate situational frame of reference were deemed to have little effect on the internal consistency or validity of an instrument (cf. Schutz, 1966). Specifically, items were reworded from a work to a sport-specific frame of reference. For example, an item reading “When I work, I really exert myself to the fullest” was changed to read “When I played, I really exerted myself to the fullest”. In addition, a sixth sport-specific item was added that complemented the existing five items, “I worked as hard in practice as I did in competition”. Responses from the six items were combined and used as an overall measure of perceived effort. Appendix C contains the instrument used to assess perceived effort.

#### 2.2.4 Intention to Return

To assess the athlete’s intention to return the following season, a three-item questionnaire was developed for use in this study. The participants were asked to respond to three questions, (1) “How likely are you to return to playing competitive hockey next season”, (2) “If you are eligible by age, how likely are you to return to playing in the same league next season”, and (3) “If you had the choice and are eligible by age, how likely are you to return to playing with this team next season”. Responses were made on a 5-point scale including the following categories: Not at all likely (at or near 0% chance), Not likely (25% chance or less), So-so (50% chance), Likely (75% chance or better), and Very likely (at or near 100%). Answers to the three questions were combined and analyzed as an overall measure of intention to return. The intention to return instrument can be found in Appendix D.

### **2.3 Procedures**

Half way through the season permission to survey the athletes was obtained from the coach of each team participating in the study. Dates and times for the administration of the survey were arranged for the last two weeks of the regular season. This was done to ensure that perceptions of group cohesion and psychological climate had ample time to develop. The researcher administered the survey to six of the 10 teams involved with the study. Because of the large area over which the teams were spread, a mail protocol was developed to assess the four teams that were not in close geographical proximity. The mail protocol included sending a package to each team's coach containing (a) the questionnaires, (b) instructions of how and when to administer the questionnaires (Appendix E), (c) players' instructions for filling out the questionnaire (Appendix F), and (d) instructions to ensure the return of the questionnaires (Appendix E) to the researcher.

Participants were ensured of the confidentiality of their responses. All questionnaires were completed in a 10 – 15 minute time frame and were done in the dressing room prior to a practice session. The participants were asked to complete the questionnaires independently and answer as honestly as possible.

### **2.4 Analyses of Data**

A series of multiple regression analyses were used to examine the relationships between the two dependent variables (perceived effort and intention to return) and the two predictor variables (perceptions of cohesion and psychological climate). To determine the unique contribution of the predictors to each dependent variable, a series

of hierarchical regression analyses were conducted wherein each predictor variable was added individually to the equation, while controlling for the other predictor variable. The factor structure of the modified psychological climate questionnaire was analyzed using a principal component analysis with varimax rotation. Internal consistency reliabilities for the GEQ, PCQ, Perceived Effort and Intention to Return questionnaires were done using Cronbach's alpha (1951). A significance level of  $p < .05$  was used for all analyses.

## **Chapter 3**

### **Results**

The results are presented in three sections. In the first section, reliability assessments (i.e., internal consistencies) for perceptions of cohesion, perceptions of psychological climate, perceived effort and intention to return are presented. In the second and third sections, the main analyses are presented. Specifically, in the second section, the results for perceived effort as it is influenced by perceptions of cohesion, psychological climate, and the joint effects of perceived cohesion and psychological climate, respectively, are presented. The third section outlines the results for intention to return as it is influenced by perceptions of cohesion, psychological climate, and the joint effects of perceived cohesion and psychological climate, respectively.

For the purpose of the analyses, the individual participant was selected as the unit of analysis in this study. There is a long-ranging debate in the group dynamics literature as to whether the individual within the group or the group itself should be the unit of analysis in group-based studies (cf. Allport, 1924). One way to answer this question emanates from examining the nature of the research question, with the proviso being that the units of analysis should match the theory (Dansereau & Alluto, 1990; Glick, 1985). In this study, both cohesion (Carron & Hausenblas, 1998) and psychological climate (James et al., 1978) are perceptions about the group that exist in the mind of the individual group members. Similarly, the research questions in this study were concerned with the relationship of perceptions of both cohesiveness and

psychological climate to individual adherence behavior (i.e., intention to return and perceived effort). As such, it is the individual's perception about cohesion and psychological climate that is salient. Consequently, the individual was chosen as the unit of analysis.

### **3.1 Scale Reliabilities**

#### **3.1.1 Group Environment Questionnaire**

As noted previously, the Group Environmental Questionnaire (GEQ) was used to assess individual perceptions of group cohesion in this study. To determine internal consistencies, Cronbach's (1951) alpha coefficients were computed for each of the four subscales of the GEQ. The alpha values were .66, .77, .69, and .72 for the four cohesion subscales, ATG-S, ATG-T, GI-S, and GI-T, respectively. As the Cronbach's alpha values for all of the four subscales of the GEQ were in the high end of the adequate (i.e., .50 – .70) internal consistency range suggested by Nunnally and Bernstein (1994), they were deemed acceptable to be included in subsequent analyses. Descriptive statistics and internal consistencies for each of the four subscales of the GEQ are presented in Table 3.1. The means and standard deviations for each item in the GEQ appear in Appendix G.

#### **3.1.2 Psychological Climate Questionnaire**

A modified version of the Psychological Climate Questionnaire (PCQ) was used to assess individual perceptions of psychological climate. Prior to assessing the internal consistencies of the six subscales of the PCQ, it was necessary to assess the factor

Table 3.1

Descriptive Statistics and Internal Consistencies for Group Environment Questionnaire Subscales

Measure	<u>M</u>	<u>SD</u>	<u>n</u> items	Scale range	Score range	Cronbach's Alpha
ATG-Task	27.09	6.69	4	1 – 9	4 – 36	.70
ATG-Social	35.26	7.52	5	1 – 9	6 – 45	.66
GI-Task	30.99	7.54	5	1 – 9	11 – 45	.69
GI-Social	23.84	6.44	4	1 – 9	5 – 36	.72

The acronyms for the various measures are as follows:

ATG-Task - Individual Attractions to the Group – Task  
 ATG-Social - Individual Attractions to the Group – Social  
 GI-Task - Group Integration – Task  
 GI-Social - Group Integration – Social

structure of the instrument. This was done because this was the first time that this instrument had been used in a sport setting, and it was deemed necessary to verify whether the same factor structure found in its use in non-sport areas would emerge in the sport setting. Factor analysis (principal components analysis with varimax rotation) specifying six factors, was performed on the 21 items of the modified PCQ. Factor weights of .40 were deemed necessary for any item to be considered to have loaded on a factor with cross-factor weightings of less than .30 (Pedhazur, 1982). Using this selection criteria and a scree test, four meaningful factors emerged.

