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Competitive Fencers' Affect:

The Intuitive–Reflective Appraisal Model

by

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THESIS

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ABSTRACT

The cognitive approach to the study of emotion is grounded in the belief that individuals are active agents and are able to exercise control over thought processes, motivation and behavior. Cognitions, causal thoughts in particular, play a central role in behavior and affect generation. Emotion depends upon how the individual cognitively appraises an event, not the event per se. Vallerand (1987) has proposed an intuitive-reflective appraisal model for self-related affects to examine the roles of intuitive (e.g. subjective performance assessment) and reflective (e.g. causal attributions) appraisals in the generation of self-related and general-type affects. The purpose of the present study was to test this model in a competitive fencing tournament and ascertain the relationships between three cognitive antecedents (intuitive appraisal, causal attributions, and intellectualization) and self-related and general-type affects. Results showed support for the main postulates of the model. Intuitive appraisal was found to have important and necessary effects on self- and general-type affects. This intuitive appraisal was shown to have more of an effect on affects than objective outcome (win/loss). Reflective appraisal processes, in the forms of causal attributions and task importance, were not necessary for affect generation, though task importance played a significant minimizing role in the experience of positive self- and general-type affects, particularly in the perceived failure condition. The results of the present study promote the use of sport specific models in the understanding of the relationship between athletes' cognitive antecedents and affect generation.

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CHAPTER I

INTRODUCTION

Combat! A fencer jumps for joy, his opponent shakes his hand and throws his mask to the ground! A single point and the judge's call has decided the outcome of a fencing tournament, and has set the stage for the process of emotion generation that influenced the emotions experienced by the fencers. From joy to anger an athlete may experience any number of emotions, either positive or negative, depending on that athlete's perception and appraisal of an event (McAuley, Duncan, & Gross, 1983). Emotion results from an evaluative perception, an appraisal of a relationship (actual, imagined, or anticipated) between a person and the environment (Lazarus, 1982). Thus, one's evaluation or cognitive appraisal, influences subsequent thoughts, emotions and behavior.

The study of emotion in many domains has been fraught with difficulties. In particular, there is little consensus as to the definition of emotion, and equivocal opinions exist regarding their nature and basic numbers. Even when referring to this concept, various terms such as "moods", "affects", "cognitive experiences" and "feelings" have been used interchangeably in the literature[1]. Of major dispute is the number of "basic" emotions. For instance, Ekman (1992) proposed that there are six "basic" emotions (happiness, surprise, fear, sadness, anger, and disgust). Izard (1992) however, has posited a different set of eight "emotions"(interest, fear, sadness, anger, guilt, shame, shyness, and disgust) while still allowing that his theory is open to the number and labels of basic emotions (as cited in Schwarz & Clore, 1996). These difficulties and debates originate from the lack of communication and integration of the different areas of

[1] Note. The terms "emotion" and "affect" are used interchangeably by Vallerand (1987) and this document shall follow this practice.

research, especially as they pertain to different theoretical approaches (Edwards, 1995; Vallerand, 1987). However, Young (1973) suggested that it is possible to construct a definition that reflects and integrates the three major components of emotion which include: (a) the cognitive and/or phenomenological, which deals with the conscious or subjective experience of emotion (b) the psychophysiological, that refers to the changes in the autonomic nervous system that take place during emotion, such as increased heart rate and (c) the behavioral component deals with expressions of emotion that are observable, such as verbal outbursts or smiling. Deci (1980) posited a general definition of emotion that incorporates these three components. He stated that:

> An emotion is a reaction to a stimulus event (either actual or imagined). It involves change in the viscera and musculature of the person, is experienced subjectively in characteristic ways, is expressed through such means as facial changes and action tendencies, and may mediate and energize subsequent behaviors (p. 85).

Although many different approaches to emotion have been proposed (see Schwarz & Clore, 1996, for a review) one that has gained interest and recognition over the past twenty-five years is the cognitive approach. Cognitive theories have their foundation in self-referent thought, and assume that the individual is capable of exercising control over thought processes, motivation, and behavior (McAuley, 1992). Proponents of this approach (see Arnold, 1960; Lazarus, 1984; Schachter, 1964; Weiner, 1985a) contend that cognitions play a causal role in the experience of emotion, that is, emotion depends upon how the individual appraises the event, not the event per se. This evaluative perception is termed cognitive appraisal, and is crucial to emotional response. "It is a necessary precondition because to experience emotion people must comprehend, whether in the form of a primary evaluative perception or a highly differentiated

process" (Lazarus, 1984, p. 124). As antecedents of emotions, these cognitive appraisals may be intuitive (primary) or reflective (differentiated process) in nature, and differentially affect the generation of an individual's emotional response to the outcome of an event (e.g. winning or losing a match).

Vallerand (1983) has assessed a number of cognitive theories and their possible application to the domain of sport research. Figure 1 provides a comparative summary of these cognitive theories. Each cognitive theory or model that has been proposed has merit in sport research, though particular strengths and weaknesses make many of them useful only for specific areas of research. For example, the theory proposed by Lazarus (1984), centers on negative emotions and coping, and its use in sport research has been mainly as a model of stress management training for athletes (Vallerand, 1983).

An emphasis on cognitive appraisal processes has driven much of the attribution research in sport. Attribution theory is directed at understanding human behaviors through identifying causes that people ascribe to their own behaviors and the behaviors of others (McAuley, 1992). Its basic premise is that individuals are considered active processors of information about achievement events. They process this information in a logical fashion, and thus, construct what they believe has happened or caused the outcome of that event. Attributions reflect a form of cognitive appraisal. One of the main areas that attribution research in sport has focused on, is the attribution-emotion link (McAuley, 1992).

Past research into the attribution-emotion relationship has been guided by Wiener's seminal theory of motivation and emotion (1979, 1980, 1985). Weiner contends that the subjective experience of emotions is dependent on the meaning attached to the situation. In essence, outcome evaluation leads to a general type of affect (e.g. happy/sad) whereas causal

search and attributions for the outcome lead to more distinct emotions (e.g. competence, anxiety). This aspect of causality and causal attributions have been frequently used in sport research. However, attribution research (e.g. Gill & Gross, 1979; Passer & Scanlan, 1977, 1979, 1980; Vallerand, 1981; Ryan, 1981) has shown that athletes' perceptions of the outcome in terms of subjective success or failure, influences emotions as well as the objective outcome (actual win or loss) (McAuley, 1992).

Arnold (1960, 1970a) posited that cognitive appraisal is the critical determinant of emotions, both positive and negative. This appraisal is always made according to one's well-being and can be of two types, intuitive (almost automatic) or reflective (rational) in nature. Intuitive appraisal is essential to the generation of emotion, though reflective appraisals serve to modify or change the primary appraisal. Arnold and Weiner both postulate the existence of cognitive antecedents of emotion and the existence of a reflective process, though Arnold argues that causal attributions are secondary, after the intuitive appraisal has taken place.

Current research into the emotion-attribution relationship has been influenced by Vallerand (1987) who has integrated much of the work of Arnold (1960) and Weiner (1979, 1980, 1985) into his model of the antecedents for self-related affects. He posits a specific temporal sequence of appraisals that follow athletic performance. Incoming information is appraised first though intuitive appraisal processes. When this appraisal reveals that outcomes or goals are consistent with basic self-structures, no further cognitive activity is necessary, as the fit between existing structures and the event is sufficient to lead to general affective experiences. During the cognitive appraisal process, incoming information that is perceived as being inconsistent with some important self-structures, or is novel, may lead to further cognitive activity, or reflective appraisal (e.g. attributions, intellectualization), in an attempt to assimilate

the information into existing structures or to accommodate the information into new structures. These reflective appraisals may then lead to self-related affects. In terms of defining emotions, his work has concentrated on two types, or groups of emotional responses to achievement outcomes. General affects (e.g. pleased/displeased) represent the mere reaction to an event outcome, the intuitive appraisal. Self-related affects (e.g. competent/incompetent) refer to emotions experienced in relation to one's self esteem and identity. The self becomes the *target* of the emotions. This self-evaluation may have immediate or future consequences for motivated behavior and self-concept. Both affect types, either positive and negative, are directly related to the form of appraisal, intuitive or reflective, that the individual engages in. The subjective perception of performance represents a case of intuitive appraisal and causal attributions are a type of reflective appraisal. Unlike Weiner, Vallerand suggests that intuitive appraisal is a necessary factor in emotion generation, and that reflective appraisal (e.g. causal attributions ascribed to subjective success or failure and intellectualization) though also an important influence, may serve only to modify (e.g. augment or minimize) the effects of the intuitive appraisal on the emotions experienced by athletes.

The few studies to date that have focussed on the attribution-emotion relationship have shown that causal attributions mediate affective reactions to achievement outcomes. However, this research has lacked consistency in terms of the measure of emotions and attributions, and has been inconsistent in the use of a theoretical framework or model to describe the relationship between cognitive appraisals and their outcomes, specifically intuitive and reflective appraisal processes and their influence on emotions.

The present study focused on the complex relationship between attributions and emotions through the systematic use of Vallerand's (1987) intuitive-reflective appraisal model for self-

related affects. Specifically, the model was used to ascertain the relationships between three cognitive antecedents (intuitive appraisal, causal attributions, and intellectualization) and self- and general-type affects experienced by athletes at a competitive fencing tournament.

Organization of the Remainder of the Thesis Document

The remainder of this thesis document has been organized into four chapters. The next chapter (Chapter II) contains a review of the literature that includes a description of the cognitive antecedents to emotion, illustrating through the appraisal process and attribution theory the process of emotion generation. Empirical evidence in support of a cognitive model of emotion in sport is provided. This chapter also details the purposes of the present study in which the intuitive-reflective appraisal model for self-related affects is tested, and the associated hypotheses and significance of the study are presented. Chapter III describes the methodology used in the study to test the intuitive-reflective appraisal model. The participants, design and procedures, the measures used, and the analyses performed are all explained in detail. Chapter IV presents the results of the study. This is divided into two sections, both match 1 and 2 will be analyzed separately with match 2 serving as a replication of the first match. In Chapter V the results are discussed and conclusions drawn with respect to present findings, and the model and its role in sport research, particularly in the fencing domain.

CHAPTER II

LITERATURE REVIEW

This chapter has been organized into three main sections. The first section describes the antecedents of emotion through the cognitive approach. Then, these antecedents and their consequences are discussed in terms of the attribution-emotion process. Specifically, Vallerand's (1987) intuitive-reflective appraisal model for self-related affects is illustrated within the context of Weiner's (1979, 1985) cognitive model from which it was partially developed. Empirical evidence for the model is presented and summarized, highlighting those gaps in the area that were addressed in the present study. Lastly, the purposes and hypotheses tested are detailed and the significance of the present study is then described.

Emotion Antecedents

Cognitive Appraisal

Researchers that support the cognitive approach to the study of emotion suggest that cognitive appraisals are used by an individual to attempt to treat incoming information from the environment in a coherent and meaningful way (Arnold, 1960; Lazarus, 1984; Schachter, 1964; Weiner, 1985a; Vallerand (1987). Epstein (1973) asserts that the individual cognitively appraises an event or situation as it pertains to their self-structures, thus enabling incoming information to achieve meaning and to be coherently organized (Vallerand, 1987). Vallerand (1987) has proposed a cognitive model of intuitive-reflective appraisal for affects, particularly self-related affects, in achievement situations. Fundamental to this model is that emotion is the result of cognitive appraisal, that is, it is the subjective appraisal of events and not events per se that produces emotions. According to Buck (1985) and Vallerand (1987), cognitive appraisals can be intuitive (almost automatic) and reflective (deliberate) in nature.

Intuitive Appraisal

Intuitive appraisal involves minimal cognitive processing. It is akin to one's almost automatic subjective assessment of performance. For example, the knowledge that one has not fenced well is often immediate following (or during) a bout without the need for more elaborate forms of cognition. With respect to sport performance in general, the mere understanding that one has either performed well or poorly, represents the most important form of intuitive appraisal (Vallerand, 1987).

Incoming information is appraised first though intuitive appraisal [see Figure 2, Item 1]. When this appraisal reveals that outcomes or goals are consistent with the basic self-structures, no further cognitive activity is necessary, as the fit between existing structures and the event is sufficient to lead to affective experiences. In such instances, task importance (Brown & Weiner, 1984; Weiner & Brown, 1984), or meaning, plays an important role in the intensity of the emotion experienced. Intuitive appraisal is always implicated in the formation of emotion [Item 2a]. Indirect evidence for this postulate indicates that affect appears to be experienced in the absence of reflective appraisals (Buck, 1985), and the subjective assessment of performance is often a more important determinant of affect than reflective appraisals, such as attributions (Forsyth & McMillan, 1981; McMillan & Spratt, 1983). For instance, Weiner et al (1978, 1979) found that irrespective of the attribution made, certain affects were related to outcome (intuitive appraisals). These outcome-dependent or general affects (e.g. happy/sad), represent the mere reaction to an event. Thus, if a fencer may be happy in the case of success or sad in the case of failure. These general affects were reported more often and were rated as generally more important than self-related affects. Thus, Vallerand (1987) has proposed the intuitive-reflective

appraisal model and attempted to show that intuitive appraisal is always involved in affect generation.

Reflective Appraisal

Reflective appraisal involves the deliberate cognitive processing of information dealing with the external or internal environment. It can take many forms, all of which may be used in sport. The postulated reflective appraisals are: (a) intellectualization, (b) comparison (self, outcome, and social) processes, (c) mastery-related cognitions, (d) information processing functions, and (e) causal attributions (Vallerand, 1987). During the cognitive appraisal process, if the incoming information is perceived as being inconsistent with some important self-structures, or is novel, arousal may be experienced [Item 2c]. This arousal may then lead to further cognitive activity, such as reflective appraisals (e.g. attributions, intellectualization), in an attempt to assimilate the information into existing cognitive structures or to accommodate the information into new structures and thus reduce arousal [Items 3 i-v]. These reflective appraisals may then lead to self-related affects. Self-related affects refer to emotions experienced in relation to one's self esteem and identity that may have immediate or future consequences for motivated behavior and one's self-concept. Clearly, the self is implicated in all emotions, however, with respect to self-related affect, the self becomes the *target* of the emotions, as these affects connote an evaluation of the self and a judgement of it (Vallerand, 1989). For example, emotions such as competence, pride, insecurity, and confidence represent self-related affects. Thus unlike general affects which are not evaluative in nature, self-related affects are related to core elements of the individual's self-concept and self-esteem systems (Vallerand, 1989). As well in the generation of affects, reflective appraisal processes may modify the intuitive appraisal process[Item 2d]. According to Lazarus (1966), intellectualization refers to a detached view of an event, and may

create a dissociation between thoughts and emotions. It is a defensive orientation that alters the appraisal process, reducing the perception of threat and thus the negative emotional impact of the event. Most studies however. have dealt mainly with the attributional reflective appraisal, and have failed to incorporate other reflective processes. The present study attempted to rectify this omission by investigating intellectualization in terms of fencers' ratings of their bouts in terms of subjective task importance (Vallerand, 1987).

Causal Attributions

Causal attributions are a specific type of reflective appraisal. Attributions, simply put, are the inferences individuals make in order to interpret and understand why certain events occur. For example, a fencer may attribute a win against a difficult opponent to hard work and/or luck. There are any number of factors that individuals may appraise as causal of an event. Research into attribution theory with respect to achievement in sport has been predominately driven by Bernard Weiner's (1979,1985) attributional model of achievement motivation and emotion. His theory emphasizes the importance of causal attributions in explaining the consequences of perceived success/failure outcomes (Frieze, Francis, & Hanusa, 1983). Weiner's cognition-emotion model (see Figure 3) centers on the premise that following an achievement outcome, individuals will engage in causal search to determine or evaluate why a particular outcome occurred. It is unclear from the literature however, whether individuals always engage in some form of causal search. Weiner (1985) explains that individuals are motivated by a need for mastery and effective management of behavior. One wants to understand an outcome in order to obtain the same result at another time if successful, or avoid a similar result if one fails. Causal search is most evident when an outcome is unexpected — failure/success is anticipated but not realized, and when desires have not been fulfilled (e.g. achievement goals are not reached, there

is personal rejection). For example, a loss to an opponent that has much less experience than oneself is unexpected and may lead to causal search by the loser of the bout.

The specific reasons employed to explain and understand achievement outcomes are referred to as causal attributions. The original model (Weiner et al.,1979) identified four causal attributions most commonly attributed to achievement outcomes, ability, effort, task difficulty, and luck (Figure 4). However, further research and theory development has demonstrated that there are any number of other ascriptions to which causality may be inferred, such as mood or task characteristics (Weiner, 1985). This is particularly true in the domains of sport and physical activity (McAuley, 1992).

A number of common properties or dimensions that underlie all causal ascriptions have been identified. The three most common dimensions include: the locus of causality, stability, and controllability (Figure 4). Locus of causality refers to whether the cause of the performance or achievement outcome is perceived as internal or external to the attributer; in other words, if the cause is determined to reside within the individual or is ascribed to the behavior of others. An internal attribution has been made if a fencer attributes a win to personal ability. If a fencer believes that a point is lost due to a scream that an opponent made, an external attribution may have resulted. Stability concerns the relative variability of the cause over time. Thus, if a fencer loses a bout and ascribes this loss to lack of practice, an unstable attribution has been made, one that can be changed. A loss ascribed to lack of innate talent is a stable attribution and change is not thought to be possible. Controllability determines whether the cause is deemed to be under the control of the attributer or other people. McAuley, Duncan and Russell (1992) have divided the control dimension of the Causal Dimension Scale (CDS) into personal and external control, depending on which is the most salient cause. Thus, a win may be considered related to self-

confidence, yet this may be because the fencer engages in self-talk (internal control) or because the coach gave positive feedback (external control) to the fencer. Any causal attribution may be a combination of any of the three dimensions (Figure 4). For instance, if a fencer wins a bout and ascribes this outcome to ability, this is a internal, stable and uncontrollable attribution.

Many researchers have fallen prey to what Russell (1982) has termed the "fundamental attribution error" by assuming that the investigator can accurately predict how the subject perceives an attribution, in terms of causal structure. This ignores individual phenomenology by excluding a factor fundamental to the attribution process, that is, that the participant is an active agent (McAuley & Gross, 1983; Rejeski & Brawley, 1983; Russell, 1982). In an attempt to rectify this problem, Russell (1982) developed the Causal Dimension Scale (CDS) in order to measure how *individuals* perceive and classify causes. The respondent codes a causal attribution(s) that has been made, along a series of scales representing the three dimensions. For instance, the individual is asked to rate to what degree an outcome is temporary or permanent – a rating on the stability dimension. Much of the current research on attributions now utilizes the CDS, and most recently the revised scale (CDSII) has been developed to address various validity and reliability issues within the CDS (McAuley, Duncan & Russell, 1992). This study was the first to use the CDSII in situ, in a competitive sport context.

Many studies have examined causal attributions in the sport domain. These have focused on the specific causes of success and failure in particular types of sport, and the influence of factors like gender, expectancy of success, or specific information on causal attributions (Biddle, 1995). For a full review of the current status of attribution theory in sport see Biddle (1993) and McAuley (1992).

Certain findings are germane to the present investigation. A common approach to the study of attributional processes in sport has been to try to determine whether different patterns exist among the attributions made for achievement outcomes, that is, whether winners and losers ascribe success or failure differently (McAuley, 1992). Generally, winners tend to make dispositional/internal attributions (e.g. ability) for outcomes, whereas losers identify situational/external (e.g. poor judging) causes for outcomes. This pattern of responses, identified as a hedonic or self-serving bias, is commonly interpreted from a motivational perspective (Brawley & Roberts, 1984; McAuley, 1992), whereby one's need for the preservation of self-esteem governs one's attributional thinking. Success therefore, may lead to internal attributions (e.g. ability) that serve to enhance one's self-esteem, and failure may produce external attributions that attempt to protect self-esteem (e.g. difficult opponent). This attributional distortion is more likely to occur in situations of importance to the individual (Biddle, 1993). The present study identified fencers in terms of their attributions as they pertained to objective success and failure and assessed the effects of task importance (i.e. intellectualization) on emotions.

Many studies have identified a distinction between subjective and objective outcomes. A seminal study by Spink and Roberts (1980) demonstrated that perceived/subjective outcome and absolute/objective (i.e. winning and losing) outcomes were not isomorphic. They obtained attributions for winning and losing from racquetball players after a match. Then, based on the athletes' assessment of satisfaction with their performance, participants were classified into one of four categories: satisfied winner (clear win), dissatisfied winner (ambiguous win), satisfied loser (ambiguous loss), dissatisfied loser (clear loss). Winners made more internal attributions than losers, in accordance with the self-serving bias. However, the first "clear outcome" groups

had higher internal attributions than those with ambiguous outcomes. Clear outcomes yielded attributions to ability and effort, while ambiguous outcomes were related to attributions of task difficulty. This study was important, as the authors recognized the need for differentiating between outcome and subjective performance in future studies. Clearly, a distinction must be made between the objective outcome and subjective performance, for example, the bout score (objective loss) versus the fencers' satisfaction with an improved performance over a previous bout (subjective win).

Attribution consequences: The attribution-emotion process.

According to Weiner (1985) the attributions that one makes may influence subsequent emotions and behavior. The attribution process proceeds in the following manner (see Figure 3). After an event, an individual may interpret an achievement outcome as positive (goal attainment) or negative (non-attainment of the goal) [Item 1]. The individual may then experience some immediate emotional reactions that are almost "automatic" reactions to the outcome (the primary appraisal) and are termed outcome-dependent emotions (Weiner, Russell & Lerman, 1979) [Item 2]. These are what Vallerand (1987) has termed general affects, and are products of the intuitive appraisal process (Figure 2). These emotions take the form of feeling good/happy when one is successful and feeling sad/frustrated when one fails, *regardless of the reason* for the outcome, that is, these affects are independent of attributions. The individual may then engage in causal search, in an effort to determine why the outcome occurred, especially if the outcome is unexpected, negative or important [Item 3]. Some conditions that may promote this search (causal antecedents) include information like personal history, hedonic biases, and the performance of others. Once an attribution has been formulated, it is processed in terms of its relative dimensional placement with respect to locus of causality, stability, and control [Item 4].

These dimensions impinge upon future expectancies and emotions [Item 5]. Weiner identifies the stability dimension as being instrumental in the formation of future expectancies (success/failure) and the locus of causality and control dimensions to be the predominant antecedents of emotions. However, a number of researchers have shown that all three causal dimensions are related to emotions (McAuley & Duncan, 1990a; McAuley, Russell & Gross, 1983; Vallerand, 1987).

Emotional reactions to this causal search are termed attribution-dependent emotions (Weiner et al., 1979). Many emotions are discriminantly related to specific causal attributions. For example, a successful outcome attributed to ability may lead to feelings of competence, and failures attributed to lack of ability may lead to feelings of incompetence. Weiner (1979, 1985) contends that the locus of causality dimension is the crucial determinant of these emotions which Vallerand (1987) terms self-related affects (Figure 2). These affects, are associated with internal attributions and are related to an individual's sense of self-esteem. External attributions on the other hand, are thought to be linked with positive or negative affects felt toward another person or event that influences the performance outcome. Thus, internal attributions such as ability and effort, that are made for one's success should have a positive impact on self-related affects. External attributions however, should minimize positive effects on self-related affects. For example, if a success is internally attributed to ability, one may feel competent. Attributing success to the lack of ability of one's opponent however, may make the fencer feel competent but less so than if the attribution was internal. In situations of failure however, the opposite should occur. Thus, if a fencer internally attributes a loss to inability, then feelings of incompetence may ensue. An external attribution, such as the observance of an opponent's

superior ability will minimize the negative effects of a loss, and the fencer will not feel as incompetent, compared to an attribution made when the opponent is less skilled than themselves.

Other causal dimensions have similar positive and negative effects on emotions. Stability may influence future outcomes, as well as the magnitude of emotional reactions, particularly for self-related affects. For example, a failure attributed to a stable attribute, like ability, may lead to feelings of depression. Controllability is hypothesized to generate emotions that are related to moral or ethical factors. For example, a controllable failure that is considered external to the individual, like poor judging, may lead to anger. And an uncontrollable failure attributed to lack of ability and internal factors, may lead to shame.

Finally, expectancy and emotions are presumed to determine action or behavior [Item 6]. Actions can be described in terms of their intensity and latency. For instance, if a fencer has a low expectancy of future success, he/she may feel sad, hopeless and have low self-esteem. These conditions promote withdrawal and behaviors that are not instrumental to the attainment of the desired goal, like lack of practice. The fencer may then not continue to participate in the future (Weiner, 1985), based on a combination of feelings of negative self-worth and poor performance.

The diagram of Weiner's model (1985) appears unidirectional, although it is known that this is not the case. Expectancy of success/failure may influence attributions, and emotions can be important attributional cues — dashed lines in Figure 3 indicate possible processes [Item 5]. For example, if an athlete overhears an onlooker groan in disbelief after what is perceived an easy point that was lost, the fencer may experience an increase in his/her belief that this personal failure was due to low ability, and this in turn may affect belief in possible future personal success.

Vallerand (1987) in keeping with the cognitive approach has modified Weiner's theory. His model is in partial agreement with Weiner's (1985a) theory of emotion with respect to the role of the intuitive and reflective (attributional) appraisal processes in the production of self-related (attribution-dependent) and general-type (outcome-dependent) affects. Weiner proposes that in achievement situations the outcome produces general-type affects [Figure 3, Item 2] whereas attributions have an impact on self-related affects [Item 5]. Vallerand's (1987) model however, posits that the intuitive appraisal of performance has important effects on *both* general and self-related affects [Figure 2, Items 2a, b]. Positive and negative self-related affects may result from the effects of intuitive and reflective appraisals (Vallerand, 1983).

Attributional processes may not always be involved in the emotion process, though when engaged, attributions may influence both types of emotion. Vallerand suggests that reflective appraisal is not necessary for self-related affects to occur, and serves only to modify, minimize, or augment the effects of the intuitive (or performance) appraisal on affects [Figure 2, Items 2c, d]. These minimizing and augmenting functions are based on the relationship with the intuitive appraisal and not on affects per se. Internal attributions are hypothesized to have augmenting functions in success and failure conditions because they are expected to act upon emotions in the same direction as the intuitive appraisal, whereas external attributions are hypothesized to play a minimizing role because they are expected to have effects opposing to that of the intuitive appraisal on emotions (Vallerand, 1987).The model also proposes, unlike Weiner, that several types of reflective appraisal in addition to attributional processes, such as intellectualization and comparison processes, may have causal effects on emotions [Figure 2, Items i through v].

Thus, affects may be general of more specific in nature. Both Weiner and Vallerand agree that affects are a consequence of cognitive appraisal processes. The distinction between their two

theories however, lies in the roles that each appraisal process plays in affect generation. Unlike Weiner, Vallerand posits that intuitive appraisal a *necessary* requirement for emotional experience and that it is related to *both* types of affect. As well, he states that reflective appraisal processes may not be necessary to generate emotions, though they may modify the intuitive appraisal process, augmenting or minimizing effects on emotions.

The Intuitive-Reflective Appraisal Model

Vallerand (1987) conducted two studies examining the relationship between causal dimensions and self-related affects following sport performance. The first study tested the potential role and relative contributions of intuitive performance appraisal and reflective attributional appraisal in the production of general and self-related affects in success and failure conditions. It was hypothesized that the intuitive appraisal would be implicated in the production of both types of affects in both success and failure conditions. Causal attributions (i.e. reflective appraisals) were expected to be involved in the generation of negative affects much more than in positive affects, as Vallerand (1987) proposed that inconsistencies between self-structures and events generate substantial reflective appraisal. Internal attributions were expected to augment the effects of the intuitive appraisal, while external attributions were expected to minimize the effects of the intuitive appraisal. Thus, intuitive appraisal was expected to be positively related to affects, and internal attributions were hypothesized to be positively and negatively related to affects in success and failure conditions, respectively.

This first study had French-Canadian high school basketball players complete scales assessing intuitive performance appraisal, reflective attributional appraisals, and general and self-related affects following a game. For the intuitive appraisal measure, participants were asked to subjectively evaluate their performance: "To what extent have you had a good or bad game as a

player today?". Reflective appraisals were assessed by asking the participants to what extent the following factors caused their good (bad) personal performance: luck (bad luck), support (lack of) from coach, help (lack of) from teammates, and the basketball court, represented external attributions; mood, ability (lack of), discipline (lack of), effort (lack of), represented internal attributions. These attributions were judged by three experts as reflective of Weiner's (1979) three-dimensional taxonomy of locus, stability, and controllability (Figure 4). Participants were then asked to indicate how they felt using six affects: four self-related (shame/pride, incompetence/competence, insecure/confident and discouraged/encouraged) and two general-type affects (dissatisfied/satisfied and sad/happy).

The study provided preliminary support for the intuitive-reflective appraisal model for self-related affects. Both the intuitive and reflective (attributional) performance appraisal had important effects on self-related and general-type affects, especially in the perceived success condition. More specifically, the intuitive appraisal was the main predictor for both positive and negative self-related affects. The postulate that reflective appraisals augment the effects of intuitive appraisal received only partial support, with internal attributions augmenting the effects of intuitive appraisal on affects only in the perceived success condition. No effect was found for internal attributions in the perceived failure condition. This may support the postulate that these attributions need not be involved in affect generation, as reflective appraisals are seen as sufficient but not necessary causes of self-related affects. However, past research suggests a role for reflective appraisal in inconsistent, unexpected and surprising outcomes (Weiner, 1985). The players may have expected failure, limiting conflict between existing self-structures and outcomes, and thus reflective appraisal was not necessary. External attributions showed a similar pattern of results to that of internal attributions, thus failing to support the hypothesis that

external attributions minimize the effects of the intuitive appraisal on self-related affects following success or failure.

For general-type affects, intuitive appraisal was always involved in the generation of self-related affects in the perceived success condition. Internal and external attributions both augmented intuitive appraisal. In the perceived failure condition, intuitive appraisal and internal attributions had limited effects on general affect. External attributions, however, minimized affect. Thus, external attributions facilitated positive general affects in the perceived success condition, and decreased negative general affects in the perceived failure condition. These findings support Vallerand's model yet contradict Weiner's (1979, 1982, 1985a) postulate that general affects are produced only by the outcome (i.e. intuitive appraisal).

To summarize, this first study provided support for the model, showing that both intuitive and reflective (attributional) appraisal processes are involved in the generation of self and general affects, especially in the perceived success condition.

The second study (Vallerand, 1987) was conducted in a laboratory setting, and tested the relative contribution of the two types of appraisals in the production of general and self-related affects in success and failure conditions, as well as the influence of the intellectualization process (Lazarus, 1966) on affect. Also tested, was the postulate that the subjective outcome (the intuitive performance appraisal) has more potent effects on affect than does the objective outcome. This study also addressed a number of methodological weaknesses that were present in the first study. Intuitive appraisal was assessed using two items instead of one, and a larger number of affects were rated. As well, instead of the researcher inferring them, the athletes' rated their perceptions in terms of the causal dimensions of locus, stability and controllability inherent in reflective appraisals, using the Causal Dimension Scale (CDS) (Russell, 1982).

It was hypothesized that the intuitive performance appraisal would be implicated in the generation of self-related and general affects and be positively related to both types of affects in success and failure conditions. Objective success/failure was expected to have a significant effect on both types of affect, with success producing increases and failure decreases in self-related and general affects, though intuitive appraisal effects were expected to be significantly more important than those of objective outcome. All three causal dimensions and task importance, were hypothesized to play an augmenting function on both types of affects in success/failure conditions. Intellectualization, in the form of task importance, was included here in order to investigate the potential effects of another type of reflective appraisal other than causal attributions.

Undergraduate psychology students were randomly assigned to conditions of success, failure, and control. All participants performed a Labyrinth task, requiring visual-motor coordination, the Weber test. Following their performance, participants completed the following scales. Intuitive appraisal was assessed with two questions (a) "How would you evaluate your performance on the Weber test?" and (b) "How well do you think you did on the Weber test?". Task importance was assessed by asking, "How important was it for you to do well on the Weber test?". The CDS was administered, then the participants indicated how they felt following their performance on the test from a list of fourteen affects: seven self-related (ashamed/ proud, incompetent/competent, inadequate/adequate, stupid/smart, unskillful/skillful, ineffective/ effective, inadequate/efficient) and seven general affects (dissatisfied/satisfied, displeased/ pleased, sad/happy, discontented/contented, bad/good, pessimistic/optimistic, blue/joyful).

Additional support was found for the intuitive-reflective appraisal model. Intuitive appraisal was involved in the generation of self-related and general-type affects, in both

success/failure conditions. It also proved to be the most important source of affective experiences over the influence of objective success/failure. Thus, it is the subjective appraisal of performance and not objective performance per se that dictates which affect will be experienced. This is congruent with findings of attribution research in the sport domain (Spink & Roberts, 1980). An augmenting effect of the reflective appraisal process (i.e. causal attributions) in success/failure conditions was found for the stability and control dimensions, but only for self-related affects. This supports the finding that when dimensions of stability and control are assessed, the often reported self-serving bias (making more personal attributions in success than in failure conditions) is obtained with the stability and control dimensions and not with the locus dimension (McAuley & Gross, 1983; Russell, 1982; Vallerand & Richer, 1986). This runs counter to Weiner's position on the role of internal attributions on self-related affects, in which he hypothesized that locus of causality (internal/external) was the essential dimension related to self-esteem.