The items that loaded on the four factors (see Table 3.2) appeared to be consistent with Brown and Leigh's (1996) findings with the original PCQ. The four factors that emerged included contribution, self-expression, supportive management and role clarity. In terms of item loadings, the four items that loaded on the first factor were the same four that loaded on the contribution factor in the original PCQ. Factor two contained the same four items as the self-expression factor found in the original measure. Four of the five items on the supportive management factor from the original PCQ emerged on the third factor. The one item from the original that did not load on this factor was "I am careful in taking responsibility because my coach is often critical of new ways of doing things". Finally, the three items that loaded on the fourth factor were the same items that loaded on the role clarity factor in the original PCQ. This four-factor solution accounted for 68.2% of the total variance and the item loadings on each factor appeared to be consistent with those found by Brown and Leigh (1996) in a non-sport setting. It is worth noting that the other two factors found by Brown and Leigh (1996) in the original instrument also emerged in this analysis. That is, both



Table 3.2

Factor Analysis Results for the Psychological Climate Questionnaire

	Item	Factor 1	Factor 2	Factor 3	Factor 4
1.	PC 9	I feel very useful in my role on the team	.78		
	PC 10	Doing my job well really makes a difference to the team	.85		
	PC 11	I feel like a key member of the team	.91		
	PC 12	The job I do is very valuable to the team	.91		
2.	PC 16	The feelings I express around the team are my true feelings	.79		
	PC 17	I feel free to be completely myself around the team	.89		
	PC 18	There are parts of myself that I am not free to express around the team	.57		
	PC 19	It is okay to express my true feelings around the team	.85		
3.	PC 1	My coach is flexible about how I play my position		.81	
	PC 2	My coach is supportive of my ideas and ways of getting things done		.76	
	PC 3	My coach gives me authority to play my position as I see fit		.75	
	PC 5	I can trust my coach to back me up on decisions I make in competition		.72	

Factor Analysis Results for the Psychological Climate Questionnaire (con't)

Item		Factor 1	Factor 2	Factor 3	Factor 4
4. PC 6	The coach makes it perfectly clear how my job is to be done				.64
PC 7	The amount of effort expected of me is clearly defined				.83
PC 8	The expected standards of performance on my team are well understood and communicated				.82
Eigenvalue		3.19	2.64	2.42	2.00
% of Variance		21.2	17.6	16.1	13.2
Cumulative % of Variance		21.2	38.8	55.0	68.2

the recognition and challenge factors from the original PCQ emerged in this study as well. However, as they contributed so little variance to the existing structure, they were eliminated from further analyses.

Internal consistency reliabilities using Cronbach's (1951) alpha coefficients were computed for each of the four meaningful factors. The alpha coefficients for the factors of contribution, self-expression, supportive management, and role clarity were .91, .80, .74, .70, respectively. Based on these high alpha values (cf. Nunnally & Bernstein, 1994), all four of these PCQ factors were used in subsequent analyses. Descriptive statistics and internal consistencies for each of the four factors of the PCQ used in the main analyses are presented in Table 3.3. The means and standard deviations for each item in the PCQ appear in Appendix H.

### 3.1.3 Perceived Effort Questionnaire

A six-item questionnaire adapted from Brown and Leigh (1996) was used to assess the individual's perceived effort. As noted previously, the items used in this study were modified slightly to reflect the sport environment. The internal consistency of the six items was computed using Cronbach's (1951) alpha. The analysis revealed an alpha coefficient of .85, which was considered acceptable for use in subsequent analyses (Nunnally & Bernstein, 1994). Descriptive statistics and internal consistency for the perceived effort scale are presented in Table 3.4. The means and standard deviations for the six items assessing perceived effort appear in Appendix I.

Table 3.3

Descriptive Statistics and Internal Consistencies for Psychological Climate Questionnaire Subscales

Measure	<u>M</u>	<u>SD</u>	<u>n</u> items	Scale range	Score range	Cronbach's Alpha
Supportive management	21.90	6.42	5	1 – 7	7 – 35	.74
Role Clarity	17.82	3.23	3	1 – 7	4 – 21	.70
Contribution	23.52	5.04	4	1 – 7	5 – 28	.92
Self-Expression	21.42	5.30	4	1 – 7	4 – 28	.80

Table 3.4

Descriptive Statistics and Internal Consistencies for Measures of Perceived Effort and Intention to Return

Measure	<u>M</u>	<u>SD</u>	<u>n</u> items	Scale range	Score range	Cronbach's Alpha
Perceived Effort <sup>1</sup>	35.49	5.29	6	1 – 7	17 – 42	.85
Intention to Return <sup>2</sup>	12.96	2.53	3	1 – 5	4 – 15	.78

1. N = 193

2. N = 149\*

\*Note-Due to eligibility requirements, 20-year old players (i.e., 20 years old is the maximum age allowed on these teams) were not included in analyses involving intention to return, thus decreasing the N from 193 to 149.

### 3.1.4 Intention to Return

Three items were used to assess the individual's intention to return to participate the following season. To assess how well the three items in the scale "stuck together" (i.e., internal scale consistency), Cronbach's (1951) alpha coefficient was calculated. The analysis revealed an alpha coefficient of .79, which was considered acceptable for use in subsequent analyses (Nunnally & Bernstein, 1994). Descriptive statistics and internal consistency of the intention to return scale are presented in Table 3.4. The means and standard deviations for the three items assessing the individual's intention to return the following season appear in Appendix J.

Finally, to assess whether multicollinearity among the predictors was a potential problem, bivariate correlations between the eight predictors used in the main analyses were calculated (see Table 3.5). A visual inspection of these correlations indicated there was no evidence of multicollinearity. That is, all bivariate correlations were below a level considered problematic (i.e.,  $r = .80$ ) (see Licht, 1995).

## 3.2 Main Analyses

### 3.2.1 Perceived Effort

#### 3.2.1.1 Cohesion Perceptions and Perceived Effort

To test the first hypothesis, multiple regression was run where all four perceived cohesion subscales (i.e., ATG-Task, ATG-Social, GI-Task, and GI-Social) were used to predict perceived effort. This analysis revealed that perception of team cohesion was a significant predictor of perceived effort,  $F(4, 188) = 9.44$ ,  $p < .001$ , and accounted for

Table 3.5

Inter-item Correlations Among Group Environment Questionnaire and Psychological Climate Questionnaire Subscales

Variable	1	2	3	4	5	6	7	8
1. ATG-Social	1.00							
2. ATG-Task	.324**	1.00						
3. GI-Social	.439**	.263**	1.00					
4. GI-Task	.446**	.619**	.370**	1.00				
5. SupMgt	.119	.085	.016	.110	1.00			
6. RolClar	.312**	.422**	.041	.398**	.106	1.00		
7. Contrib	.304**	.421**	.301**	.295**	.248**	.375**	1.00	
8. Self-Exp	.447**	.303**	.383**	.382**	.127	.208**	.277**	1.00

\*\*p &lt; .01

The acronyms for the various measures are as follows:

ATG-Social - Individual Attractions to the Group-Social  
 ATG-Task - Individual Attractions to the Group-Task  
 GI-Social - Group Integration-Social  
 GI-Task - Group Integration-Task  
 SupMgt - Supportive Management  
 RolClar - Role Clarity  
 Contrib - Contribution  
 Self-Exp - Self-Expression

17% of the total variance. Examination of the beta weights showed that the task cohesion factor of GI-Task ( $\beta = .32, p < .001$ ) was the only significant predictor of perceived effort (see Table 3.6). This indicates that male ice hockey players reporting a greater attraction to the group's task were also the ones who reported the greatest individual perceived effort. This provides preliminary support for the first hypothesis.

#### 3.2.1.2 Psychological Climate Perceptions and Perceived Effort

To examine the second hypothesis, a multiple regression was run wherein the four perceived psychological climate subscales were used to predict perceived effort. Specifically, the four psychological climate subscales of self-expression, contribution, supportive management and role clarity were used to predict perceived effort. The results of the analysis revealed that perceptions of psychological climate significantly predicted perceived effort  $F(4, 187) = 10.66, p < .001$ , and accounted for 19% of the total variance. Examination of the beta weights showed that perception of role clarity ( $\beta = .32, p < .001$ ) was the only significant predictor of perceived effort (see Table 3.7). This indicates that male ice hockey players reporting greater perceptions of role clarity also were the ones indicating greater perceptions of individual effort, supporting hypothesis two.