The augmenting function of the reflective attributional appraisal was only operative for self-related affects. This may reveal a form of self-serving bias, the need to experience positive self-related affects in success and to alleviate negative self-related affects in failure conditions. This, along with the finding that the effects of perceived outcome (i.e. intuitive appraisal) were more important on general affects than on self-related affects, is consistent with Weiner's distinction between outcome-dependent emotions and attribution-dependent emotions.

There was no effect for intellectualization (task importance). It was found to be unrelated to both types of affect. Vallerand suggested that this may have been due to the visuomotor task having little bearing on self-structures. The present study however, assessed athletes' perceptions of task importance in a sport context. The Carleton Invitational tournament was an important

event to many of the fencers for a variety of reasons. It was the first tournament of the year for both varsity and national fencers, and thus an ideal opportunity after the Christmas break to practice their skills at a tournament with a relaxed atmosphere. For varsity fencers in particular, this tournament was the first chance to assess their opponents before the varsity season, which began three weeks after this event. As well, most of the fencers who participated in the event and the study were varsity athletes. Thus, this particular tournament may have represented an important part of many of the fencers' self-structures, and assessing task importance in this context may have an effect in the present study, while no effect was found for the perhaps relatively low importance of the Weber task used in the laboratory.

To summarize, these two studies demonstrated that intuitive appraisal appears to be a sufficient and necessary determinant of self-related affects in both success and failure conditions. While objective outcome has an effect on both types of affect, it is secondary to that of intuitive appraisal. Thus it is the subjective appraisal of the outcome that dictates affect generation. The reflective attributional appraisal plays an important role in the generation of both types of affect, though it is limited relative to that of intuitive appraisal. Attributions may not always be involved in the emotion process. Contrary to what is believed (Weiner, 1985), internal attributions (locus of causality) may not play a crucial role in the emotion process, especially if other causal dimensions such as stability and control, are assessed. As well, while the second study increased the scope of the assessment, additional study is needed in field settings in order to support the model and assess the roles of each causal dimension.

Vallerand's (1987) model is grounded in the belief that self-related affects are prevalent consequences for individuals engaged in achievement contexts. However, much of Weiner et al.'s (1978, 1979) work has suggested that affects are also related to the outcome of the event

and are even more prevalent than self-related affects. Thus, Vallerand and Blais (1989) assessed whether self-related affects represent the most prevalent type of affect experienced in achievement domains, and whether situational factors (personal and team success/failure) had an effect on affect prevalence. Male and female collegiate basketball players recollected using the critical incident technique instances of personal and team success and failure, and reported how they felt in each of these conditions on a questionnaire. Data was collected for 11 CEGEP teams during an invitational tournament, and for 2 university teams prior to a practice session. A total of 116 responses per conditions were retained for analysis. Affects coded as self-related in the success conditions were competent, proud, confident, accomplished, and encouraged. Self-related affects in the failure conditions were incompetent, guilty, discouraged, resigned, and determined. The general-type or other-type affects reported included happy, pleased, satisfied, surprised, indifferent and relaxed in success conditions, whereas disappointed, frustrated, surprised, angry, dissatisfied, unhappy, and indifferent were reported in the failure conditions. Results revealed that across conditions, self-related affects were reported significantly more often than other emotions (63% versus 37%). As well, self-related affects were significantly more prevalent in failure than in success conditions (77% versus 57%). Personal and team situations did not have an effect on the prevalence of self-related affects. The fact that more self-related affects were reported in the failure than in the success condition, runs contrary to the postulated self-serving attributional bias (in which people take credit for their success but deny responsibility for their failures). However, the researchers suggest that this result may reflect the effects of self-focusing techniques (Greenberg & Pyszczynski, 1986 in Vallerand & Blais, 1989). Individuals may be more self-focusing following failure than following success, and that this style of thought may serve at least a maintaining function and perhaps a triggering role in the

experience of negative self-related affects such as depression. The results then, strongly support the assumption that self-related affects are prevalent experiences of individuals engaged in achievement related activities. And thus, the use of the intuitive-reflective appraisal model in future studies is warranted.

Since Vallerand's (1987) initial work, seven additional studies have tested the intuitive-reflective model or discussed it in context with Weiner's (1978, 1985) model, in achievement situations. Six of these studies have been in sport contexts, one in an educational setting.

Robinson and Howe (1989) in a study of a youth, competitive team sport, found support for Vallerand's model of intuitive-reflective appraisal. Intuitive appraisal was the main predictor of affect, regardless of type (self or general). Reflective attributional appraisal was shown to effect the generation of general affect — both internal and stable attributions facilitated positive general-type affects in the perceived success condition, and uncontrollable attributions facilitated negative general-type affects in the failure condition.

Perceived performance (i.e. intuitive appraisal) had the greatest predictive power for self-related affect in both success and failure conditions. More specifically, internal and stable attributions had augmenting effects in the success condition, and uncontrollable attributions had augmenting effects in the failure condition. The internal attributions were associated with positive self-related affects in the perceived success condition. This supports Vallerand's proposal that attributional appraisals of the internal-external type are sufficient but not necessary causes of self-related affects and serve only to modify the effects of intuitive appraisal on affect. And in line with previous findings (Vallerand, 1987; Weiner, 1985), stability had an influence on positive self-related affects in the perceived success condition. As well, uncontrollable attributions were associated with negative self-related affects in the failure condition. All of

Robinson and Howe's (1989) findings were similar across gender in both success and failure conditions. This is consistent with Vallerand's findings (1987).

In sum, while that study's aim was to investigate Wiener's theory, it provided preliminary evidence for some of Vallerand's key postulates. The findings of the study also indicated that causal dimensions have roles of varying importance in success and failure conditions. The locus of causality dimension had an augmenting influence on both types of affects for both success and failure, the effects of stability were confined to success, and the effects of controllability were confined to failure conditions. The study highlighted the augmenting role of attributions and the necessity for further investigations in this area.

McAuley and Duncan (1990) examined the roles of intuitive and reflective appraisals in the generation of self-related and general affects to gymnastic performance. Intuitive appraisal was assessed by asking the participants for a subjective evaluation of their routine performance, "How well do you think you performed in your floor exercise today?". Reflective appraisal (i.e. causal attributions) was measured with the Causal Dimension Scale Revised (CDSII) that asked the respondents to make open-ended attributions for an achievement outcome and then classify them along causal dimensions (McAuley et al., 1989). Affects were assessed by asking the participants to indicate the extent to which they experienced eleven emotions as a function of their performance during their routine. Four emotions were representative of general-type affects (depressed, happy, pleased, satisfied) and five emotions (competent, proud, shame, guilt, disappointment) represented self-related emotions. The emotions, gratitude and anger, were classified as other-related affects, though no explanation was given for this grouping. These emotions have not been consistently categorized by previous authors. The present study does not include gratitude, and identifies anger as a general emotion.

In line with the model and other studies, intuitive appraisal was found to be instrumental in the formulation of both general and self-related affects. However, self-related affects were predominately influenced by intuitive appraisal, whereas other-related affects were influenced by causal dimensions. The stability dimension showed the strongest relationship with both general and other-related affects. This follows Vallerand's contention that attributions are sufficient but not necessary precursors of affect. This study reiterates that intuitive appraisal is an important antecedent in the generation of emotions and that reflective attributional appraisals plays an augmenting role in the emotion generation process. Further studies should ascertain the role that other types of reflective appraisals have in determining affective reactions under different circumstances. The present study incorporated intellectualization, another form of reflective appraisal that Vallerand (1987) hypothesizes has an influence on athletes' appraisals and emotions relative to the importance of the task.

Biddle and Hill (1988, 1992a, 1992b) studied the relationship between attributions and emotional feeling in three studies, two in the laboratory and one in a real-world sport context. The first study (Biddle & Hill, 1988) employed a one-vs.-one 'race' on cycle ergometers in a laboratory to examine the nature of attributions for success/failure (objective win/loss) and to investigate the particular emotions related to specific causal attributions. The participants also rated the importance of winning and their degree of satisfaction with their performance. Both winners and losers of the race completed the same attribution questionnaire that was comprised of 12 attributions (Elig and Frieze, 1979). The attributions rated included: mood, previous experience, effort, ability, motivation and interest, form, and personality represented internal attributions; luck, opponent's ability, opponent's effort, opponent's form, and opponent's personality represented external attributions. However, winners and losers completed different

emotion questionnaires. The winners rated 13 emotions: satisfied, pleased, cheerful, happy, good, contented, delighted, confident, proud, appreciative, secure, and thankful. The losers rated 16 emotions: displeased, dissatisfied, frustrated, regretful, discontented, disgusted, irritated, concerned, troubled, upset, lousy, disturbed, sad, unhappy, depressed, and bitter. While the researchers incorporated a richer number of emotions than previous studies they were not described as either self or general type affects. As well, restricting the emotions rated between win and loss conditions, biases the outcome, as the researchers have assumed that all winners will experience positive emotions and all losers will experience negative emotions. These facts not only call into question the validity of the study but limit its generalization to other investigations of the attribution-emotion relationship

Biddle and Hill (1988) found that some attributions were related to self-reported emotion, though sometimes this was mediated by the importance of winning. Although winners reported mainly internal attributions (effort, mood, personality, ability, motivation) and losers reported both internal and external (opponent's personality) attributions, emotions tended to be related to internal factors for both winners and losers. This is consistent with Weiner's research. As well, the results showed a tendency toward a self-serving bias in which success was attributed to internal factors and failure to external factors. For losers in particular, high outcome importance appeared to be associated with the use of defences against particular emotions when internal attributions for the loss were made.

Of particular interest in this study is that the losers were dissatisfied with their performance, whereas winners were satisfied. This is not unusual. However, no account was made with respect to those participants that may have had ambiguous outcomes such as in the Spink and Roberts (1980) study. It is important to note that Biddle and Hill repeatedly separate

the concept of satisfaction from the list of emotions. The researchers use satisfaction with performance as a separate variable in which to categorize the athletes. And yet, they do not identify the reasons for this separation. This presents interpretation difficulties among other emotion-antecedent research. In the present study, satisfaction/dissatisfaction was used as an emotion, this is in line with the majority of researchers (e.g. Weiner, 1985; Weiner et al.,1979; Vallerand, 1987, 1989).

In the second study, Biddle and Hill (1992a) devised a one-vs.-one fencing contest in the laboratory in order to investigate the attribution-emotion relationship. This contest was performed by undergraduates that had never fenced before, and the study involved deception, that is, the outcomes (success/failure) of the one hit bouts were manipulated. Attributions were assessed for objective outcome (win/loss) and subjective intuitive appraisal of performance (satisfied/dissatisfied), as well as for performance importance. Questionnaires rating 12 attributions for outcome (win/loss), and 28 adjectives describing emotions were completed. Factor analysis revealed three emotion factors: 'positive self-esteem' (e.g. pleased, competent), 'depression-frustration' (e.g. upset, shame) and 'intropunitiveness' (e.g. sorry, guilty).

Winners made predominately internal attributions, and the losers a mix of external and internal attributions. Positive self-esteem for winners was best predicted by performance satisfaction, outcome importance and attributions (positively to mood, ability, motivation, form, inversely to luck). For losers, positive self-esteem was predicted from attributions. The 'depression-frustration' factor was predicted only by attributions (positively to personality and opponents' personality, inversely to luck). Thus, additional support was found for the relationship between attributions and emotions, though other antecedents, namely outcome importance and performance satisfaction were also related to emotions. Note however, that the

same confound exists in this study with respect to satisfaction/dissatisfaction. As well, the artificial context and manipulated contest raise questions of validity and reliability of the results. Participants were not fencers and the task was distinctly unlike fencing, and thus comparison to sport contexts is virtually impossible.

Biddle and Hill's (1992b) third study was conducted in the field and involved regional squash league athletes. This study measured the subjective appraisal of performance (satisfied/dissatisfied), attributions for objective outcome (win/loss), as well as the importance of winning and playing well. This last measure was recorded before the competition and was hypothesized to be a predictor of emotion. Factor analyses revealed three factors for both outcome and performance attributions (personal sport ability, unstable and opponent), and three emotion factors from 16 emotions (positive self-esteem, relaxation and surprised incompetence). Multiple regression analyses revealed that for winners, emotions were generally related to performance satisfaction (i.e. intuitive appraisal) rather than attributions (i.e. reflective appraisal), and the losers' emotions were best predicted by unstable attributions and perceived importance. Those players that were satisfied with their performance reported greater self-esteem after unstable attributions, while the dissatisfied players' were best predicted by opponent attributions or perceived importance.

These studies (Biddle and Hill, 1988, 1992a, 1992b) provide partial support for the dual role of the intuitive-reflective appraisal process of emotions, suggesting that in sport contexts, attributions and emotions are related, but that non-attribution variables (e.g. performance satisfaction) are also important predictors of sport-related emotion. Although Biddle and Hills' studies (1988, 1992a, 1992b) incorporated a greater number of attributions and emotions than other studies, a number of difficulties arise in the interpretation of the methods and results as

they pertain to theory, and seriously affect the validity of the results, particularly in comparison to other studies in the area. For instance, as the participants did not code their attributions with respect to dimensions, the fundamental attribution error may have had an effect on the results. The relationships between emotions and the other variables were analyzed according factors that were not consistent between studies. All three studies included a confound with respect to the satisfaction concept. As well, it is unclear in what capacity "performance importance" is being assessed. Biddle and Hill refer to it as a predictor of emotion, yet they do not express whether its effect is one of augmentation similar to that of intellectualization (task importance), used by Vallerand (1987). Clearly, a study that is consistent and incorporates the strengths of previous research needs to be conducted.

Valchopoulos, Biddle, and Fox (1996) examined the relationships between achievement goal orientations, perceived sport competence, perceptions of success, and perceived outcome attributions and their effects on children's exercise-induced feeling states following physical exercise. The children (11 to 15 years of age), participated in a performance-oriented 800-m running event as a part of the regular physical education class. They completed the Task and Ego Orientation in Sport Questionnaire, a perceived sport competence scale before the event, and after the run they completed a measure of performance success and a modified CDSII (McAuley et al., 1992), as well as the Exercise-Induced Feeling Inventory.

This study, along with McAuley and Duncan (1990) are the only studies to date, that test the attribution-emotion relationship, in a sport context, with the CDSII. For the purposes of their study, Valchopouls et al. (1996) modified the CDSII for children, reducing the number of items to 8 and used a 5-point scale format. Confirmatory factor analysis revealed a valid structure for the attributional assessment of children using this modified version of the scale. It was assumed

that children's achievement goals, perceptions of sport competence, and their casual attributions for perceived outcomes would shape their experience of the activity in different ways and these experiences would affect their emotional responses to the run. Results indicated that the objective performance feedback itself did not directly influence children's perceptions of success or failure. It was how the individuals construed this information according to their achievement orientations and perception of competence, that shaped their perceptions of success/failure in the activity. As well, the locus of causality dimension operated as a mediator of the effect of perceptions of success on the state of positive engagement. The more successful the participants felt, the more likely they were to attribute their outcome to reasons perceived as internal and personally controllable. However, more internal attributions for success led to less positive engagement. It appeared that perceptions of success themselves were stronger influences on affect than the attributional dimensions. This is in accordance with other cognitive theorists, namely Arnold (1970) and Vallerand (1987), that argue that despite the important influence of reflective appraisals, it is the intuitive appraisal that is the major determinant of affects.

Summary

It appears that causal dimensions do indeed mediate affective reactions to achievement outcomes (Weiner, 1985). However, affect does not occur only as a function of post-outcome causal search (McAuley, 1992). Other cognitive processes, like intuitive appraisal, appear to influence post-outcome affect (McAuley and Duncan, 1990a; Robinson and Howe, 1989; Vallerand, 1987, 1989; Valchopouls et al., 1996). As well, the type of reflective appraisal that is used, and whether the appraisal is objective or subjective, differentially influences the attribution-emotion relationship (Biddle & Hill, 1988, 1992a, 1992b; Vallerand, 1987; McAuley and Duncan, 1990a; Robinson and Howe, 1989).

Questions remain however, due to the lack of consistency between the studies with respect to the nature, number and definitions of the attributions and emotions investigated. No two studies have utilized the same emotions, nor have they systematically dealt with the distinction between self-related and general-type affects. The variable measure of attributions, with the questionable validity and reliability of the CDS and the fundamental attribution error inherent in the use of attribution lists, does not lead to confirmatory interpretation of the previous studies.

As well, Vallerand (1987) was the only researcher that attempted to measure another reflective appraisal process, that is, intellectualization, in one of the first studies using the intuitive-reflective appraisal model. It is unclear whether the performance importance variable the study by Biddle and Hill (1992b) refers to intellectualization as having an augmenting function on intuitive appraisal.

Almost all of the studies involved some form of manipulation, either by manufacturing the outcome (e.g. Biddle & Hill, 1988), manipulating the attributions made (e.g. McFarland & Ross, 1982), or utilizing tasks that were not typical of sport practices (e.g. Biddle & Hill, 1988; Vallerand, 1987).

Most studies have been conducted in the laboratory (e.g. Biddle & Hill, 1988; Vallerand, 1987 Study 2). The two studies that were conducted in situ, contributed to the literature with their use of the CDSII, however, the Valchopoulos et al. (1996) version of the CDSII was their own construction, not the validated scale constructed by McAuley et al. (1992). As well, both studies tested children and neither sport tested was competitive in nature. The gymnastics study was in the course of regular training (McAuley et al., 1990) and the other study was an induced exercise program (Valchopoulos et al.,1996).

No study has assessed athletes in situ and intra-individually. Thus, there is no information regarding the consistency of the model for specific individuals or over time. This is a significant gap in the literature, as prediction and subsequent planning of intervention programs is one of the main purposes of this type of research. Knowledge about the attribution-emotion process at this time cannot reach those who need it most, the athletes.

The Present Study

Purposes

In general, the purpose of the present study was to investigate cognitive processes that generate emotional reactions in sport. Specifically, Vallerand's (1987) intuitive-reflective appraisal model was tested in a competitive fencing tournament. To do this, three cognitive antecedents from this model were assessed with regards to their relationships to self- and general-type affects: (a) intuitive (performance) appraisal, and two forms of reflective appraisal (b) casual attributions and intellectualization (task importance). The role of intuitive and reflective appraisals in the production of self-related and general affects in two conditions, objective outcome (win/loss) and subjective outcome (perceived success/failure) conditions was determined.

Unique to this study was the use of a replicative design for the study of affect generation. The same cognitive antecedents were assessed twice for each fencer, over two different matches. Thus, the results of the first match could be compared to the results of the second, providing important information with respect to the test of the model on the same individuals at different times.

Hypotheses

It was posited that this study would support the "intuitive-reflective appraisal model" (Vallerand, 1987) and that of past research in this area (e.g. Biddle & Hill, 1988, 1992a, 1992b; McAuley and Duncan, 1990; Robinson and Howe, 1989).

Objective outcome and subjective outcome (i.e. intuitive appraisal)

1. Objective outcome (win/loss) was expected to have an effect on both self- and general-type affects. Specifically, those fencers who reported an objective success (i.e. a win) were expected to have higher levels of positive self- and general-type affects than those who reported an objective failure (i.e. a loss).
2. Perceived subjective outcome (i.e. intuitive appraisal) was expected to have an effect on both self- and general-type affects. Specifically, those fencers who perceived a subjective success were expected to have higher levels of positive self- and general-type affect than those who perceived an subjective failure.
3. Perceived subjective outcome (i.e. intuitive appraisal) was expected to have a significantly greater effect on both self- and general-type affects in success/failure conditions than objective outcome.

Reflective appraisal

1. When reflective appraisal occurs, attributions were expected to have an effect on both self- and general-type affects. With respect to each attributional dimension and conditions of subjective perceived success/failure, it was hypothesized that:

a) Locus of causality

i. In the perceived success condition, fencers who made internal attributions were expected to report significantly more positive self- and general-type affects than fencers in the perceived failure condition.

ii. In the perceived success condition, fencers who made external attributions were expected to report significantly more positive self- and general-type affects than fencers in the perceived failure condition.

b) Stability

i. In the perceived success condition, fencers who made stable attributions were expected to report more positive self- and general-type affects than fencers who made unstable attributions.

ii. In the perceived failure condition, fencers who made unstable attributions were expected to report more positive self- and general-type affects than fencers who made stable attributions.

c) Controllability (Personal and External control)

i. In the perceived success condition, fencers who made controllable attributions were expected to report more positive self- and general-type affects than fencers who made uncontrollable attributions.

ii. In the perceived failure condition, fencers who made uncontrollable attributions were expected to report more positive self- and general-type affects than fencers who made controllable attributions.

2. In general, those outcomes that were attributed to be internal, stable and controllable were expected to play an augmenting function in both conditions on intuitive appraisal. An

augmenting effect of the reflective appraisal for the locus of causality dimension (internal/external) was expected to be present on the intuitive appraisal, if the reflective appraisal went in the same direction as the intuitive appraisal, and also added a significant portion of the variance in predicting affect.

3. Intellectualization, in the form of task importance, was expected to have an augmenting influence on self- and general-type affects in success/failure conditions.
4. Replication – Match 2

It was expected that the fencers would respond to objective outcome (win/loss) and subjective outcome (perceived success/failure) conditions according to the above hypotheses, with respect to the effects of intuitive appraisal, casual attributions and intellectualization on self- and general-type affects. As no other study to date has been of a replicative design, the results of match 2 are also expected to support the intuitive-reflective appraisal model (Vallerand, 1987).

Significance of the Study

The present study is important for a number of reasons. The respective roles of intuitive and reflective appraisal in the generation of self-related and general-type affects have not been firmly established (Vallerand, 1987), particularly in actual sport contexts. This study measured the variables pertinent to the model in a fencing tournament, using a replicative design. Thus, contributions to the understanding of the roles of the appraisal processes in affect generation have been made, with respect to contextual factors and the consistency of the model for individuals over time.

Vallerand (1987) had tested the emotion antecedent, intellectualization, in his second study, though posited that the laboratory task performed may not have had any effect on intuitive appraisal as it may not have been of importance to the participants. From the researcher's

experience this tournament was meaningful to the participants. It was pertinent based on the fact that it was the first of the season and it was proximal to both the varsity and national seasons. Therefore, this measure of reflective appraisal was included in the study, as no other study has yet assessed task importance (i.e. intellectualization) in a sport context that had meaning to the participants.

This study shall contribute to the body of knowledge that pertains to the cognitive antecedents of emotion in sport, through careful measurement of the constructs utilizing: (a) a valid and reliable, current attribution scale (CDSII) and (b) an emotion scale that that was constructed to take into account the variable nature of the emotions or affects used in previous research and to clearly delineate the type and number of affects to be assessed.

In terms of the practical implications of this research, the determination of the predictors, or antecedents of emotions, is valuable not only to researchers but to athletes and coaches who are interested in performance enhancement. Emotions influence future behavior and performance (Weiner et al., 1979, 1985) and in order to effect change in performance, athletes could utilize personal information with respect to their attributions and related emotions to tailor cognitive and behavioral coping strategies that are specific to their needs. Specifically, if one is concerned with changing an athlete's beliefs about potential ability or effort within a sport, information about attributions and emotions, may help to invalidate negative beliefs and lead to positive attributions that may help create self-confidence and positive expectancies (Brawley & Roberts, 1984).

As Vallerand's (1987) model is relatively untested, it is important to apply the model systematically to a sport context, in situ, unmanipulated in any way, and provide a measure of individual responses at different times. Unique to this study, is the focus on individuals within a

team context. Thus, this study extended the measure of the attribution-emotion relationship over two matches (pools) in the fencing tournament, in order to provide a comparison of the measure of the variables measured, for the same individuals over two events. This replicative design has the advantage of testing the postulates of the model twice, keeping the individuals constant as the tournament progressed, thus providing a method of assessing the variables over time.

CHAPTER III

METHODOLOGY

This chapter presents a description of the methodology that was used in this study. The four sections describe the participants, the design and procedures followed, the measures used to assess the variables of the model, and lastly, the analyses used to verify the hypotheses.

Participants

A total of 114 fencers Canadian University and National club fencers from the Carleton University Invitational tournament participated in the tournament. Of these, 17 competed in two weapon classes, these individuals were only assessed for the weapon that they competed in first. A total of 63 fencers participated in this study. Of these 63 fencers, there were 45 males and 18 females who participated in one of three weapon classes – 23 foil, 29 épée and 11 saber. Table 1 illustrates the distribution of fencers in terms of weapon and gender. Each fencer was part of a single team that consisted of three same-sex fencers. Participants' ages ranged from 16 to 42 years, with a mean age of 22 years (SD = 5 years).

The fencers' skill level ranged from novice to expert, measured by the number of years fenced, and their rank and classification set yearly by the Canadian Fencing Federation. This classification system is described in Appendix A. The fencers' experience ranged from 3 months to 18 years, with a mean of 4 years experience (SD = 3.5 years). Only 9 fencers had National classifications, two A's, two B's, and five C's. Thus, participants were primarily of the novice category.

Table 1

Distribution of Fencers in terms of Gender and Weapon

		Weapon		
Gender	n	Foil	Épée	Saber
Male	45	19	15	11
Female	18	4	14	0
Total	63	23	29	11

Design and Procedures

This study was associational in nature, with replication and repeated measures. No variables were manipulated in this study. Each individual completed two measures of the same variables, at two different times during a single tournament. Although a total of 89 fencers participated in the study, only 63 completed the questionnaire at least two times and therefore, only these fencers were included in the analyses. The two matches were analyzed separately. The second match, served as a replication of the first. Thus, match 1, was the test of the hypotheses of the intuitive-reflective appraisal model, and match 2 served as a replication, with the advantage of having the same participants and the same environment. Thus, there were N = 63 fencers in each match analysis.

Permission to use the facilities and approach the fencers was obtained from the head coach at Carleton University, Ottawa, Ontario in the Fall of 1997. A letter of information as well as a request for participants was also sent to each club that intended to participate in the tournament (Appendix C). These letters were sent within two weeks of the tournament as the

researcher received confirmation from the tournament organizers of the teams' attendance at the event.

The researcher had no part in the selection of participants. The fencers were part of teams that were determined prior to the competition by their coaches. Their inclusion in particular teams and thus their participation in the tournament, was based on factors such as skill level, availability, desire to compete, and team membership. Team membership remained constant for the entire tournament. Internal validity control measures included, use of the same location with familiar fencing formats, judges and gymnasium and technical apparatus. As well, data collectors were assigned particular pools and this was constant for all matches.

The participants competed in an organized fencing tournament that was part of the regular varsity season in January, 1998. All participants were required to use International Fencing Federation, regulation uniforms and masks in order to limit physical risk. The tournament used the international relay format, and all weapons followed the same bout sequence. An example of this bout order is illustrated in Appendix B. Before the tournament began, all judges and tournament officials were made aware of the study at the meeting of the Directoire Technique (tournament technical director). At the start of the tournament, each weapon class had its own Coaches' and Captains' general meeting before its own event began. The timing of these meetings depended on the organization of the tournament. For instance, on the first day of competition, three weapons fenced, and the first round for each weapon was held after the completion of each weapon's round. The researcher attended every meeting in order to describe the study and the need for research on emotions and attributions, particularly for the sport of fencing. At these meetings and when the fencers were given the questionnaires, their participation was described as voluntary and confidential. As well, all fencers and coaches were

informed that withdrawal from the study would incur no penalty. No coaches or captains refused to inform their teammates or participate in the study. Though not every fencer participated, only three refused outright to participate, the others either did not fully complete the questionnaire or decided after they agreed not to participate. All coaches, captains and officials were introduced to the research assistants. This procedure was followed on both days of data collection.

There was no deception in this study. The letter sent prior to the tournament informed the coaches and fencers that the main objective of the project was to examine the relationship between perceptions of performance and emotions in sport, through fencers' bout descriptions. Fencers were also informed as to the purpose and testing nature of the study by their coaches and team captains after the meetings, as well as by the researcher and her assistants when they were given the questionnaire on piste after their first match.

Data was collected only during the first round of the tournament. For this round, the teams were ranked and divided into pools. For example, in the case of men's épée, 12 teams were divided into 3 pools of 4 teams. Therefore, for each team, three matches were completed. A single team match has nine bouts total, with the first team to reach 45 hits winning. Each participant fenced a total of three times in each match. However, each fencer completed only a single questionnaire directly after the last bout was fought in each match. Thus, each fencer had the opportunity to complete three questionnaires, over a total of three matches in their first round.

After their first final bout, the fencers were instructed to read and complete the consent form (Appendix D). Once permission had been granted, they were asked to complete the questionnaire (Appendix E). The fencers provided their date of birth and the last four digits of their phone numbers on all questionnaires. This preserved the anonymity of the fencers and

served as an identification code to assist the researcher in the pairing of the questionnaires from each match for analysis.

Every attempt was made not to interfere with fencers' focus and preparation. This was the reason that data was collected only during the first round, when fencers had more time between matches and were not as pressured as they may have been during direct elimination bouts further along in the tournament.

In terms of debriefing procedures, fencers were given a contact sheet at the end of the tournament, that described the study and provided the names and contact information of the researchers as well as the Chair of the Ethics Committee, and were told that if they had any questions or concerns not the hesitate to contact the individuals named.

Questionnaire

There were two versions of the questionnaire, the first included the request for demographic information, and the second omitted this in order to limit the time required for fencers to complete the questionnaire on subsequent occasions. Each questionnaire took approximately 10-15 minutes to complete. These versions were later matched by the researcher using the identification on the first page of the questionnaire (date of birth and last four digits of the fencers' phone numbers). Thus, enabling the researcher to separate those fencers who had completed the questionnaire twice ($N = 63$) from those who had only completed one ($N = 89$).

The questionnaire included bout information, four scales and a section that asked for fencers' demographic and background information (Appendix E). For all sections of the questionnaire, fencers' were instructed to base their responses on their own performance for their last bout in a team match, not on their teams' performance. The scales assessed intellectualization, intuitive appraisal, causal attributions, and self- and general-type affects. Two

questionnaires were completed by each fencer at two different times during the tournament therefore, internal consistency measures are given for match 1 and match 2 for each scale.

Bout Results. This section provided information for objective outcome assessment and analysis of the fencers' performance. The fencers recorded their own results as well as their team's results for each match. This included bout and match scores, as well as whether or not they won or lost in terms of both individual and team results. Thus, each fencer recorded two final bout scores (one individual and one team) and circled whether each had won or lost twice, in each questionnaire. They also recorded the name of the opposing team, in order for the researcher to validate fencers' responses with the final results provided by the Directoire Technique. Final tournament results for all individuals and teams were also recorded by the researcher. For the purpose of the analyses, only the individual objective (actual bout outcome – win/loss) was used.

Intellectualization Scale. The first scale measured intellectualization, a form of reflective appraisal, through subjective task importance. In line with procedures used by Vallerand (1987), fencers were asked to indicate on a 7-point Likert scale, "How important was it for you to do well in your last bout?". This scale ranged from 1 (not at all important) to 7 (extremely important).

Intuitive Appraisal Scale. This measure, taken from Vallerand's (1987) second study, relates to the fencers' intuitive appraisal of their performance in their last bout. Fencers were asked to subjectively evaluate their performance in their last bout in the match they had just fenced. Two items were used to assess this concept: (a) "How would you evaluate your performance in your last bout?" and (b) "How well do you think you did in your last bout?". Items were scored on 7-point Likert scales ranging from 1 (not good at all) to 7 (extremely good). For each match, these

two items were summed to yield a composite score reflecting intuitive appraisal. Internal consistency analyses revealed a correlation of .90 ($p < .05$) for match 1, .89 ($p < .05$) for match 2.

Causal Attributions Scale. The revised Causal Dimension Scale (CDSII) was used to measure the fencers' causal attributions (McAuley et al., 1992). The first version (CDS) had been criticized with respect to the reliability and validity of the control dimension (McAuley & Gross, 1983; Vallerand & Richer, 1988). Thus, McAuley, Duncan and Russell (1992) suggested that the control dimension could be differentiated and better assessed, in terms of whether a cause is (a) controllable/uncontrollable by the person and (b) controllable/ uncontrollable by other people. The validity and reliability for the four dimensional Revised Causal Dimension Scale (CDSII) was demonstrated through multi-group confirmatory factor analyses. In terms of internal consistency, the coefficient alphas calculated ranged as follows: locus of causality, .67; stability, .67; personal control, .79; external control, .82 Thus, this scale is a reliable and valid measure of individuals' perceived causal attributions (McAuley et al., 1992).

For this study, fencers were asked after each match to identify up to three reasons, that is, causal attributions, for their last bout performance. They then rated these attributions in terms of 12 items that represented the four attributional dimensions; locus of causality, stability, personal control and external control. Thus, there were four subscales each with three items. Each item was represented as a dichotomous scale, ranging from 9 to 1. For example, item 1 asked "Is the cause something that reflects an aspect of yourself (9) ... (1) reflects an aspect of the situation?" This item represents locus of causality, higher scores (9) indicating internal versus external locus (1). For both matches only the first reason was used, as up to 22 fencers did not provide second and third reasons for their performance assessments. Total scores for each dimension were

obtained by summing the three items. The coefficient alphas from the internal consistency analyses are illustrated in Table 2.