#### 3.2.1.3 Cohesion and Psychological Climate Perceptions and Perceived Effort

As a first step, a multiple regression was run where perceptions of both cohesion and psychological climate dimensions that emerged as significant in the previous analyses (i.e., GI-Task and role clarity) were used to predict perceived effort. The



Table 3.6

Summary of Multiple Regression Analysis of Cohesion Predicting Perceived Effort

Predictor Variable	<u>R</u>	<u>R</u> <sup>2</sup>	<u>Adj R</u> <sup>2</sup>	$\beta$	<u>F</u>	<u>p</u>
ATG-Social				.05		
ATG-Task				.14		
GI-Social				- .11		
GI-Task				.32*		
	.41	.17	.15		9.44	.001

\*  $p < .05$ 

The acronyms for the various measures are as follows:

ATG-Social - Individual Attractions to the Group-Social  
 ATG-Task - Individual Attractions to the Group-Task  
 GI-Social - Group Integration-Social  
 GI-Task - Group Integration-Task

Table 3.7

Summary of Multiple Regression Analysis of Psychological Climate Predicting Perceived Effort

Predictor Variable	<u>R</u>	<u>R</u> <sup>2</sup>	<u>Adj R</u> <sup>2</sup>	$\beta$	<u>F</u>	<u>p</u>
SupMgt				.08		
RolClar				.32*		
Contrib				.07		
Self-Exp				.12		
	.43	.19	.17		10.66	.001

\* $p < .05$

The acronyms for the various measures are as follows:

SupMgt - Supportive Management  
 RolClar - Role Clarity  
 Contrib - Contribution  
 Self-Exp - Self-Expression

overall equation examining the effects of GI-Task and role clarity on perceived effort was significant,  $F(2, 190) = 25.91, p < .001$ , accounting for 21.4% of the total variance. Examination of the beta weights showed that the role clarity ( $\beta = .29, p < .001$ ) and GI-Task factors ( $\beta = .27, p < .001$ ) were both significant predictors of perceived effort. Given that both perceptions of cohesion (i.e., GI-Task) and psychological climate (i.e., role clarity) emerged as significant predictors of perceived effort, a hierarchical multiple regression was necessary to examine the relative contribution of each as per the third hypothesis of the present study.

To determine the unique contribution of the cohesion and psychological climate subscales to perceived effort, two sets of hierarchical procedures were used. First, the unique contribution of the perceived cohesion subscale over the psychological climate perceptions was examined. To do this, the perceived psychological climate subscale that emerged in the previous analysis (i.e., role clarity) was entered on step one. The significant perceived cohesion subscale that emerged from previous analysis, GI-Task, was then entered on the second step to examine the unique contribution of GI-Task over the perceived psychological climate dimension of role clarity. The results of the analysis revealed that GI-Task added significant variance over and above the contribution made by role clarity (see Table 3.8). The r-square improved significantly from .15 to .21,  $F(1, 190) = 14.49, p < .001$ .

To examine the relative contribution of perceptions of psychological climate over perceptions of cohesion, another hierarchical multiple regression was done, wherein the cohesion subscale (i.e., GI-Task) was entered first, followed by the

Table 3.8

Summary of Hierarchical Multiple Regression Analysis of Role Clarity and GI-Task Predicting Perceived Effort Entering Role Clarity First

Variable	<u>R</u>	<u>R<sup>2</sup></u>	<u>Adj R<sup>2</sup></u>	<u>Adj R<sup>2</sup>change</u>	Sig <u>F</u> change	Sig <u>F</u> model
Step 1 <sup>a</sup>	.39	.15	.15	.15	.001	.001
Step 2 <sup>b</sup>	.46	.21	.21	.06	.001	.001

<sup>a</sup>Predictors: Role Clarity

<sup>b</sup>Predictors: Role Clarity, GI-Task

Note-Beta weights for the two predictors in the overall model are as follows:

Role Clarity = .29

GI-Task = .27

psychological climate subscale (i.e., role clarity) on the second step. The analysis revealed that the psychological climate subscale (i.e., role clarity) added significant unique variance over and above the cohesion subscale (i.e., GI-Task). The r-square improved from .14 to .21 (see Table 3.9), which represented a statistically significant improvement,  $F(1, 190) = 16.51, p < .001$ .

### 3.2.2 Intention to Return

#### 3.2.2.1 Cohesion Perceptions and Intention to Return

For all analyses involving the dependent variable of intention to return, a reduced sample ( $N = 148$ ) was used. This was done because of age restrictions implemented by the junior hockey leagues in which the teams surveyed played. Twenty-year olds were ineligible to return to participate the following season, and thus were not included in any subsequent analyses involving the dependent variable intention to return.

To test the fourth hypothesis, the four perceived cohesion subscales (i.e., ATG-Task, ATG-Social, GI-Task, and GI-Social) were used to predict intention to return. The analysis revealed that cohesion was a significant predictor of intention to return,  $F(4, 144) = 6.48, p < .001$ , accounting for 15% of the total variance. Examination of the beta weights showed that the social cohesion factor ATG-Social ( $\beta = .21, p = .02$ ) was the only significant predictor of intention to return (see Table 3.10). This indicates that male ice hockey players reporting a greater attraction to the group socially were the ones who indicated a greater intention to return to participate the following season, supporting hypothesis four.

Table 3.9

Summary of Hierarchical Multiple Regression Analysis of Role Clarity and GI-Task Predicting Perceived Effort Entering GI-Task First

Variable	<u>R</u>	<u>R<sup>2</sup></u>	<u>Adj R<sup>2</sup></u>	<u>Adj R<sup>2</sup>change</u>	Sig <u>F</u> change	Sig <u>F</u> model
Step 1 <sup>a</sup>	.38	.14	.14	.14	.001	.001
Step 2 <sup>b</sup>	.46	.21	.21	.07	.001	.001

<sup>a</sup>Predictors: GI-Task

<sup>b</sup>Predictors: GI-Task, Role Clarity

Note-Beta weights for the two predictors in the overall model are as follows:

GI-Task = .27

Role Clarity = .29

Table 3.10

Summary of Multiple Regression Analysis of Cohesion Predicting Intention to Return

Predictor Variable	<u>R</u>	<u>R</u> <sup>2</sup>	<u>Adj R</u> <sup>2</sup>	$\beta$	<u>F</u>	<u>p</u>
ATG-Social				.21*		
ATG-Task				.11		
GI-Social				.03		
GI-Task				.16		
	.39	.15	.13		6.48	.001

\* $p < .05$ 

The acronyms for the various measures are as follows:

ATG-Task    - Individual Attractions to the Group – Task  
 ATG-Social   - Individual Attractions to the Group – Social  
 GI-Task     - Group Integration – Task  
 GI-Social    - Group Integration – Social

### 3.2.2.2 Psychological Climate Perceptions and Intention to Return

To test the fifth hypothesis, the four subscales of psychological climate, (i.e., supportive management, role clarity, contribution, and self-expression) were used to predict intention to return. The results of the analysis revealed that perceptions of psychological climate successfully predicted intention to return,  $F(4, 143) = 6.26, p < .001$ , and accounted for 15% of the total variance. Examination of the beta weights showed that perceptions of role clarity ( $\beta = .32, p < .001$ ) and self-expression ( $\beta = .17, p < .04$ ) were the most significant predictors of intention to return (see Table 3.11). This indicates that male ice hockey players reporting greater perceptions of role clarity and self-expression also were the ones who indicated a greater intention to return to participate the following season, supporting hypothesis five.