Table 2

Internal Consistencies for Causal Dimension Scale Revised for Match 1 and Match 2

	Dimension			
Match	Locus of Causality	Stability	External Control	Personal Control
Match 1 (N = 63)	.6964	.6642	.7421	.9482
Match 2 (N = 63)	.8706	.6360	.9064	.8772

Note. The alpha coefficients for each subscale are based on 3 items.

Emotion Scale. The last scale assessed affective experiences following performance. Fencers were asked after each match to indicate on each questionnaire the extent to which they experienced certain emotions as a function of their performance during their last bout. Thirty-two emotions were chosen based on their inclusion in at least three of the studies assessing Vallerand's (1987) intuitive-appraisal model (Biddle & Hill, 1992a, 1992b; Robinson & Howe, 1989; Vallerand & Blais, 1989) and the Edwards Inventory of Emotions (Edwards, 1995). As well, each emotion was expressed in terms of its antonym, except for disappointed, embarrassed, guilty, and surprised.

The emotions represented the types of affect that previous researchers have designated as self-related and general-type affects (McAuley et al., 1990; Robinson & Howe, 1989; Vallerand, 1987; Weiner et al. 1979,1985). The 11 self-related emotions included: proud/ashamed, guilty, embarrassed, confident/insecure, competent/incompetent, encouraged/discouraged, disappointed. The 21 general-type emotions included: happy/sad, pleased/displeased, joyful/despair,

satisfied/dissatisfied, good/bad, elated/depressed, contented/discontented, angry/calm, frustrated, relaxed/tense and surprised. Participants were asked to indicate the degree to which they may have felt any of the emotions after their last bout in the match, on a 7-point Likert scale ranging from 1 (not at all) to 7 (extremely so).

To arrive at final emotion scales, factor analyses and alphas were used to determine the best items for each affect subscale, self-related affects and general-type affects. The affect scales for match 1 and match 2 were factor analyzed separately. Items were retained if: 1) they had high (above .60) factor loadings on the appropriate factors, 2) did not have cross-loadings greater that .30 with other factors and, 3) had alpha coefficients .70 and higher for each match questionnaire Tabachnick & Fidell, 1996, p. 67). The coefficient alphas from the internal consistency analyses are illustrated in Table 3. The following emotions were retained for analysis: 6 self-related affects (insecure, guilty, incompetent, embarrassed, discouraged, encouraged) and 10 general affects (bad, angry, discontented, frustrated, proud, satisfied, pleased, joyful, elated, contented).

Table 3

Internal Consistencies for the Emotion Scale after Factor Analyses for Match 1 and Match 2

	Match	
Affect	Match 1 (N = 63)	Match 2 (N = 63)
Self-related (6 items)	.7924	.8448
General (10 items)	.9190	.9193

Background Information. The last section of the questionnaire asked fencers to provide demographic (e.g. age, gender, nationality), as well as information specific to their fencing experience; weapon class, number of years fenced, as well as National rank and classification.

Data Analyses

Only those 63 fencers who had competed in at least two matches (pools) and then completed the questionnaire for each pool were considered (i.e. completed at least two questionnaires) for analysis. The two matches ($N = 63$) were analyzed separately. Match 1 was the test of the model's postulates in a competitive fencing tournament and match 2 served as a replication.

Preliminary Analyses. The data ($N = 63$) were analyzed for group gender differences with respect to age, objective outcome, task importance, weapon class, team outcome, the four attributional dimensions and for both self- and general-type affect totals. Chi-squared tests were performed between gender and the discrete variables, (a) objective outcome (b) team outcome and (c) weapon class. Significant differences were found for both matches between gender and weapon class, however based on the distribution at the tournament (Table 1) and the similarities between weapon fencing practices, and the level of the fencers, this variable was not considered in further analyses. It may be that for elite fencers, the differences in fencing practice (e.g. épée is a "slower" paced weapon) between the weapon classes may have some effect on the attribution-emotion process. Independent t-tests were used for all other group comparisons and no significant differences were found. Group differences were not performed between gender and rank, classification or nationality as few fencers were ranked, classified or of different nationalities. Descriptive statistics and correlation matrices were computed for all computed variables for both match 1 and 2 (Appendix F).

Hypotheses Tests. First, the effects of objective outcome (win/loss), and intuitive appraisal (perceived success/failure) on affect (self-related and general) were tested using a 2 x 2 MANOVA. Then, the combined effect of intuitive appraisal and causal attributions on affect (self-related and general) were tested using four 2 x 2 MANOVAS, one for each attributional dimension. Thus, for each MANOVA, there were two independent variables (a) intuitive appraisal and one of (b) locus of causality (internal/external), external control, personal control, or stability and two dependent variables, self-related and general-type affects. Each dimension was separated into two conditions, (a) locus of causality into internal and external (b) external control into controllable or uncontrollable (c) personal control into controllable or uncontrollable and (d) stability into stable and unstable, aspects of each dimension.

In order to test the augmenting effects of the reflective appraisal (attributions and intellectualization) on intuitive appraisal, multiple hierarchical regression analyses were conducted separately on both sets of data, match 1 and 2 (Vallerand, 1987).

CHAPTER IV

RESULTS

Preliminary Analyses

In order to identify any gender differences, chi-square and independent t-tests were performed for objective outcome, intuitive appraisal, each attributional dimension, both self-related and general affects, and task importance. The chi-square for objective outcome was not significant for either match ($\chi^2 = .016$, $p = .90$ and $\chi^2 = 1.29$, $p = .26$, respectively). No significant gender differences were found for any of the variables assessed in this study for either match 1 or 2. The results of the independent t-tests, as well as the mean scores and standard deviations by gender for match 1 and match 2, are reported in Appendix E. As no significant gender differences were found for the other variables, or in either of the matches, gender was not considered further in the analyses conducted.

Correlation matrices and descriptive statistics for intuitive appraisal, the attributional dimensions (locus of causality, external control, personal control, stability), intellectualization, and the self-related and general-type affects are provided in Appendix F.

Main Analyses

In order to test the hypotheses of the intuitive-reflective appraisal model for this competitive sport context, three main analyses were performed on match 1. All analyses were tested at a significance level of $p = .05$. These same analyses were then performed on match 2, which served as a replication. First, the effects of objective outcome (win/loss), and intuitive appraisal (perceived success/failure) on affect (self-related and general) were tested using a 2 (win/loss) x 2 (success/failure) MANOVA. Then, the combined effects of intuitive appraisal and causal attributions on affect (self-related and general) were tested using four 2 x 2 MANOVAS,

one for each attributional dimension. Thus, for each MANOVA, there were two independent variables (a) intuitive appraisal (success/failure) and (b) one of the attributional dimensions (e.g. locus of causality). Each attributional dimension was separated into two conditions, (a) locus of causality - internal versus external locus (b) external control - controllable versus uncontrollable c) personal control - controllable versus uncontrollable and (d) stability - stable versus unstable attributions.

And lastly, in order to test the augmenting effects of the reflective appraisals (attributions and intellectualization) on intuitive appraisal, hierarchical regression analyses were conducted (Vallerand, 1987). These analyses were conducted on data from match 1, and then on match 2 for the purpose of replication.

Match 1

Affects as a Function of Objective Outcome (Win/Loss) and Intuitive Appraisal (Perceived Success/Failure)

In order to assess the effects of objective outcome and intuitive appraisal (subjective outcome) on affect a 2 x 2 MANOVA was conducted. In terms of objective outcome and intuitive appraisal fencers were separated into two groups for each variable; those who reported a personal won or lost bout, and for intuitive appraisal those who perceived this outcome as a success or failure (Frieze et al., 1983). A median split was used to create the success and failure conditions for intuitive appraisal. Although intuitive appraisal was rated on a scale of 1 (not al all well) to 7 (extremely good), a median split was used as many of the participants were close to the median, and if analyses had been based on the extremes 1 and 7, much of the data would have been lost.

Results revealed a significant main effect for outcome, for both self- $F(1, 63) = 6.12$,

$p = .016$ and general-type $F(1, 63) = 4.73$, $p = .034$ affects. Fencers who won reported experiencing significantly more positive self- ($M = 5.87$) and general-type affects ($M = 4.83$) than those in who experienced a loss ($M = 5.26$ and $M = 4.21$, respectively).

A significant main effect was also found for intuitive appraisal for both self- $F(1, 63) = 14.23$, $p = .000$ and general-type $F(1, 63) = 31.07$, $p = .000$ affects. Fencers in the perceived success condition reported experiencing significantly more positive self- ($M = 6.04$) and general-type ($M = 5.33$) affects than those in the perceived failure conditions ($M = 5.08$ and $M = 3.71$, respectively).

The measure of effect size, revealed that the effect of intuitive appraisal on self- ($Eta^2 = .194$) and general-type ($Eta^2 = .345$) affects was larger than that of objective outcome on self- ($Eta^2 = .094$) and general-type ($Eta^2 = .074$) affects.

A significant interaction was found between outcome and intuitive appraisal though only for self-related affects, $F(1, 63) = 4.28$, $p = .043$. Bonferroni post hoc tests revealed significant mean differences between those fencers who lost and perceived this as a failure and those who (a) won and perceived this as a success ($M = -1.57$, $p = .000$) (b) lost and perceived this as a success ($M = -47$, $p = .001$) and (c) won and perceived this as a failure ($M = -1.41$, $p = .024$).

Thus, the difference in the level of positive self-related affects between those fencers who lost and perceived this as a failure is significantly different than the other three conditions (Figure 5). In terms of the interaction then, those fencers who lost and perceived this as a failure ($M = 4.51$) reported experiencing significantly less positive self-related affects than those fencers who won and perceived this as a success ($M = 6.08$), who lost and perceived this as a success ($M = 5.98$) and those who won and perceived this as a failure ($M = 5.65$). The differences between the other three groups were not significant ($p = 1.00$).

Means for self-and general-type affects as a function of objective outcome and intuitive appraisal are presented in Table 4. Note that for all data tables in both matches, affect scores reported are mean scaled scores that range from 1 to 7, for both self-related and general-type affects. Higher scores are indicative of more positive affects. The n refers to the number of fencers per cell.

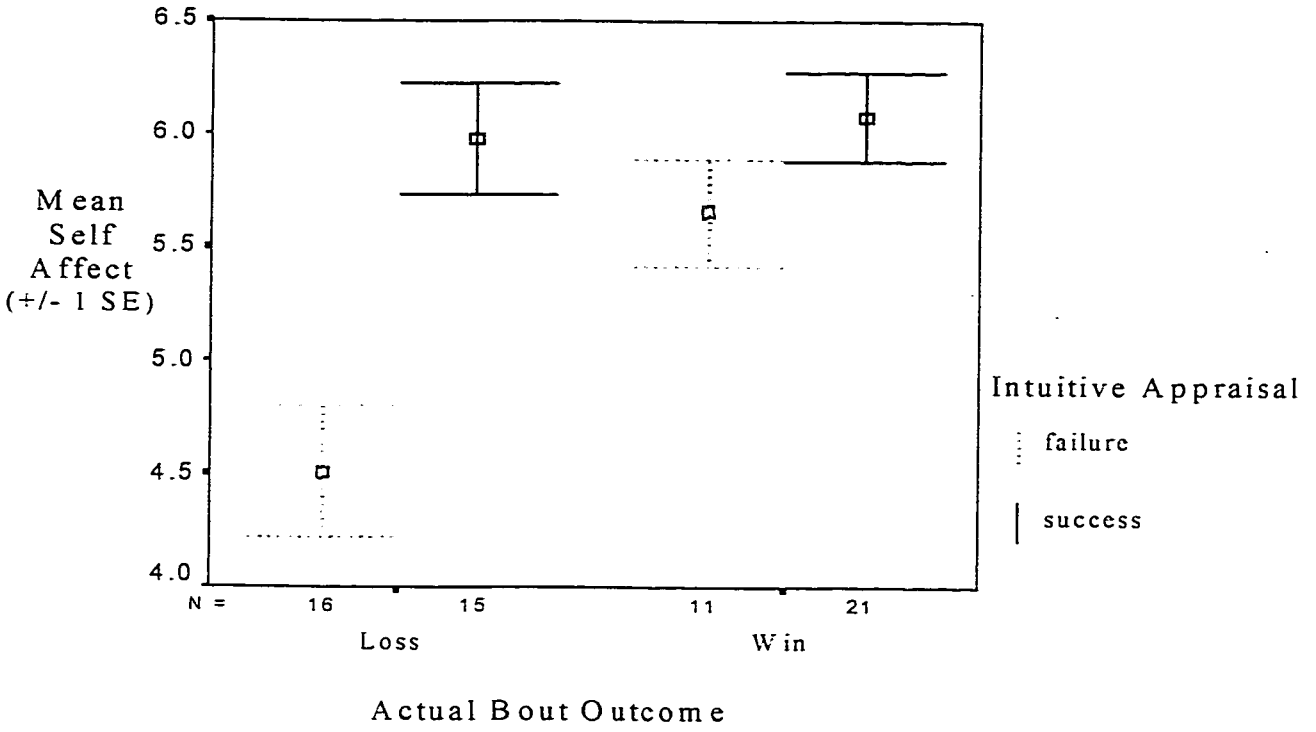

Figure 5. Interaction Effect of Objective Outcome (Win/Loss) and Intuitive Appraisal (Success/Failure) on Self-related Affect

Table 4

Effects of Objective Outcome (Win/Loss) and Intuitive Appraisal (Perceived Success/Failure) on Affect

Affect Type	Perceived Success Win	Perceived Success Loss	Perceived Failure Win	Perceived Failure Loss
Self-related				
M	6.08	5.98	5.65	4.51
SD	.90	.96	.79	1.16
General				
M	5.61	5.04	4.05	3.37
SD	1.09	1.34	1.01	1.00
n	21	15	11	16

Affects as a Function of Intuitive Appraisal (Perceived Success/Failure) and Attributions

In order to assess the effects of intuitive appraisal and attributions four 2 x 2 MANOVAS were conducted, one for each attributional dimension: locus of causality, external control, personal control, and stability.

Locus of Causality Attributions

Results of this 2 (success/failure) x 2 (internal/external) MANOVA revealed a significant main effect for intuitive appraisal for both self- $F(1, 63) = 11.34$, $p = .001$ and general-type

F (1, 63) = 25.40, p = .000 affects. No main effect was found for locus of causality (internal/external) on either self- F (1, 63) = .026, p = .87 or general-type F (1, 63) = .002, p = .97 affects. As well, there was no significant interaction between intuitive appraisal and locus of causality for either self- F (1, 63) = 2.33, p = .13 or general-type F (1, 63) = 2.35, p = .13 affects. Means for self-and general-type affects as a function of intuitive appraisal and locus of causality (internal/external) are presented in Table 5.

Table 5

Self- and General-type Affects as a Function of Intuitive Appraisal and Locus of Causality Attributions

Affect Type	Perceived Success Internal	Perceived Success External	Perceived Failure Internal	Perceived Failure External
Self-related				
M	6.25	5.80	4.87	5.29
SD	.78	1.02	1.16	1.20
General				
M	5.58	5.15	3.51	4.04
SD	1.12	1.32	.94	1.28
n	19	17	20	7

External Control Attributions

Results of the 2 (success/failure) x 2 (externally controllable/externally uncontrollable) MANOVA revealed a significant main effect for intuitive appraisal for both self- F (1, 63) = 15.97, p = .000 and general-type F (1, 63) = 30.53, p = .000 affects. No main effect was found for external control attributions on either self- F (1, 63) = .22, p = .64 or general-type F (1, 63) = .57, p = .46 affects. As well, there was no significant interaction between intuitive appraisal and external control attributions for either self- F (1, 63) = .17, p = .18 or general-type F (1, 63) = 1.85, p = 1.85 affects. Means for self-and general-type affects as a function of intuitive appraisal and external control attributions are presented in Table 6.

Table 6

Self- and General-type Affects as a function of Intuitive Appraisal and External Control Attributions

	Perceived Success	Perceived Success	Perceived Failure	Perceived Failure
	Externally Controllable	Externally Uncontrollable	Externally Controllable	Externally Uncontrollable
Affect Type				
Self-related				
M	5.95	6.19	4.97	4.98
SD	.90	.96	1.62	.85
General				
M	5.31	5.49	4.05	3.41
SD	1.25	1.19	1.12	.94
n	23	13	10	17

Personal Control Attributions

Results of this 2 (success/failure) x 2 (personally controllable/personally uncontrollable) MANOVA revealed a significant main effect for intuitive appraisal for both self- F (1, 63) = 16.05, p = .000 and general-type F (1, 63) = 34.04, p = .000 affects. No main effect was found for personal control attributions for either self- F (1, 63) = .08, p = .78 or general-type F (1, 63) = .002, p = .97 affects. As well, there was no significant interaction between intuitive appraisal and personal control attributions for either self- F (1, 63) = .31, p = .58 or general-type F (1, 63) = .10, p = .75 affects. Means for self-and general-type affects as a function of intuitive appraisal and personal control attributions are presented in Table 7.

Table 7

Self- and General-type Affects as a Function of Intuitive Appraisal and Personal Control Attributions

	Perceived Success	Perceived Success	Perceived Failure	Perceived Failure
	Personally Controllable	Personally Uncontrollable	Personally Controllable	Personally Uncontrollable
Affect Type				
Self-related				
M	6.15	5.93	4.94	5.01
SD	1.00	.83	1.05	1.31
General				
M	5.33	5.42	3.70	3.59
SD	1.29	1.18	1.11	1.00
n	18	18	14	13

Stability

Results of this 2 (success/failure) x 2 (stable/unstable) MANOVA revealed a significant main effect for intuitive appraisal for both self- F (1, 63) = 15.59, p = .000 and general-type F (1, 63) = 33.00, p = .000 affects. No main effect was found for stability attributions for either self- F (1, 63) = .009, p = .93 or general-type F (1, 63) = .068, p = .80 affects. As well, there was no significant interaction between intuitive appraisal and stability attributions for either self- F (1, 63) = .005, p = .94 or general-type F (1, 63) = .063, p = .80 affects. Means for self-and general-type affects as a function of intuitive appraisal and stability attributions are presented in Table 8.

Table 8

Self- and General-type Affects as a Function of Intuitive Appraisal and Stability Attributions

Affect Type	Perceived Success Stable	Perceived Success Unstable	Perceived Failure Stable	Perceived Failure Unstable
Self-related				
M	6.04	6.03	5.00	4.96
SD	.80	1.08	1.33	1.06
General				
M	5.38	5.37	3.73	3.58
SD	1.23	1.24	1.02	1.09
n	21	15	12	15

Regression Analyses

In order to assess the augmenting effects of the reflective appraisals (specifically, locus of causality attributions, and task importance as it reflects intellectualization) on the intuitive appraisals prediction of self- and general-type affects, four hierarchical regression analyses were conducted, one for each type of affect and one for each intuitive appraisal condition (success and failure).

The result of the first two hierarchical regressions revealed a significant effect for self- and general-type affects (Tables 9 and 10, respectively). The total variance associated with self-related affects was 41% and for general-type affects the variance accounted for was 57%. Thus, an important portion of the variance is explained, with general-type affects explaining 16% more of the variance than self-related affects.

Intuitive appraisal is a significant and positive predictor of self-related (ß = .64) and general-type affects (ß = .75). Indicating that fencers' perceived success or failure influenced the level of positive affects that they experienced. Thus, as the positive subjective assessment of performance increased (i.e. intuitive appraisal) so did the fencers' positive affects. Locus of causality attributions did not have a significant effect on either self-related (ß = .03) or general-type affects (ß = .149). Task importance also did not have a significant effect on either self-related (ß = -.17) or general-type affects (ß = -.088). Thus, there was no modifying (augmenting or minimizing) effect of the reflective appraisal processes on intuitive appraisal in predicting self- or general-type affect.

Table 9

Hierarchical Regression for the Augmenting Functions of Locus of Causality and Task Importance on Intuitive Appraisal in Predicting Self-related Affect (N = 63)

Predictor	ß	R^2 Change	F Change	p
1. Intuitive Appraisal	.64*	.414	43.08*	.000
2. Intuitive Appraisal	.65*			.000
Locus of Causality	.03	.001	.089	.766
3. Intuitive Appraisal	.69*			.000
Locus of Causality	.06			.561
Task Importance	-.17	.025	2.63	.110

* $p < .05$ Note. $R^2 = .44$ and Adjusted $R^2 = .41$.

Table 10

Hierarchical Regression for the Augmenting Functions of Locus of Causality and Task Importance on Intuitive Appraisal in Predicting General Affect (N = 63)

Predictor	ß	R^2 Change	F Change	p
1. Intuitive Appraisal	.75*	.56	78.24*	.000
2. Intuitive Appraisal	.77*			.000
Locus of Causality	.13	.02	2.51	.119
3. Intuitive Appraisal	.79*			.000
Locus of Causality	.15			.088
Task Importance	-.09	.01	1.01	.318

* $p < .05$ Note. $R^2 = .59$ and Adjusted $R^2 = .57$.

The results of the hierarchical regression for the success condition revealed a significant effect for self- and general-type affects (Table 11). The total variance associated with self-related affects was 31% and for general-type affects the variance accounted for was 32%. Thus, only a small portion of the variance is explained by both affect types in the success condition, and both are lower than those in the overall regressions for self- and general-type affects (41% and 57% respectively).

Intuitive appraisal is a significant and positive predictor of self-related (ß = .44) and general-type affects (ß = .51). Indicating that fencers' perceived success influenced the level of positive affects that they experienced. Thus, as the positive subjective assessment of performance increased (i.e. intuitive appraisal) so did the fencers' positive affects. Locus of causality attributions had a significant effect on both self-related (ß = .33) and general-type affects (ß = .29). Thus, locus of causality attributions had an augmenting effect on the intuitive appraisal, thus increasing the positive affects experienced by the fencers. Task importance did not have a significant effect on either self-related (ß = .25) or general-type affects (ß = .17) and thus, did not modify (augment or minimize) the effect of the reflective appraisal processes on intuitive appraisals in predicting self- or general-type affect.

The results of the hierarchical regression for the failure condition revealed a significant effect for self- and general-type affects (Table 12). The total variance associated with self-related affects was 51% and for general-type affects the variance accounted for was 49%. Thus, an important portion of the variance is explained by both affect types in the failure condition, and both are higher than those in the success condition regressions for self- and general-type affects (31% and 32% respectively). The overall variance then, is explained more by the perceived failure condition, than the perceived success condition.

Intuitive appraisal is a significant and positive predictor of self-related (ß = .63) and general-type affects (ß = .64). Indicating that fencers' perceived failure influenced or augmented the level of positive affects that they experienced. Thus, as the positive subjective assessment of performance increased (i.e. intuitive appraisal) so did the fencers' positive affects. Locus of causality attributions did not have a significant effect on either self-related (ß = .-.08) or general-type affects (ß = .05). Thus, locus of causality attributions did not modify (augment or minimize) the effect of the reflective appraisal processes on intuitive appraisals in predicting self- or general-type affect. Task importance had a significant effect but negative effect on both self-related (ß = -.44) and general-type affects (ß = -.39) indicating that as task importance decreases, more positive self-related and general-type affects are reported by the fencers. Thus, task importance, had a minimizing effect on intuitive appraisal, indicating that perceived success/failure had less of an effect on the positive affects experienced by the fencers. For example, low perceived task importance minimizes the effect of perceived failure on the experience of positive affect.

Table 11

Hierarchical Regression for the Augmenting Functions of Locus of Causality and Task Importance on Intuitive Appraisal in Predicting Affect in the Success Condition (N = 63)

Predictor	Affect	ß	R^2 Change	F Change	p
1. Intuitive Appraisal	Self-related	.44	.06	3.08	.000*
	General	.51	.26	12.12	.001*
2. Intuitive Appraisal	Self-related	.38			.014*
	General	.47			.003*
Locus of Causality	Self-related	.33	.11	5.11	.030*
	General	.29	.08	4.25	.047*
3. Intuitive Appraisal	Self-related	.39			.010*
	General	.47			.002*
Locus of Causality	Self-related	.33			.03*
	General	.29			.049*
Task Importance	Self-related	.25	.06	3.08	.09
	General	.17	.03	1.45	.24

* $p < .05$

Note. For self-related affect: $R^2 = .37$ and Adjusted $R^2 = .31$

Note. For general affect: $R^2 = .38$ and Adjusted $R^2 = .32$.

Table 12

Hierarchical Regression for the Augmenting Functions of Locus of Causality and Task Importance on Intuitive Appraisal in Predicting Affect in the Failure Condition (N = 63)

Predictor	Affect	ß	R^2 Change	F Change	p
1. Intuitive Appraisal	Self-related	.63	.40	16.3	.000*
	General	.64	.41	17.6	.000*
2. Intuitive Appraisal	Self-related	.59	.01	.24	.002*
	General	.66	.002	.09	.001*
Locus of Causality	Self-related	-.08			.63
	General	.05			.78
3. Intuitive Appraisal	Self-related	.68	.17	8.84	.000*
	General	.74	.13	6.60	.000*
Locus of Causality	Self-related	.08			.60
	General	.20			.24
Task Importance	Self-related	-.44			.007*
	General	-.39			.017*

* $p < .05$

Note. For self-related affect: $R^2 = .57$ and Adjusted $R^2 = .51$.

Note. For general affect: $R^2 = .55$ and Adjusted $R^2 = .49$.

Match 2 – Replication

The purpose of these analyses was to replicate of the first match's results. The identical analyses were performed on this data set (N = 63) that were done for match 1.

Affects as a Function of Objective Outcome (Win/Loss) and Intuitive Appraisal (Perceived Success/Failure)

Results of this 2 (win/loss) x 2 (success/failure) MANOVA revealed a significant main effect for outcome, for both self- F (1, 63) = 8.73, p = .004 and general-type F (1, 63) = 13.12, p = .001 affects. Fencers who won reported experiencing significantly more positive self- (M = 6.0) and general-type affects (M = 5.11) than those in who experienced a loss (M = 4.72 and M = 3.72, respectively). Means for self-and general-type affects as a function of objective outcome and intuitive appraisal are presented in Table 13.

A significant main effect was also found for intuitive appraisal for both self- F (1, 63) = 21.08, p = .000 and general-type F (1, 63) = 21.81, p = .000 affects. Fencers in the perceived success condition reported experiencing significantly more positive self- (M = 5.77) and general-type (M = 4.95) affects than those in the perceived failure conditions (M = 4.95 and M = 3.87, respectively). The measure of effect size, revealed that the effect of intuitive appraisal on self- (Eta^2 = .26) and general-type (Eta^2 = .27) affects was larger than that of objective outcome on self- (Eta^2 = .13) and general-type (Eta^2 = .18) affects.

No significant interaction between outcome and intuitive appraisal was found for either self-related F (1, 63) = .1.38, p = .25 or general-type F (1, 63) = .24, p = .63 affects.

Table 13

Effects of Objective Outcome (Win/Loss) and Intuitive Appraisal (Perceived Success/Failure) on Affect

Affect Type	Perceived Success Win	Perceived Success Loss	Perceived Failure Win	Perceived Failure Loss
Self-related				
M	6.25	5.29	5.75	4.14
SD	.66	1.46	.75	1.55
General				
M	5.57	4.33	4.64	3.10
SD	.89	1.36	1.07	1.24
N	28	8	16	11

Affects as a Function of Intuitive Appraisal (Perceived Success/Failure) and Attributions

Locus of Causality Attributions

Results of this 2 (success/failure) x 2 (internal/external) MANOVA revealed a significant main effect for intuitive appraisal for both self- F (1, 63) = 24.17, p = .000 and general-type F (1, 63) = 24.83, p = .000 affects. No main effect was found for locus of causality (internal/external) on either self- F (1, 63) = .22, p = .65 or general-type F (1, 63) = .03, p = .86 affects. As well, no interaction between intuitive appraisal and locus of causality attributions was found for either self- F (1, 63) = 1.06, p = .31 or general-type F (1, 63) = .95, p = .34 affects. Means for self-

and general-type affects as a function of intuitive appraisal and locus of causality (internal/external) are presented in Table 14.

Table 14

Self- and General-type Affects as a Function of Intuitive Appraisal and Locus of Causality Attributions

Affect Type	Perceived Success Internal	Perceived Success External	Perceived Failure Internal	Perceived Failure External
Self-related				
M	6.15	5.98	4.42	4.85
SD	.56	.86	1.84	1.30
General				
M	5.36	5.10	3.44	3.81
SD	1.00	1.11	1.66	1.11
N	22	22	10	9

External Control Attributions

Results of this 2 (success/failure) x 2 (externally controllable/externally uncontrollable) MANOVA revealed a significant main effect for intuitive appraisal for both self- F (1, 63) = 23.03, p = .000 and general-type F (1, 63) = 23.86, p = .000 affects. No main effect was found for external control attributions on either self- F (1, 63) = .22, p = .64 or general-type F (1, 63) = .09, p = .76 affects. No significant interaction between intuitive appraisal and external control attributions was found for either self- F (1, 63) = .79, p = .38 or general-type F (1, 63) = .17,

$p = .69$ affects. Means for self-and general-type affects as a function of intuitive appraisal and external control attributions are presented in Table 15.

Table 15

Self- and General-type Affects as a Function of Intuitive Appraisal and External Control Attributions

Affect Type	Perceived Success Controllable	Perceived Success Uncontrollable	Perceived Failure Controllable	Perceived Failure Uncontrollable
Self-related				
M	6.13	6.01	4.45	4.85
SD	.60	.84	1.62	1.60
General				
M	5.25	5.22	3.52	3.75
SD	1.00	1.12	1.21	1.70
N	22	22	11	8

Personal Control Attributions

Results of this 2 (success/failure) x 2 (personally controllable/personally uncontrollable) MANOVA revealed a significant main effect for intuitive appraisal for both self- $F(1, 63) = 23.30$, $p = .000$ and general-type $F(1, 63) = 25.66$, $p = .000$ affects. No main effect was found for personal control attributions for either self- $F(1, 63) = .001$, $p = .98$ or general-type $F(1, 63) = 1.31$, $p = .26$ affects. As well, no interaction between intuitive appraisal and personal control attributions was found for either self- $F(1, 63) = .001$, $p = .97$ or general-type $F(1, 63) = .62$, p

= .43 affects. Means for self-and general-type affects as a function of intuitive appraisal and personal control attributions are presented in Table 16.

Table 16

Self- and General-type Affects as a Function of Intuitive Appraisal and Personal Control Attributions

Affect Type	Perceived Success Controllable	Perceived Success Uncontrollable	Perceived Failure Controllable	Perceived Failure Uncontrollable
Self-related				
M	6.07	6.06	4.62	4.63
SD	.72	.75	1.87	1.19
General				
M	5.28	5.16	3.88	3.25
SD	1.00	1.16	1.59	1.07
N	27	17	11	8

Stability

Results of this 2 (success/failure) x 2 (stable/unstable) MANOVA revealed a significant main effect for intuitive appraisal for both self- F (1, 63) = 29.58, p = .000 and general-type F (1, 63) = 29.48, p = .000 affects. No main effect was found for stability attributions for either self- F (1, 63) = 3.22, p = .08 or general-type F (1, 63) = 2.27, p = .14 affects.

Significant interaction effects were found between intuitive appraisal and stability for both self-related F (1, 63) = 5.16, p = .03 and general-type F (1, 63) = 4.62, p = .04 affects. (Figures 6 & 7 respectively).

For self-related affects, Bonferroni post hoc tests revealed significant mean differences between those fencers who perceived a failure and made unstable attributions and those who (a) perceived success and made unstable attributions (M = -2.18, p = .000) and (b) perceived success and made stable attributions (M = -2.04, p = .000). Thus, the difference in the level of positive self-related affects between those fencers who perceived a failure and made unstable attributions is significantly different than the other two conditions (Figure 6). The difference in the level of positive self-related affects between those fencers who perceived a failure and made unstable attributions (M = 3.96) was significantly less than those in conditions (a) and (b), M = 6.13 and M = 6.0, respectively.

For general-type affects, Bonferroni post hoc tests revealed significant mean differences between those fencers who perceived a failure and made unstable attributions and those who (a) perceived success and made unstable attributions (M = -2.38, p = .000) and (b) perceived success and made stable attributions (M = -2.18, p = .000). As well, a significant mean difference was revealed for those fencers who perceived a failure and made stable attributions and those who perceived a success and made unstable attributions (M = -1.23, p = .03) There was no significant difference between the perceived failure/unstable attribution condition and the perceived failure/stable attribution condition (M = -1.15, p = .20).

Thus, the difference in the level of positive general affects between those fencers who perceived a failure and made unstable attributions is significantly different than the other two conditions (Figure 7). In terms of the interaction, those fencers who perceived a failure and made

unstable attributions (M = 2.95) reported experiencing significantly less positive self-related affects than those fencers in conditions (a) and (b) M = 5.33 and M = 5.13, respectively. As well, those fencers who perceived a failure and made stable attributions (M = 5.13) reported significantly less positive general affects than those who perceived a success and made unstable attributions (M = 5.33).

Means for self-and general-type affects as a function of intuitive appraisal and stability attributions are presented in Table 17.