### 3.2.2.3 Cohesion and Psychological Climate Perceptions and Intention to Return

In assessing the relative contribution of perceptions of cohesion and psychological climate to intention to return, the initial step entailed running a multiple regression wherein all significant subscales from the previous analyses (i.e., role clarity, self-expression, and ATG-Social) were used to predict intention to return. The overall equation examining the effects of ATG-Social, role clarity and self-expression on intention to return was significant,  $F(3, 144) = 10.11, p < .001$ , accounting for 17.4% of the total variance. Examination of the beta weights showed that role clarity ( $\beta = .26, p < .001$ ) and ATG-Social ( $\beta = .18, p < .04$ ) were both significant predictors of intention to return, while self-expression ( $\beta = .11, p > .05$ ) did not attain significance. Since self-expression was not significantly related to intention to return, it was deleted from the



Table 3.11

Summary of Multiple Regression Analyses of Psychological Climate Predicting Intention to Return

Predictor Variable	<u>R</u>	<u>R<sup>2</sup></u>	<u>Adj R<sup>2</sup></u>	$\beta$	<u>F</u>	<u>p</u>
SupMgt				.00		
RolClar				.32*		
Contrib				-.04		
Self-Exp				.17*		
	.39	.15	.13		6.26	.001

\*  $p < .05$

The acronyms for the various measures are as follows:

SupMgt      - Supportive Management  
 RolClar     - Role Clarity  
 Contrib      - Contribution  
 Self-Exp    - Self-Expression

subsequent analysis and role clarity was used as the only psychological climate predictor in the next analysis. As selected subscales of both cohesion and psychological climate predicted intention to return, a hierarchical multiple regression was used to examine the relative contributions of each as per the final hypothesis.

To determine the unique contribution of the cohesion and psychological climate subscales to intention to return, two sets of hierarchical procedures were used. As was done previously for perceived effort, the unique contribution of the perceived cohesion subscale over the psychological climate subscale was examined. To do this, the perceived psychological climate subscale that emerged in the previous analyses (i.e., role clarity) was entered on step one. The significant perceived cohesion subscale that emerged from the previous analyses, ATG-Social, was then entered on the second step to examine the unique contribution of ATG-Social over the perceived psychological climate factor of role clarity. The results of the analysis revealed that ATG-Social added variance over and above role clarity (see Table 3.12). The r-square improved from .12 to .16, which was a statistically significant improvement,  $F(1, 146) = 7.44, p < .007$ .

To examine the relative contribution of perceptions of psychological climate over perceptions of cohesion, another hierarchical multiple regression was done, wherein the cohesion subscale (i.e., ATG-Social) was entered first, followed by the psychological climate subscale (i.e., role clarity) on the second step. The analysis revealed that the psychological climate subscale added unique variance over and above the cohesion subscale with the r-square improving from .09 to .16 (see Table 3.13).

Table 3.12

Summary of Hierarchical Multiple Regression Analysis of Role Clarity and ATG-Social Predicting Intention to Return Entering Role Clarity First

Variable	<u>R</u>	<u>R<sup>2</sup></u>	<u>Adj R<sup>2</sup></u>	<u>Adj R<sup>2</sup> change</u>	Sig <u>F</u> change	Sig <u>F</u> model
Step 1 <sup>a</sup>	.35	.12	.12	.12	.001	.001
Step 2 <sup>b</sup>	.41	.16	.16	.04	.007	.001

<sup>a</sup>Predictors: Role Clarity,

<sup>b</sup>Predictors: Role Clarity, ATG-Social

Note-Beta weights for the two predictors in the overall model are as follows:

Role Clarity = .28

ATG-Social = .22

Table 3.13

Summary of Hierarchical Multiple Regression Analyses of Role Clarity and ATG-Social Predicting Intention to Return Entering ATG-Social First

Variable	<u>R</u>	<u>R<sup>2</sup></u>	<u>Adj R<sup>2</sup></u>	<u>Adj R<sup>2</sup> change</u>	Sig <u>F</u> change	Sig <u>F</u> model
Step 1 <sup>a</sup>	.31	.09	.09	.09	.001	.001
Step 2 <sup>b</sup>	.41	.16	.16	.08	.001	.001

<sup>a</sup>Predictors: ATG-Social

<sup>b</sup>Predictors: ATG-Social, Role Clarity

Note-Beta weights for the three predictors in the overall model are as follows:

ATG-Social = .22

Role Clarity = .28

This also was a statistically significant improvement in the prediction of intention to return,  $F(1, 146) = 11.99, p < .001$ .

## **Chapter 4**

### **Discussion**

Adherence behavior has been studied for many years, with the majority of the research focusing on the 'person' variables in the now classic Lewinian formula for explaining behavior  $B = f(P,E)$ , where adherence behavior (B) is a function of the person (P) and the environment (E) (Lewin, 1935). However, most sport psychology researchers would now support the proposition that an individual's adherence behavior is highly influenced by his/her membership in salient groups (i.e., environment factors). While many group-related perceptions may impact upon individual adherence behavior, this study focused on the examination of two group-based perceptions and their relationship to two forms of individual adherence behavior. Specifically, the overall objective of this study was to examine the relationships among two group-based perceptions (i.e., psychological climate and cohesion) and two forms of individual adherence (i.e., intention to return and perceived effort) in the team sport of ice hockey. It was hypothesized that both forms of individual adherence behavior would be related positively to perceptions of cohesion and psychological climate.

The first hypothesis was concerned with examining the relationship between perceptions of cohesion and perceptions of effort. To test this hypothesis, a multiple regression analysis was used to determine whether the four cohesion subscales (i.e., ATG-Task, ATG-Social, GI-Task, and GI-Social) were associated with an individual's

perceived effort. The results revealed that the cohesion factors accounted for 17% of the variance, with the cohesion subscale of GI-Task being the best predictor of perceived effort. Specifically, it was found that ice hockey players scoring higher on the GI-Task subscale reported higher perceptions of individual effort. This positive relationship confirmed that perceptions of task cohesion predict perceived effort, thus supporting the first hypothesis.

The fact that higher scores on a task measure of cohesion were associated with greater perceptions of individual effort was consistent with the recent findings of Prapavessis and Carron (1997) who found that athletes in a number of sports who reported higher perceptions of task cohesion worked harder in practice. The present result also extends the Prapavessis and Carron (1997) finding to a new measurement of work output. While Prapavessis and Carron (1997) used work output, measured on one occasion as a percentage of Max  $\text{VO}_2$ , the current study extended this to a measurement of effort that attempted to capture the perceptions of individuals reflecting back on an entire season of games and practices.

In terms of the specific form of cohesion that was found to be significant in this analysis, the emergence of a task rather than a social factor of cohesion also may be consistent with the definition of effort used in this study. The intention of the effort scale was to assess an individual's tendency to work hard and long as a method of achieving success. As such, effort may be viewed as being directed more toward achieving the task aspects of the team versus being involved with working hard as a means of socializing and developing friendships (i.e., social aspects of the team). Thus,

this meaning of effort (i.e., reflecting task aspects) may agree with the endorsement of the task aspects of cohesion as was found in the present study.

The emergence of a cohesion factor with a group orientation (i.e., GI factor) as opposed to an individual orientation (i.e., ATG factor) also may not be a surprising result. It has been found elsewhere (Carron & Spink, 1995; Widmeyer, Brawley & Carron 1985), for instance, that individuals are more likely to endorse personal attractions (i.e., ATG factors) in the early stages of group development than in the later stages of group development where GI factors tend to emerge. As a minimum of six months of the teams' season had elapsed before data were collected, it may not be surprising that a group factor (i.e., GI-Task) was more salient than individual factors (i.e., ATG factors).

To test the second hypothesis, the other predictor in the present study, perception of psychological climate was used to predict perceived effort. Specifically, the four psychological climate subscales (i.e., supportive management, role clarity, contribution, and self-expression) were entered in a multiple regression analysis in an attempt to predict perceived effort. The results revealed that perceptions of psychological climate were effective in predicting perceived effort, accounting for 19% of the total variance. Role clarity emerged as the only psychological climate subscale to predict perceived effort. Specifically, it was found that ice hockey players scoring high on perceptions of role clarity endorsed greater perceptions of individual effort. These results provide support for hypothesis two, that perceptions of psychological climate would be associated positively with an individual's perceived effort.