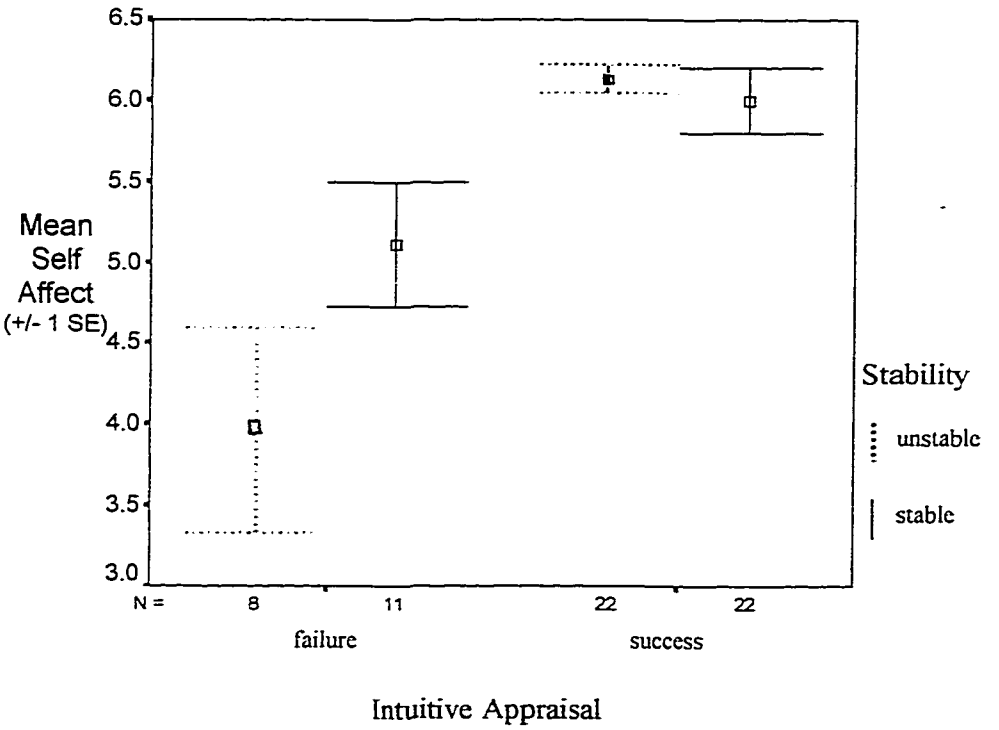

Figure 6. Interaction Effect of Intuitive Appraisal and Stability on Self-related Affects

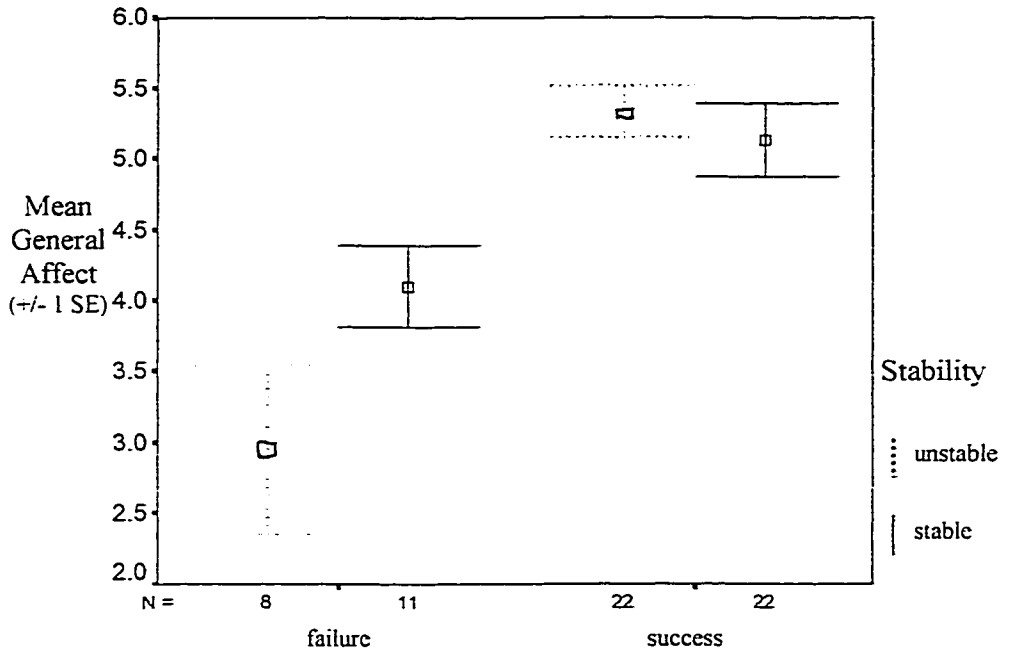

Figure 7. Interaction Effect of Intuitive Appraisal and Stability on General Affect

Table 17

Self- and General-type Affects as a Function of Intuitive Appraisal and Stability Attributions

Affect Type	Perceived Success Stable	Perceived Success Unstable	Perceived Failure Stable	Perceived Failure Unstable
Self-related				
M	6.00	6.13	5.11	3.96
SD	.95	.42	1.28	1.79
General				
M	5.13	5.33	4.10	2.95
SD	1.22	.86	.96	1.69
n	22	22	11	8

Regression Analyses

In order to assess the augmenting effects of the reflective appraisals (specifically, locus of causality attributions, and task importance as it reflects intellectualization) on the intuitive appraisals prediction of self- and general-type affects, four hierarchical regression analyses were conducted, one for each type of affect and one for each intuitive appraisal condition (success and failure).

The result of the first two hierarchical regressions revealed a significant effect for self- and general-type affects (Tables 18 and 19, respectively). The total variance associated with self-related affects was 48% and for general-type affects the variance accounted for was 58%. Thus,

an important portion of the variance is explained, with general-type affects explaining 10% more of the variance than self-related affects.

Intuitive appraisal is a significant and positive predictor of self-related (ß = .65) and general-type affects (ß = .74). Indicating that fencers' perceived success or failure influenced, and augmented the level of positive affects that they experienced. Thus, as the positive subjective assessment of performance increased (i.e. intuitive appraisal) so did the fencers' positive affects. Locus of causality attributions did not have a significant effect on either self-related (ß = -.08) or general-type affects (ß = -.003). Task importance had a significant but negative effect on both self-related (ß = -.29) and general-type affects (ß = -.22), indicating that as task importance decreases, more positive self-related and general-type affects are reported by the fencers. Thus, task importance, had a minimizing effect on intuitive appraisal, indicating that perceived success/failure had less of an effect on the positive affects experienced by the fencers.

Table 18

Hierarchical Regression for the Augmenting Functions of Locus of Causality and Task Importance on Intuitive Appraisal in Predicting Self-related Affect (N = 63)

Predictor	ß	R^2 Change	F Change	p
1. Intuitive Appraisal	.65*	.424	44.92*	.000
2. Intuitive Appraisal	.65*			.000
Locus of Causality	-.08	.006	.089	.928
3. Intuitive Appraisal	.69*			.000
Locus of Causality	-.009			.928
Task Importance	-.286*	8.96	2.63	.004

* $p < .05$
Note. $R^2 = .51$ and Adjusted $R^2 = .48$.

Table 19
Hierarchical Regression for the Augmenting Functions of Locus of Causality and Task Importance on Intuitive Appraisal in Predicting General Affect (N = 63)

Predictor	ß	R^2 Change	F Change	p
1. Intuitive Appraisal	.74*	.55	74.78*	.000
2. Intuitive Appraisal	.74*			.000
Locus of Causality	-.003	.00	.001	.98
3. Intuitive Appraisal	.77*			.000
Locus of Causality	.05			.545
Task Importance	-.22*	.05	6.74	.012

* $p < .05$
Note. $R^2 = .60$ and Adjusted $R^2 = .58$.

The results of the hierarchical regression for the success condition revealed a significant effect only for general-type affects (Table 20). The total variance associated with self-related affects was only 5% and for general-type affects the variance accounted for was 32%. Thus, only a small portion of the variance is explained by both affect types in the success condition, and both are lower than those in the overall regressions for self- and general-type affects (48% and 58% respectively).

Intuitive appraisal is not a significant predictor of self-related (ß = .29). It is however, a significant and positive predictor of general-type affects (ß = .60). Indicating that fencers' perceived success influenced the level of positive general affects that they experienced. Thus, as the positive subjective assessment of performance increased (i.e. intuitive appraisal) so did the fencers' positive general affects. Locus of causality attributions did not have a significant effect on either self-related (ß = .01) or general-type affects (ß = .02). Task importance had a negative but non-significant effect on both self-related (ß = -.18) or general-type affects (ß = -.10). Thus, neither reflective appraisal process modified (augment or minimize) the effect of the reflective appraisal processes on intuitive appraisals in predicting self- or general-type affect.

The results of the hierarchical regression for the failure condition revealed a significant effect for both self- and general-type affects (Table 21). The total variance associated with self-related affects was 46% and for general-type affects the variance accounted for was 49%. Thus, an important portion of the variance is explained by both affect types in the failure condition, and both are much greater than those in the success condition regressions for self- and general-type affects (5% and 32% respectively). The overall variance then, is explained more by the perceived failure condition, than the perceived success condition, which was also found in match 1.

Intuitive appraisal is a significant and positive predictor of self-related (ß = .64) and general-type affects (ß = .64). Indicating that fencers' perceived failure greatly influenced the level of positive affects that they experienced. Thus, as the positive subjective assessment of performance increased (i.e. intuitive appraisal) so did the fencers' positive affects Locus of causality attributions had a negative but non-significant effect on both self-related (ß = .-.06) or general-type affects (ß = -.01). Thus, locus of causality attributions did not modify (augment or minimize) the effect of the reflective appraisal processes on intuitive appraisals in predicting self- or general-type affect. Task importance had a significant and negative effect on both self-related (ß = -.40) and general-type affects (ß = -.43) and thus, indicating that as task importance decreases, more positive self-related and general-type affects are reported by the fencers. Thus, task importance, had a minimizing effect on intuitive appraisal, indicating that perceived success/failure had less of an effect on the positive affects experienced by the fencers.

Table 20

Hierarchical Regression for the Augmenting Functions of Locus of Causality and Task Importance on Intuitive Appraisal in Predicting Affect in the Success Condition (N = 63)

Predictor	Affect	ß	R^2 Change	F Change	p
1. Intuitive Appraisal	Self-related	.29	.09	3.95	.054
	General	.60	.36	23.56	.000*
2. Intuitive Appraisal	Self-related	.29			.064
	General	.60			.000*
Locus of Causality	Self-related	.014	.000	.009	.93
	General	.023	.001	.032	.86
3. Intuitive Appraisal	Self-related	.31			.051
	General	.604			.000*
Locus of Causality	Self-related	.074			.65
	General	.06			.69
Task Importance	Self-related	-.18	.03	1.25	.27
	General	-.10	.008	.52	.48

* $p < .05$

Note. For self-related affect: $R^2 = .11$ and Adjusted $R^2 = .05$

Note. For general affect: $R^2 = .37$ and Adjusted $R^2 = .32$.

Table 21

Hierarchical Regression for the Augmenting Functions of Locus of Causality and Task Importance on Intuitive Appraisal in Predicting Affect in the Failure Condition (N = 63)

Predictor	Affect	ß	R^2 Change	F Change	p
1. Intuitive Appraisal	Self-related	.64	.41	11.8	.003*
	General	.64	.41	11.7	.003*
2. Intuitive Appraisal	Self-related	.63	.00	.10	.006*
	General	.64	.00	.00	.005*
Locus of Causality	Self-related	-.062			.76
	General	-.008			.97
3. Intuitive Appraisal	Self-related	.50	.14	4.72	.010*
	General	.50	.17	5.95	.015*
Locus of Causality	Self-related	-.05			.79
	General	.006			.97
Task Importance	Self-related	-.40			.046*
	General	-.43			.028*

* $p < .05$

Note. For self-related affect: $R^2 = .55$ and Adjusted $R^2 = .46$.

Note. For general affect: $R^2 = .58$ and Adjusted $R^2 = .49$.

Analysis Summary

The results of both sets of analyses reveal many similarities and a number of important differences between the two matches. In terms of similarities, both main effects for outcome (win/loss) and for intuitive appraisal (success/failure) for both self-related and general-type affects were significant. Thus, fencers who won reported experiencing significantly more positive affects than those who lost, and those fencers who perceived their bout to be a success, experienced more positive affect than those who perceived their bout to be a failure. As well, both analyses revealed that the effect of intuitive appraisal on affect was greater than that of outcome. However, match 1 analyses revealed a significant interaction between objective outcome and intuitive appraisal for self-related affects, while match 2 reveal no interaction for these two variables for either affect type.

In terms of the effects of the attributional dimensions, main effects were found only for intuitive appraisal in both matches for locus of causality (internal/external), external control (controllable/uncontrollable), and personal control (controllable/uncontrollable). No main effects were found for any of the dimensions, nor were there any interactions, except for stability in match 2.

A striking difference between the two matches lies in the effects of the stability dimension. In the first match, only a significant main effect was found for intuitive appraisal, similar to what had been seen with the other dimensions. In the second match however, along with the main effects of stability and intuitive appraisal, there was a complex interaction between the two variables that depended on the type of affect and the condition - success or failure. For both self-related affects and general-type affects, the difference in the level of positive affects experienced for those fencers who perceived a failure and made unstable attributions, was

significantly less than for those fencers who (a) perceived success and made stable attributions and those who (b) perceived success and made unstable attributions. As well, for general-affects, those fencers who perceived a failure and made stable attributions also reported experiencing less positive affects than those who perceived a success and made unstable attributions.

With respect to the possible modifying effects (augmenting or minimizing) of intuitive appraisal and the reflective appraisals (locus of causality and task importance) on affect, for both matches a similar proportion of the variance was associated with both self-related and general affects overall. As well, intuitive appraisal was a significant and positive predictor of both affect types, indicating that fencers' perceived success/failure influenced their level of positive affects that they experienced. Indicating that as the positive subjective assessment of performance increased (i.e. intuitive appraisal) so did the fencers' positive affects. Locus of causality attributions did not have significant effects for either affect type. The difference lies in the effects of task importance (or intellectualization). There was no significant effect in match 1, and thus no modifying effects. In match 2 however, task importance had a significant and negative effect on both affect types, indicating that as task importance decreases, more positive affects were experienced by the fencers. Thus, task importance, had a minimizing effect on intuitive appraisal, indicating that perceived success/failure had less of an effect on the positive affects experienced by the fencers.

In terms of the success condition, significant effects were found for both affect types in match 1, both accounting for less of the variance than in the overall results. For match 2, only general affects had a significant effect. Self-related affects accounted for only 5% of the variance. Intuitive appraisal was a significant and positive predictor of both affects types in match 1, but was only a significant and positive predictor of general type affects in match 2.

Locus of causality attributions had significant effects in match 1 for both affect types, but not in match 2. Task importance did not have significant effect in match 1 or 2, but in match 2 the effect was negative. Thus, for both matches, task importance did not serve to modify the effect of the intuitive appraisal in predicting affect in the success condition.

In the failure condition, significant effects were found in both matches for self- and general-type affects, accounting for a similar amount of the variance (between 46% and 51%). As well, intuitive appraisal was a significant and positive predictor of both affect types in both matches. Thus, indicating that fencers' perceived failure influenced or augmented the level of positive affects that they experienced. Locus of causality attributions did not have a significant effect in either match. However, task importance had a significant and negative effect on both affect types, indicating as in the overall regression, that as task importance decreases, more positive self-related and general type affects are experienced by the fencers. Thus, task importance, had a minimizing effect on intuitive appraisal, indicating that perceived success/failure had less of an effect on the positive affects experienced by the fencers.

Thus, though there are many similarities between the matches, there are three important differences that occurred, in terms of the effects of objective outcome, the stability dimension, and the modifying effects of task importance, in the perceived success and failure conditions.

CHAPTER V

DISCUSSION

The general purpose of this thesis was to investigate cognitive processes that generate emotional reaction in sport. Specifically, Vallerand's (1987) intuitive-reflective appraisal model for self-related affects was tested in a competitive fencing tournament. In order to do this, three cognitive antecedents were assessed with respect to their relationships to self- and general-type affects (a) intuitive appraisal (perceived success/failure) and (b) two reflective appraisal processes, causal attributions and intellectualization in the form of task importance. A repeated measures design was used, assessing fencers twice during the tournament with the same questionnaire measuring the appraisal processes and self- and general-type affects.

It was posited that the findings of this study would support the intuitive-reflective appraisal model. Two main sets of hypotheses were assessed, those that involved the relationship between (a) objective outcome (win/loss) and intuitive appraisal (success/failure) and those that involved the relationship between (b) intuitive appraisal, causal attributions and task importance. Thus, objective outcome was expected to have an effect on both affect types, as those fencers who reported an objective win were expected to have more positive affect levels than those who reported an objective loss. Intuitive appraisal, that is, subjective outcome, was expected to have an effect on both affect types, as those fencers who perceived a bout to be a success were expected to have more positive affect levels than those fencers who perceived a bout to be a failure. As well, intuitive appraisal was expected to have a significantly greater effect on both affect types than objective outcome.