The fact that psychological climate perceptions predicted perceived effort is in agreement with the findings of Brown and Leigh (1996), who have linked psychological climate and effort in an organizational environment. Specifically, they found that a positive psychological climate was associated with greater job involvement and commitment of time and effort in the work of the organization. Thus, the results of the present study extend this relationship between psychological climate and perceived effort to a sport setting. In terms of role clarity, specifically, Kahn (1990) found that clarity of an individual's role in an organization (i.e., clear expectations and consistent predictable task norms) created a positive psychological climate and increased involvement. Therefore, it might be posited based on the results of this study, that if an individual's role on the team is clearly defined and the amount of effort expected is well understood and communicated, then the athlete will likely work harder towards achieving the team's goals.

The third hypothesis was exploratory in nature and involved examining the relative contribution of selected perceptions of cohesion and psychological climate to perceived effort. To determine, whether either predictor (i.e., GI-Task or role clarity) contributed any unique variance to perceived effort, a hierarchical stepwise regression procedure was done. Two results emanated from this analysis. First, it was found that the cohesion factor, GI-Task, added unique variance (i.e., r-square change = 6%) beyond the significant variance role clarity explained. Second, it was found that when the entry of GI-Task and role clarity was reversed (i.e., cohesion was entered before role clarity) that role clarity predicted an additional 7% in explained unique variance

over and above the significant variance contributed by GI-Task in the explanation of ice hockey players' perceived effort.

These results are important for several reasons. First, it appears as if both forms of group-related perceptions (i.e., selected forms of cohesion and psychological climate perceptions) independently predict significant variance in the adherence measure of perceived effort. Second, the fact that measures of cohesion (i.e., GI-Task) and psychological climate (i.e., role clarity) both contributed unique variance to the predictions of perceived effort over and above the variance contributed by the other predictor suggests that both measures are important in understanding changes in an athlete's perception of individual effort. This is an important finding in that the relative contribution of cohesion and psychological climate as they predict perceived effort have not been examined previously in the literature. Third, given the fact that both types of group-related perceptions predicted unique variance in perceived effort suggests that these two measures were assessing different constructs. This speculation also is supported by the low to moderate correlations between the various subscales of perceived cohesion and psychological climate found in this study (see Table 3.5). This is an important finding as it has been suggested elsewhere that cohesion and psychological climate may be similar concepts (Koys & DeCoitiis, 1991).

Another purpose of this study was to examine the effects of cohesion and psychological climate perceptions on a second measure of adherence-the intention to return to play for another season. The fourth hypothesis examined the link between perception of social cohesion and an athlete's intention to return to play for another season. To examine this relationship, a multiple regression analysis was used to

determine whether the four cohesion subscales (i.e., ATG-Task, ATG-Social, GI-Task, and GI-Social) could be used to predict an individual's intention to return to participate the following season. The results revealed that the perception of cohesion was a significant predictor of intention to return (accounting for 15% of the total variance), with the cohesion subscale of ATG-Social being the only significant predictor of intention to return. Specifically, it was found that ice hockey players scoring high on the ATG-Social subscale indicated a greater intention to return to play the following season. These results provide preliminary support for hypothesis four that perceptions of social cohesion would predict future intentions to return.

The fact that higher scores on the ATG-Social subscale predicted intentions to return is consistent with previous research investigating the relationship between cohesion and intention to return. Spink (1995, 1998) also found that the social aspects of cohesion were associated with intentions to return in the future for a sample of female sport team athletes. Given the current results were obtained with male sport team athletes suggests that the Spink (1995, 1998) findings examining cohesion and intention to return with females may now be extended to male athletes. Combining the findings of this study with those of Spink (1995, 1998) suggest that both male and female team members having enhanced feelings of personal involvement regarding individual acceptance and social interactions within the group (i.e., social cohesion) may be more inclined to return the following season to participate. Thus, while task cohesion may be associated with group productivity (Mullen & Cooper, 1994), it appears as if social cohesion may be necessary for longer-term group maintenance.

The emergence of a cohesion factor with an individual orientation (i.e., ATG factors) as opposed to a group orientation (i.e., GI factors) was a somewhat surprising result. As noted previously, it has been suggested elsewhere (Carron & Spink, 1995; Widmeyer et al., 1985) that in the early stages of group development, new members are likely to endorse an individual perspective (i.e., ATG factors) rather than a group perspective (i.e., GI factors). However, in this study data were collected during the last two weeks of a seven-month long season, a time well into the development of the group, suggesting GI cohesion factors should have been more salient. While this comment relates to the current season, members on sport teams typically have a longer tenure (i.e., individual membership on the team may last years versus months). This may have been the case in the current study wherein all the senior players (i.e., 20-year olds) were eliminated for the intention to return analysis, leaving the first and second year players (81% of the final sample) as the predominant group in the sample. Thus, it is possible that this sample with less team tenure may have contributed to the salience of the ATG cohesion factors. Possibly, a veteran team (i.e., greater collective team tenure) would endorse GI factors more. This awaits future research.

Finally, as noted previously, intention to return was operationalized as a measure of adherence. Thus, in a general sense, these findings contribute to the research linking cohesion to other measures of group maintenance in both a sport (Carron et al., 1988; Robinson & Carron, 1982; Spink, 1995, 1998) and exercise (Spink & Carron, 1992, 1993) setting.

To test the fifth hypothesis, which examined the relationship between psychological climate and intention to return, the four subscales of psychological

climate (i.e., supportive management, role clarity, contribution, and self-expression) were used to predict an individual's intention to return to play the following season. The results revealed that perception of psychological climate was effective in predicting intention to return, accounting for 15% of the total variance. Specifically, it was found that hockey players scoring high on perceptions of role clarity and self-expression indicated a greater intention to return to play the following season. These results provide support for hypothesis five that perceptions of psychological climate would predict future intentions to return.

The fact that measures of psychological climate predicted intention to return was consistent with the conceptual framework outlined in the introduction. It was reasoned that if psychological climate contributes to an individual investing greater time and effort into pursuing organizational goals (Kahn, 1990), and if investment of time is viewed as a form of adherence (Porter & Steers, 1973; Steers & Rhodes, 1978), then perception of a more positive psychological climate should be associated with a desire to return to play for another season.

Two subscales of psychological climate (i.e., role clarity and self-expression) emerged as the predictors of intention to return to play in this study. Kahn (1990) has suggested that positive role clarity, which entails clear expectations of group norms (i.e., performance and effort standards), creates a psychologically safe environment and increases task involvement. In terms of the present study, it might be posited that ice hockey players who have a precise knowledge of role, effort, and performance expectations (i.e., role clarity) might be more involved and wish to continue that involvement in the future. In terms of self-expression, Brown and Leigh (1996) suggest

that a psychological climate that facilitates the expression of individual creativity and feelings into an individual's work role translates into psychological engagement in work. In the present study it appears as if ice hockey players might wish to return to an environment in which they feel comfortable expressing themselves.

The last hypothesis examined the relative contribution of each situational factor to the adherence measure of intention to return to play for another season. This was done in three steps. First, a multiple regression with the previous significant predictors (i.e., ATG-Social, role clarity, and self-expression) was used to determine if all three predicted intention to return when entered simultaneously. Self-expression was the only predictor not to attain significance; therefore, only ATG-Social and role clarity were used in subsequent analyses. Second, a hierarchical multiple regression was used to examine the relative contribution of the cohesion factor after the psychological climate factor had been entered in the prediction of intention to return. It was found that the cohesion factor (i.e., ATG-Social) added unique variance (i.e.,  $r$ -square change = 4%) beyond the significant variance explained by role clarity. Third, the entry of ATG-Social and role clarity was reversed (i.e., cohesion was entered before role clarity), to determine if psychological climate contributed to intention to return over and above cohesion. It was found that role clarity predicted an additional 7% in unique explained variance over and above the significant variance contributed by ATG-Social in the explanation of ice hockey players' intention to return the following season.

The results examining the relative contribution of cohesion and psychological climate perceptions to intention to return parallel those found when examining the other adherence measure, perceived effort. Specifically, it was found that both measures of

cohesion and psychological climate independently predicted intention to return for another season. Second, although psychological climate appeared to contribute more unique variance to intention to return (7% versus 4%), both measures resulted in significant contributions over and above the other measure. This provides preliminary support for the idea that both perceptions of cohesion and psychological climate are salient in examining an athlete's intention to return to play for another season. Third, given the unique contributions attributed to each predictor, additional support is provided for the suggestion that each of these measures (i.e., cohesion and psychological climate measures) was assessing different constructs.

While the preceding discussion outlines what was found, a few comments as to what was not found appear to be in order. In terms of psychological climate, specific subscales of the concept did not predict either measure of adherence behavior (i.e., intention to return or perceived effort). For example, supportive management did not predict either intention to return or perceived effort. Supportive management refers to how much flexibility a leader allows with respect to how tasks are accomplished. An example of an inventory item that illustrates this point is "My coach is flexible about how I play my position". In many sports, it could be argued that most tasks are well defined, and as such, there is little reason for a leader to be flexible with respect to how tasks are accomplished. This might be particularly salient within the context of an interactive team sport such as ice hockey where great task interdependence is required for successful performance (Carron & Chelladurai, 1981). This speculation appears to be supported by the results of the present study where supportive management was endorsed, on average, the least of any form of the psychological climate subscales (see

Table 3.5). If this reasoning can be supported in future research, it may provide one possible suggestion as to why supportive management did not emerge as a predictor of either measure of adherence in this sport setting. This appears to be a fruitful area for future research.

The results also revealed that the psychological climate measure of contribution failed to predict intention to return or perceived effort. The psychological climate subscale of contribution is concerned with the individual's perception that his/her contribution to a task is meaningful. As this is the first time this construct (i.e., psychological climate) has been examined in the sport context, one can only speculate as to why contribution did not contribute to the prediction of either measure of adherence. One possibility is that on a large sports team such as an ice hockey team (i.e., over 20 players), there might be little opportunity for an individual to perceive that he or she has made more of a contribution to team goals than other teammates. One way to test this would be to assess the relationship between the psychological climate subscale of contribution and adherence in both small and large teams. Another possibility to explain the present results may relate to the fact that in team sports such as ice hockey, success has much to do with team play involving the communication, cooperation, and coordination of several individuals at one time. This emphasis on team play may limit the importance of individual contribution as a measure of psychological climate in the sport setting. This also awaits future research.

The results also revealed that perception of self-expression, as a measure of psychological climate, had a small association with intention to return but was unable to predict perceived effort. This latter result may not be too surprising given that effort (as



assessed in this study) has more to do with the task at hand, whereas self-expression involves feeling free to express one's true feelings around the team, which is more of a social dimension of psychological climate. As such, self-expression may not be related to a task-related factor such as effort, as it was defined in this study. On the other hand, perceptions of self-expression did emerge as a predictor of intention to return. As previously reported, social factors of cohesion (Spink, 1995, 1998) seem to be the best predictors of intention to return. Similarly, it might be posited that certain subscales of psychological climate (i.e., self-expression), which reflect more of the social nature of the group, might be better predictors of behaviors that are more social in nature (i.e., intention to return).

Finally, a general comment about the finding that different cohesion antecedents predicted different measures of adherence appears warranted. The fact that different cohesion factors emerged as predictors for the two measures of adherence (i.e., ATG-Social with intention to return and GI-Task with perceived effort) may not be surprising given that Spink and Carron (1993) have argued that various forms of adherence may be affected differentially by perceptions of group cohesion. Porter and Steers (1973) and Steers and Rhodes (1978) also have noted that it is conceptually and methodologically indefensible to assume that all measures of adherence share common antecedents and can be treated with similar techniques. For example, the decision to quit the team entirely would require greater deliberation over a longer period of time (Steers & Rhodes, 1978), whereas an athlete's decision to reduce work output could be made more spontaneously (Prapavessis & Carron, 1997). Also, the different forms of adherence can vary considerably with regards to negative consequences for the group.

For example, a sport team can function with much of the team reducing their work output, however, the team would cease to exist if a number of members withdrew from the team (Steers & Rhodes, 1978).

#### 4.1 Summary

In the present study, a number of unique contributions were made to the existing body of research on adherence behavior in sport. First, two forms of adherence were assessed, intention to return and perceived effort. In terms of intention to return, a single item has been used in previous studies to assess an individual's intention to return to play the following season (Spink, 1995, 1998). In this study, three questions were combined and analyzed as an overall measure of intention to return. The use of multiple questions was intended to improve the reliability of the measure (Kerlinger, 1986) versus the 1-item measures of intention used in previous research. Also, intention to return the following season has only been examined with a female population in the sport setting. This study used a male sample, thus extending previous research linking cohesion and intention to return to a male population.

In terms of perceived effort, this is the first time this measure has been used as a manifestation of adherence. Work output, a form of effort, has been operationalized as an adherence measure (Prapavessis & Carron, 1997). However, this was a singular measure and may not have been indicative of an individual's true level of effort over the course of a season. In this study, effort was assessed over a longer period of time, by examining athletes' perception of how hard they have worked through the course of the season.

This study also introduced a new concept to the study of adherence to sport, that being psychological climate. Psychological climate originated in the organizational literature and has been linked to an individual's level of involvement, effort, and performance in the work place (Brown & Leigh, 1996). The fact that psychological climate has now been linked to adherence behavior (i.e., intention to return and perceived effort) in the sport setting gives researchers a new variable to help explain adherence behavior in sport.

#### 4.2 Practical Implications

As noted previously, both cohesion and psychological climate made independent contributions to adherence behavior. That is, both concepts contributed unique variance in the prediction of intention to return and perceived effort. This result suggests that it may be important to consider both cohesion and psychological climate when examining adherence in sport. Considering these two concepts simultaneously may shed light on the effects of these environmental factors on adherence behavior.

In addition to the concurrent application of cohesion and psychological climate to adherence behavior, the type of adherence behavior examined also may be an important consideration. The results from this study suggest that different group-related perceptions vary in importance depending on the type of adherence behavior being assessed. That is, the various manifestations of adherence (i.e., intention to return and perceived effort) appeared to have different antecedents. In terms of practical interventions, these results provide preliminary evidence that interventions should be tailored to the specific form of adherence behavior of interest. For example, in a

situation where the level of individual effort is low, task factors of cohesion may be the appropriate focus of intervention. However, if intention to return is the primary area of concern, then the focus might move to the factors of social cohesion.

#### 4.3 Future Directions

As this study examined a number of new concepts in both the area of adherence (i.e., perceived effort) and group-related perceptions (i.e., psychological climate), the results provide for some promising areas for future research. These include the following:

##### 4.3.1 Measurement Issues

**Psychological climate.** Given that this was only the second time that the PCQ has been used in any setting, research is needed to further establish its psychometric properties (i.e., reliability and validity) generally, and in the sport situation, specifically. In the sport setting, one might wonder, for instance, if there are items not contained in this scale that might strengthen the relationships between adherence behavior and perceptions of psychological climate. One suggestion in this regard might be to use athletes as active agents to help identify other sport-specific items that might enhance the predictive validity of the psychological climate scale.

**Perceived effort.** The measurement of perceived effort used in this study was drawn from a measurement developed for the work setting. It is interesting to note that the modified measurement used in this study had better internal consistency in this sample ( $\alpha = .85$ ) than those reported for its use in the work setting (alphas of .64 and .59 in

two samples, Brown & Leigh, 1996). This may have been due to the inclusion of an additional sport-specific item to the inventory for this study. If this is correct, the predictive validity of the scale might be improved further by having athletes identify other sport-specific items that could be included in the instrument.

#### 4.3.2 Research Issues

The results of this study provided some important preliminary findings in selected areas that suggest avenues for future research.

1. Given the fact that this was the first attempt at examining psychological climate in the sport setting, replication with another sample is warranted. This may be particularly important given the fact that a majority of the players used in this study were playing on teams that served as a feeder system to the professional ranks of ice hockey. Possibly, the unique nature of this sample may limit the generalizability of the present results to other elite samples. Therefore, future research with elite athletes who are not part of a feeder system to the professional ranks appears important. Also, a male sample was used in this study, leaving open the question of whether a similar result would be found with a female sample. Based on the suggestion that predictors of adherence behavior may differ by gender (Duda & Tappe, 1989), the examination of the effects of psychological climate on the adherence behavior of female athletes appears to be warranted.
2. It also may be necessary to reevaluate the subscales of psychological climate used in the sport setting. The fact that all of the subscales of psychological climate did not predict either adherence measure (i.e., intention to return and perceived effort)

begs the question of whether the manifestations of psychological climate that did not emerge (i.e., supportive management and contribution) are salient in the sport setting. Other researchers (Jones & James, 1979; Koys & Decotiis, 1991) have examined subscales of psychological climate that are different from the ones examined in this study. Investigation into whether other subscales of psychological climate would be more salient in the sport setting requires future attention.

3. Given that the measurement of perceived effort was retrospective in nature (i.e., after the season had ended), changes in the timing of the administration of the measurement also may improve prediction. It might be suggested that perceived effort be assessed intermittently throughout the season to get a better long-term indication of an athlete's effort level. It also might be suggested that researchers examine effort levels in practice and competition situations. This also might provide a better predictive instrument.
4. The sample used in this study consisted of ice hockey players participating in highly competitive leagues. As previous research has suggested that group-related perception are often moderated by competition level (Spink, 1995) and type of sport (Carron & Chelladurai, 1981), it might be suggested that future researchers examine different sports (i.e., football, soccer, and rugby) and different levels of competition (i.e., elite versus recreational) to determine if cohesion and psychological climate perceptions have the same effects on adherence behaviors in these different situations.

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## Appendix A

### Group Environment Questionnaire

#### Instructions

- A. The following questions are designed to assess **your feelings** about **YOUR PERSONAL INVOLVEMENT** with this team. Don't be concerned if questions are stated in either a negative or positive way. Just give your first reaction. **Please place the value** from 1 to 9 that indicates your level of agreement **in the space to the right of each statement**. Use the 1 to 9 scale below.

	1	2	3	4	5	6	7	8	9	
	Strongly								Strongly	
	Disagree								Agree	
										<i>VALUE</i>
1.	I do not enjoy being a part of the social activities of this team.									_____
2.	I'm not happy with the amount of playing time I get.									_____
3.	I am not going to miss the members of this team, when the season ends.									_____
4.	I'm unhappy with my team's level of desire to win.									_____
5.	Some of my best friends are on this team.									_____
6.	This team does not give me enough opportunities to improve my personal performance.									_____
7.	I enjoy other parties more than team parties.									_____
8.	I do not like the style of play on this team.									_____
9.	For me this team is one of the most important social groups to which I belong.									_____

## Appendix A (con't)

### Instructions

- B. The following questions are designed to assess **your perceptions of YOUR TEAM AS A WHOLE**. Don't be concerned if questions are stated in a negative or positive way. Just give your first reaction.

Using the 1 to 9 scale below, **place the value** that indicates your level of agreement **in the space to the right of each statement**.

	1	2	3	4	5	6	7	8	9	
	Strongly								Strongly	
	Disagree								Agree	
										<i>VALUE</i>
10.										_____
11.										_____
12.										_____
13.										_____
14.										_____
15.										_____
16.										_____
17.										_____
18.										_____

## Appendix B

### Psychological Climate Questionnaire

The following questions are designed to assess **your feelings** about **your team environment**. Don't be concerned if questions are stated in either a negative or positive way. Just give your first reaction. **Please place the value from 1 to 7 that indicates your level of agreement in the space to the right of each statement.**

	1	2	3	4	5	6	7	
	Strongly						Strongly	
	Disagree						Agree	
								<u>VALUE</u>
1.								_____
2.								_____
3.								_____
4.								_____
5.								_____
6.								_____
7.								_____
8.								_____
9.								_____
10.								_____
11.								_____
12.								_____
13.								_____

Appendix B (con't)

14. My coach generally appreciates the way I do my job. \_\_\_\_\_
15. The team recognizes the significance of the contributions I make. \_\_\_\_\_
16. The feelings I express around the team are my true feelings. \_\_\_\_\_
17. I feel free to be completely myself around the team. \_\_\_\_\_
18. There are parts of myself that I am not free to express  
around the team. \_\_\_\_\_
19. It is okay to express my true feelings around the team. \_\_\_\_\_
20. My position is very challenging. \_\_\_\_\_
21. It takes all my resources for me to succeed on this team. \_\_\_\_\_



## Appendix C

### Perceived Effort Questionnaire

These items concern your perceptions of the amount of effort you have put forth this season. Please answer using the following scale.

1	2	3	4	5	6	7
<b>Strongly Disagree</b>						<b>Strongly Agree</b>

Place the value that reflects how you feel in the space to the right of each item.

- |  | <u><b>VALUE</b></u> |
|--|---------------------|
| 1. When the game was on the line, I devoted all my energy to getting the job done        | _____               |
| 2. When playing, I did so with intensity   | _____               |
| 3. I worked on all aspects of my game during practice (e.g., offensive and defensive)    | _____               |
| 4. I worked as hard as I could to be successful this season (e.g., off ice conditioning) | _____               |
| 5. When I played, I really exerted myself to the fullest                                 | _____               |
| 6. I worked as hard in practice as I did in competition                                  | _____               |

## Appendix D

### Intention to Return Questionnaire

The following items concern your intention to return playing next season. Please answer using the following scale.

1	2	3	4	5
not at all likely (at or near 0% chance)	not likely (25% chance or less)	so-so (50% chance)	likely (75% chance or better)	very likely (at or near 100%)

Place the value that reflects how you feel in the space to the right of each item.

#### VALUE

1. How likely are you to return to **playing competitive hockey** next season? \_\_\_\_\_
2. If you are eligible, how likely are you to return to **playing in the same league** next season? \_\_\_\_\_
3. If you had the choice and are eligible by age, how likely are you to return to **playing with this team** next season? \_\_\_\_\_

## Appendix E

### Letter to Coaches

Dear Coach,

Thank you very much for agreeing to do this for me. The purpose of this study is to examine the effects of various group factors on the individual behaviors of players in team sports. All of the data I collect from the various teams will be pooled so that no one individual or team will be identified. Coaches or anyone involved with the team will not be able to view their team's responses, however, when I have completed my thesis, I would be more than happy to inform you of the results.

The survey will take your team about 15 minutes to complete, preferably before practice. I ask that you introduce what to do and then let your trainer administer the survey without your presence. This is the only way to get an honest, unbiased response from them. Have your trainer collect the surveys in the envelope provided once the players are done. Please remind the players to fill out the team name, age, player number and years played with the team on the first page of the survey. Make sure that they answer all the questions, they do the survey individually, and ensure them that none of the coaches will see any of their responses. If you have any questions, please feel free to call me. Good luck in the rest of your season and thank you again for taking the time out of your busy schedule to help me out with the study.

Thanks,  
Pat Odnokon  
Graduate Student  
University of Saskatchewan  
W: 966 2688 H  
E-mail: @mail.usask.ca

## Appendix F

### Instructions to the Athlete

#### TO THE ATHLETE

Thank you for agreeing to volunteer for this study. We believe that there are many reasons for being involved in team sports. Our own participation in recreational and competitive sports meant many things to us.

We're interested in having athletes tell us about their team. We don't want to guess at what these may be so we're conducting a survey of a number of teams. So far, we've received great cooperation from other teams similar to yours.

It would help us if you can read the survey carefully and **ANSWER ALL QUESTIONS**.

We're asking for your help in completing this survey just this one time.

The study has the approval of Sask Sport.

Your **privacy** and **anonymity** are **guaranteed** by the researchers.

If you have any questions, we encourage you to contact us:

The Research Team

Dr. Kevin S. Spink, College of Kinesiology  
University of Saskatchewan 966-6474

Mr. Pat Odnokon, College of Kinesiology  
University of Saskatchewan 966-2688

THANK YOU!

## Appendix F (con't)

### University of Saskatchewan Research Project Consent Form Team Dynamics Study

Dr. Kevin S. Spink, Professor  
College of Kinesiology  
Telephone: 966-6474

Pat Odnokon, Graduate Student  
College of Kinesiology  
Telephone: 966-2688

#### Purposes and Procedures

The purpose of this research study is to examine the group dynamics of team sport participants. With many individuals participating in team settings, the examination of how the team functions becomes increasingly important.

Your participation in this study will involve completing three short questionnaires once prior to a practice. The questionnaire will take approximately 15 minutes to complete. We hope that you will give your honest opinions if you decide to respond. However, we cannot and do not guarantee or promise that you will receive any benefits from the study.

#### Rights and Welfare of the Individual

You will be free at any time to withdraw from any or all parts of the study without penalty. Your participation or non-participation in this study will in no way be reflected in your present or future participation on this team. You will be advised if any new information or requirements arise that will have a bearing on your decision to continue in this study. Your identity will remain confidential and anonymity is provided as results will be reported in a thesis or research article only as a collective finding. You will be asked to indicate your name only in the event that we need to match two pieces of information on each person. The original questionnaires will be safeguarded and securely stored at the University of Saskatchewan by K. Spink for a minimum of five years as per University requirements.

Please be assured that you may ask questions at any time. We will be glad to discuss the results, at your request, when they become available and we welcome your comments and suggestions throughout the study. We can be reached at the telephone numbers listed above.

#### Subject's Statement

I voluntarily consent to participate in this study. I understand that any time during this study, I am free to withdraw without jeopardizing my present and future opportunities for participation on this team. The procedures have been fully explained to me and I fully understand the contents of the consent form and the proposed procedures.

I have had the opportunity to ask questions and have received satisfactory answers to all inquiries regarding this study.

You will be given a copy of this form to keep.

---

Participant's Signature

---

Date

---

Researcher's Signature

---

Date

## Appendix G

### Means and Standard Deviations of the 18 Group Environment Questionnaire Items Used in the Analyses

ITEMS	M	SD
<b>ATG-S</b>		
I do not enjoy being a part of the social activities of this team	7.47 <sup>1 2</sup>	2.43
I am not going to miss the members of this team, when the season ends	7.51 <sup>2</sup>	2.03
Some of my best friends are on this team	6.39	2.61
I enjoy other parties more than team parties	6.36 <sup>2</sup>	2.38
For me this team is one of the most important social groups to which I belong	7.54	2.15
<b>ATG-T</b>		
I'm not happy with the amount of playing time I get	6.77 <sup>2</sup>	2.43
I'm unhappy with my team's level of desire to win	5.93 <sup>2</sup>	2.67
This team does not give me enough opportunities to improve my personal performance	7.23 <sup>2</sup>	2.13
I do not like the style of play on this team	7.16 <sup>2</sup>	2.07
<b>GI-S</b>		
Members of our team would rather go out on their own than get together as a team	4.94 <sup>2</sup>	2.07
Our team members rarely party together	6.60 <sup>2</sup>	2.10
Our team would like to spend time together in the off season	5.75	2.35
Members of our team do not stick together outside of practices and games	6.55 <sup>2</sup>	2.23
<b>GI-T</b>		
Our team is united in trying to reach its goals for performance	6.72	2.00
We all take responsibility for any loss or poor performance by our team	6.50	2.53
Our team members have conflicting aspirations for the team's performance	6.24 <sup>2</sup>	2.20
If members of our team have problems in practice, everyone wants to help them so we can get back together again	5.49	2.33
Our team members do not communicate freely about each athlete's responsibilities during competition or practice	6.04 <sup>2</sup>	2.23

<sup>1</sup>Scale values: Anchored with 1 = Strongly Disagree and 9 = Strongly Agree.  
The higher the value, the greater the item endorsement.

<sup>2</sup>Reverse scored

## Appendix H

### Means and Standard Deviations of the 21 Psychological Climate Questionnaire Items Used in the Analyses

ITEMS	M	SD
<b>Supportive Management</b>		
My coach is flexible about how I play my position	4.39 <sup>1</sup>	1.83
My coach is supportive of my ideas and ways of getting things done	4.76	1.80
My coach gives me authority to play my position as I see fit	3.96	1.97
I am careful in taking responsibility because my coach is often critical of new ways of doing things	3.96 <sup>2</sup>	1.90
I can trust my coach to back me up on decisions I make in competition	4.86	1.69
<b>Role Clarity</b>		
The coach makes it perfectly clear how my job is to be done	5.72	1.47
The amount of effort expected of me is clearly defined	6.32	1.25
The expected standards of my performance on my team are well understood and communicated	5.80	1.37
<b>Contribution</b>		
I feel very useful in my role on the team	5.91	1.45
Doing my job well really makes a difference to the team	6.04	1.28
I feel like a key member of the team	5.71	1.50
The job I do is very valuable to the team	5.89	1.38
<b>Self-Expression</b>		
The feelings I express around the team are my true feelings	5.36	1.62
I feel free to be completely myself around the team	5.90	1.53
There are parts of myself that I am not free to express around the team	4.49 <sup>2</sup>	2.23
It is okay to express my true feelings around the team	5.70	1.44

## Appendix H (con't)

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### Recognition

I rarely feel that my skill is taken for granted	4.60	1.81
My coach generally appreciates the way I do my job	5.19	1.49
The team recognizes the significance of the contributions I make	5.14	1.46

### Challenge

My position is very challenging	5.76	1.31
It takes all my resources for me to succeed on this team	5.84	1.29

---

<sup>1</sup>Scale values: Anchored with 1 = Strongly Disagree and 7 = Strongly Agree.  
The higher the value, the greater the item endorsement.

<sup>2</sup>Reverse scored



## Appendix I

### Means and Standard Deviations of the 6 Perceived Effort Items Used in the Analyses

ITEMS	M	SD
When the game was on the line, I devoted all my energy to getting the job done	6.54 <sup>1</sup>	.72
When playing, I did so with intensity	6.23	.87
I worked on all aspects of my game during practice	5.73	1.22
I worked as hard as I could to be successful this season	5.53	1.42
When I played, I really exerted myself to the fullest	6.09	1.10
I worked as hard in practice as I did in competition	5.41	1.47

<sup>1</sup>Scales values: Anchored with 1 = Strongly Disagree and 7 = Strongly Agree.

The higher the value, the greater the item endorsement.

## Appendix J

### Means and Standard Deviations of the 3 Intention to Return Items Used in the Analyses

ITEMS	M	SD
How likely are you to return to playing competitive hockey next season?	4.68 <sup>1</sup>	.69
If you are eligible, how likely are you to return to playing in the same league next season?	4.26	1.01
If you had the choice and are eligible by age, how likely are you to return to playing with this team next season?	4.13	1.15

<sup>1</sup>Scale values: 1 = Not at all likely (at or near 0% chance); 2 = Not likely (25% chance or less); 3 = So-so (50% chance); 4 = Likely (75% chance or better); 5 = Very likely (at or near 100%)

The higher the value, the greater the item endorsement