In both matches, objective outcome and intuitive appraisal had significant effects on the levels of positive affects that were experienced. And the effects of intuitive appraisal were

significantly greater than those of objective outcome. Thus, fencers who won reported experiencing more positive self- and general-type affects than those who lost, and fencers who perceived a bout to be a success reported experiencing more positive self- and general-type affects than those who reported a perceived failure. The perception of success/failure however, had greater influence on the level of positive affect generated. These results are in line with the model and the hypotheses. Vallerand (1987) contends that intuitive appraisal is always implicated in the generation of emotion and this was found in the present study for both self-related and general affects. The fact that objective outcome also had significant effects is in line with much of the attributional-emotion research to date (e.g. Weiner, 1979, 1980, 1985).

An interaction between objective outcome and intuitive appraisal was found in match 1, though only for self-related affects. In this case then, those fencers who lost and perceived this as a failure had experienced significantly less positive self-related affects than those in the other three conditions. Thus, the level of self-related affects and their relation to perceived failure, may indicate that these fencers may have evaluated their performance negatively, and in turn less positive self-related affects were generated. In terms of the model, it would appear that these self-related affects occurred without the influence of reflective appraisals, as no main effects were found for any of the causal attributions, and only one interaction was found, in match 2 for stability. This would suggest then, that these fencers did not perceive the outcome as inconsistent with their self-structure. This is possible according to the intuitive-reflective appraisal model (Vallerand, 1987). However, Vallerand (1987) has not stated any specific hypotheses with respect to an interaction of this kind, nor is this explained by Weiner's model (1985), as these self-related or "attribution-dependent" affects appear to have by-passed causal search. The direct

link (process) between intuitive appraisal and self-related affect cannot clearly be delineated in this case, as objective outcome has had an effect on the generation of self-related affects.

In terms of the reflective appraisal hypotheses, causal attributions and task importance were expected to have an effect on both affect types. In order to assess these effects each of the attributional dimensions was divided into two groups, (a) locus of causality into internal versus external (b) external control into controllable versus uncontrollable (c) personal control into controllable versus uncontrollable and (d) stability into stable versus unstable aspects of the dimension. Hypotheses for each attributional dimension were framed in terms of subjective, perceived success/failure conditions.

It was hypothesized that in terms of locus of causality, in the perceived success condition, fencers who made internal attributions were expected to report significantly more positive self- and general-type affects than fencers in the perceived failure condition. And in the perceived success condition, fencers who made external attributions were expected to report significantly more self- and general-type affects than fencers in the perceived failure condition.

For both matches, intuitive appraisal was significant in predicting both self- and general-type affects. Thus, fencers who perceived a bout to be a success reported experiencing more positive self- and general-type affects than those who reported a perceived failure. However, no significant effects or interactions were found for locus of causality. Thus, it cannot be determined whether internal and external attributions had differential effects on the generation of affect. This was also the case for Study 2 (Vallerand, 1987) but not for previous research which found that internal attributions for success had a positive impact on self-related affects, whereas external attributions minimized positive effects on self-related affects, and vice versa in failure conditions (e.g. McFarland & Ross, 1982; Weiner, 1985). Vallerand (1987, Study 1) found however, that

external attributions had the same pattern of effects as internal attributions (augmenting function). In light of this past research, the limited sample size may have had an effect on the impact of the two groups (internal and external). As well, the CDSII was limited to three items in this dimension and does not specifically divide responses as internal or external, and only one reason was assessed in the present study due to unequal response numbers for the second and third reasons on the questionnaire.

In terms of controllability attributions (both personal and external), in the perceived success condition fencers who made controllable attributions were expected to report more positive self- and general-type affects than fencers who made uncontrollable attributions. In the perceived failure condition fencers who made uncontrollable attributions were expected to report more positive self- and general-type affects than fencers who made controllable attributions. However, no significant effects or interactions were found for either personal or external controllability attributions. Thus, it cannot be determined whether these attributions had differential effects on the generation of affect. Vallerand (1987) however, found a significant effect for the control dimension on self-related affects, as well as a significant interaction between intuitive appraisal and control. Thus in his study, the athletes who made more controllable attributions in the perceived success condition experienced more positive self-related affects than those who made less controllable attributions. And those who made less controllable attributions in the perceived failure condition, experienced more positive self-related affects than athletes who made more controllable attributions. However, this difference was only significant in the perceived failure condition.

In his study Vallerand used the CDS which was not separated into personal and external control dimensions, and thus unlike the present study, the number of items that assessed this

dimension were not limited to three each. Again the limited sample size and number of items on the CDSII may have restricted the differentiation of fencers into controllable and uncontrollable conditions. This may have contributed to the lack of significant main effects for the causal attributions.

With respect to stability attributions, it was expected that in the perceived success condition, fencers who made stable attributions were expected to report more positive self- and general-type affects than fencers who made unstable attributions. In the perceived failure condition, fencers who made unstable attributions were expected to report more positive self- and general-type affects than fencers who made stable attributions.

The present study revealed different effects for matches 1 and 2. For match 1, like the other attributional dimensions, no significant effects were found. However, in match 2 significant interaction effects were found between intuitive appraisal and stability, and these effects varied depending on the type of affect and the condition - success or failure. For both self-related affects and general-type affects, the difference in the level of positive affects experienced for those fencers who perceived a failure and made unstable attributions, was significantly less than for those fencers who (a) perceived success and made stable attributions and those who (b) perceived success and made unstable attributions. Thus, due to the interaction, it appears that reflective appraisal, in the form of causal stability attributions influenced the generation of self-related and general-type affects. Thus, it appears that outcomes that were perceived as unstable had a negative effect on the level of positive affects, particularly in the perceived failure condition. Thus, according to the model, both intuitive and reflective appraisals affected the generation of emotions, indicating that for these three conditions (unstable-failure, unstable-success, and stable-success) fencers' intuitive appraisal was found to be inconsistent

with their self-structures. For general-affects, those fencers who perceived a failure and made stable attributions also reported experiencing less positive affects than those who perceived a success and made unstable attributions. In terms of the hypotheses, although these complex interactions were not expected, in general they are in line with the posited effects of stability on affect. That only general affects were affected in this condition (stable-failure) indicates according to Vallerand's model, that reflective appraisals were not involved (Figure 2), adding to the position that intuitive appraisal alone may be sufficient for affect generation.

Vallerand (1987) also found a significant interaction, with athletes who made more stable attributions in the perceived success condition experiencing more positive self-related affects than those that made less stable attributions. Those who made less stable attributions in the perceived failure condition however, experienced more positive self-related affects than those who made more stable attributions. However, the difference between stable and unstable attributions was only significant in the perceived success condition. This was not the case for the present study. The present study found a significant difference in the level of positive general affects, as well as the self-related affects experienced by the fencers. Vallerand's (1987) findings did not display the same pattern of results.

The fact that an interaction effect was found only in match 2, indicates that there was a difference for the fencers between the first and second performance assessments. There could be a number of reasons for this result. There may have been a cumulative effect of two individual loses, or two team loses, thus increasing negative self-evaluations, and decreasing the positive affects experienced. For example, for those fencers who perceived a failure and made unstable attributions, their low levels of positive affects may be due to ascriptions to the opponents' superior ability (many of the participants were novices) or their lack of effort. For those fencers

who perceived a success and still made unstable attributions, the low levels of positive affect may be due to ascribing their success to luck, not skill. Unfortunately, it was not possible to control for the differential effects of individual fencers' cognitive appraisals of themselves versus their team results. This may have influenced fencers' assessments, as they could not control for team success.

In general, those outcomes that were attributed to internal, stable and controllable causes were expected to play an augmenting function in both conditions on intuitive appraisal. An augmenting effect of the reflective appraisal for the locus of causality dimension (internal/ external) was expected to be present on the intuitive appraisal, if the reflective appraisal went in the same direction as the intuitive appraisal, and also added a significant portion of the variance in predicting affect. The other reflective appraisal process - intellectualization, in the form of task importance, was also expected to have an augmenting influence on self- and general-type affects in success/failure conditions.

With respect to the possible modifying effects (augmenting or minimizing) of intuitive appraisal and the reflective appraisals (locus of causality and task importance) on affect, for both matches a similar proportion of the overall variance was associated with both self-related and general-type affects. As well, intuitive appraisal was a significant and positive predictor of both affect types, indicating that fencers' perceived success/failure influenced or augmented the level of positive affects that they experienced. Thus, those fencers who perceived a success had higher levels of positive affects than those who perceived a failure. This is in line with the hypotheses, the model and previous research. Locus of causality attributions did not have significant effects for either affect type, contrary to the hypotheses and previous findings. However as stated previously, the measure of attributions and the sample size appear limited. The difference lies in

the effects of task importance (or intellectualization). There was no significant effect in match 1, and thus no modifying effects. In match 2 however, task importance had a significant and negative effect on both affect types, indicating that as task importance decreases, more positive affects were experienced by the fencers. Thus, task importance, had a minimizing effect on intuitive appraisal, indicating that perceived success/failure had less of an effect on the positive affects experienced by the fencers. For example, low perceived task importance minimizes the effect of perceived failure on the experience of positive affect, thus increasing the level of positive affects.

This is in line with the model and previous research. And as intellectualization (task importance) is defined as a cognitive process used to limit the experience of negative affect and avoid perceived threat, the minimizing effects of task importance on positive affects appear to be theoretically sound. In line with the researcher's assumption that the tournament was an important and meaningful task and that this context may reveal effects that were not previously found appears valid. Vallerand (1987) had posited that the task used in his laboratory study may not have shown these effects as it may not have been meaningful to the participants. Results of the present study appear to support this claim.

However, when the analyses were performed with respect to success and failure conditions, a different pattern of effects was found. In terms of the success condition, significant effects were found for both affect types in match 1, both accounting for less of the variance than in the overall results. For match 2, only general affects had a significant effect. Self-related affects accounted for only 5% of the variance. Intuitive appraisal was a significant and positive predictor of both affects types in match 1, but was only a significant and positive predictor of general-type affects in match 2. Locus of causality attributions had significant effects in match 1

for both affect types, but not in match 2. Although overall task importance was not significant, it had a significant augmenting effect in the perceived success condition. Thus, internal (higher scores) attributions for perceived success generated more positive affects and vice versa for external attributions. This augmenting effect of locus of causality in the perceived success condition was also found by Vallerand (1987). Task importance did not have significant effects in match 1 or 2, and in match 2 the effect was negative. Thus, for both matches, task importance did not serve to modify the effect of the intuitive appraisal in predicting affect in the success condition.

In the failure condition, significant effects were found in both matches for self- and general-type affects, accounting for a similar amount of the variance (between 46% and 51%). As well, intuitive appraisal was a significant and positive predictor of both affect types in both matches. Thus, indicating that fencers' perceived failure influenced or augmented the level of positive affects that they experienced. Locus of causality attributions did not have a significant effect in either match. This was also true of Vallerand's (1987) findings. However, task importance had a significant and negative effect on both affect types, indicating as in the overall regression, that as task importance decreases, more positive self-related and general-type affects are experienced by the fencers, that is, the effects of intuitive appraisal is minimized.

It was also expected that in both matches 1 and 2, the fencers would respond to objective outcome (win/loss) and subjective outcome (perceived success/failure) conditions according to the above hypotheses, with respect to the effects of intuitive appraisal, casual attributions and intellectualization on self- and general-type affects. The summary of the analyses clearly indicates that the experiences reported by the fencers were very similar between matches. This is in line with the hypotheses. However, there were significant differences with respect to (a) the

interactions of objective outcome and intuitive appraisal in match 1 and, intuitive appraisal and stability in match 2, (b) as well as the differences in the modifying effects on intuitive appraisal, most notable the minimizing effects of task importance in the perceived failure condition. Thus, the replication served an important purpose. Based on the fencers' reported experiences many of the findings across the matches were similar, but notable differences helped to delineate aspects of the model that may have been overlooked if a second study had not been conducted. In sport contexts where athletes must participate in a number of rounds or matches, for example fencing, tennis, even baseball with its different innings, and certainly all Olympic events with qualifying runs, it is important to assess the cumulative effects of individual and team experiences, particularly when the event is meaningful, and has been perceived as a failure. This has far reaching implications with respect to interventions at the individual and team level, with respect to addressing cognitive appraisals and their affects on the generation of emotions and providing mental control techniques to athletes to improve performance.

Limitations

The very context of the event may present some difficulties in the interpretation of results. The participants were individual fencers, competing in individual bouts, but within a team context. Although instructed to assess their last bout performance for each match, they may have been influenced by their other bout results, or by the final team outcome. For example, if a fencer lost the final bout, and this bout was the deciding factor to a team victory, the fencers' responses may have been influenced, even enhanced by the "double" loss (i.e. personal and team). However, this type of experience is typical in fencing competitions, especially those of a team nature. Therefore, in terms of ecological validity, this influence may not have negatively influenced, or made less valid the results of the present study. The results may have indeed

reflected accurately the complexity of affect experienced by fencers in a team context. Though it is important to note that appraisals may very well be different with respect to individual and team outcomes. Future investigations would profit from discovering a means to differentiate between these processes, though I concede that due to the very nature of the topic of investigation any such separation would prove highly difficult.

Three factors lead to the loss of participants: Not unexpectedly, those fencers who had performed poorly in a previous bout, were disinclined to reflect upon this performance and many refused to complete second or third questionnaires. Those who did complete the questionnaires may have altered their responses in terms of the self-serving bias and this in turn may have influenced the analyses. As well, repeated testing resulted in the loss of a number of participants, while 89 fencers competed the first questionnaire, only 63 completed it at least twice. This factor suggests that the decision to test only during the first round was valid; fencers may have become increasingly uneager to participate as the tournament progressed. And lastly, although space on the CDSII was provided for up to three reasons, many fencers reported only one reason. It is important to note that many fencers stated that they had no other reasons, and felt they were expected to have them. They tended to search for some time for additional reasons for their performance assessment, and it is possible that these reasons did not reflect situational factors related to their current performance but possible "habitual" concerns with respect to their training and competition results. Perhaps in future studies only one reason, the main cause, should be requested of athletes during competition. This would be beneficial to the researcher, but also to the athletes, as it is important to interfere as little as possible with their mental and emotional state during an event.

Conclusions

The nature of emotion research itself it fraught with difficulties, particularly in terms of defining emotions, or affects. It is clear from the literature that there is little consensus as to the identification of affects as either self-related or general. As Vallerand (1989) stated, the self is implicated in all emotions, and thus this calls into question the necessity of distinguishing between affect types. Emotions vary according to many factors, psychological, physiological and behavioral. As well, individuals themselves experience and articulate emotions differently. In my opinion, assessment of an athlete's cognitive processes and emotions requires the input of that athlete. Thus, the subjective nature of these constructs is dealt with by the subject, particularly when formulating mental control programs for performance enhancement.

In light of the present findings, a strong case can be made for the necessary influence of intuitive appraisal in self-related and general-type affect generation, as this subjective evaluation had a more significant effect than objective outcome, and it appears to have occurred in the absence of reflective appraisal (i.e. no main effects for any of the attributions). Thus it appears that it is the perception of the event and not the event per se that influences affect, and in some cases (e.g. the stability interaction) certain types of affects may be more prevalent. This finding supports the cognitive approach to the study of affect. As Shakespeare wrote "*...for there is nothing either good or bad, but thinking makes it so*" (Hamlet, Act II, scene 2).

Also in line with the model, attributions played a very small role in the generation of affect, except in very specific instances (match 2 – stability). Thus, the present study offers support for the main postulates that intuitive appraisal is a necessary determinant of affect, and that reflective appraisal processes if active, have a modifying function (augmenting or minimizing) on intuitive appraisal, which in turn may influence the generation of emotion.

The replicative design in an actual competitive context contributed to the theoretical and practical significance of the intuitive-reflective appraisal model. Previous studies have been inconsistent in their use of particular affects and attributions, making comparisons difficult if not impossible. The present study has attempted to rectify these inconsistencies, with the use of a model specific to sport contexts, valid measures that integrate previous research and a design free of manipulation.

Given that the model was tested in situ, and replicated under the same environmental conditions, the results add to the validity of the intuitive-reflective appraisal model and its use in sport specific contexts. The present study assessed fencers as individuals competing in a team context. It terms of future research in fencing, applied research designs may prove to be a rich source from which to develop personalized intervention programs. Of particular interest would be to assess a single elite fencer (thus controlling for skill level) throughout a competition, to investigate the degree of consistency that he or she displays in terms of cognitive antecedents and the affects generated. The results could then be developed into a program aimed at enhancing not only positive affects, but addressing the underlying cognitive precursors to these affects.

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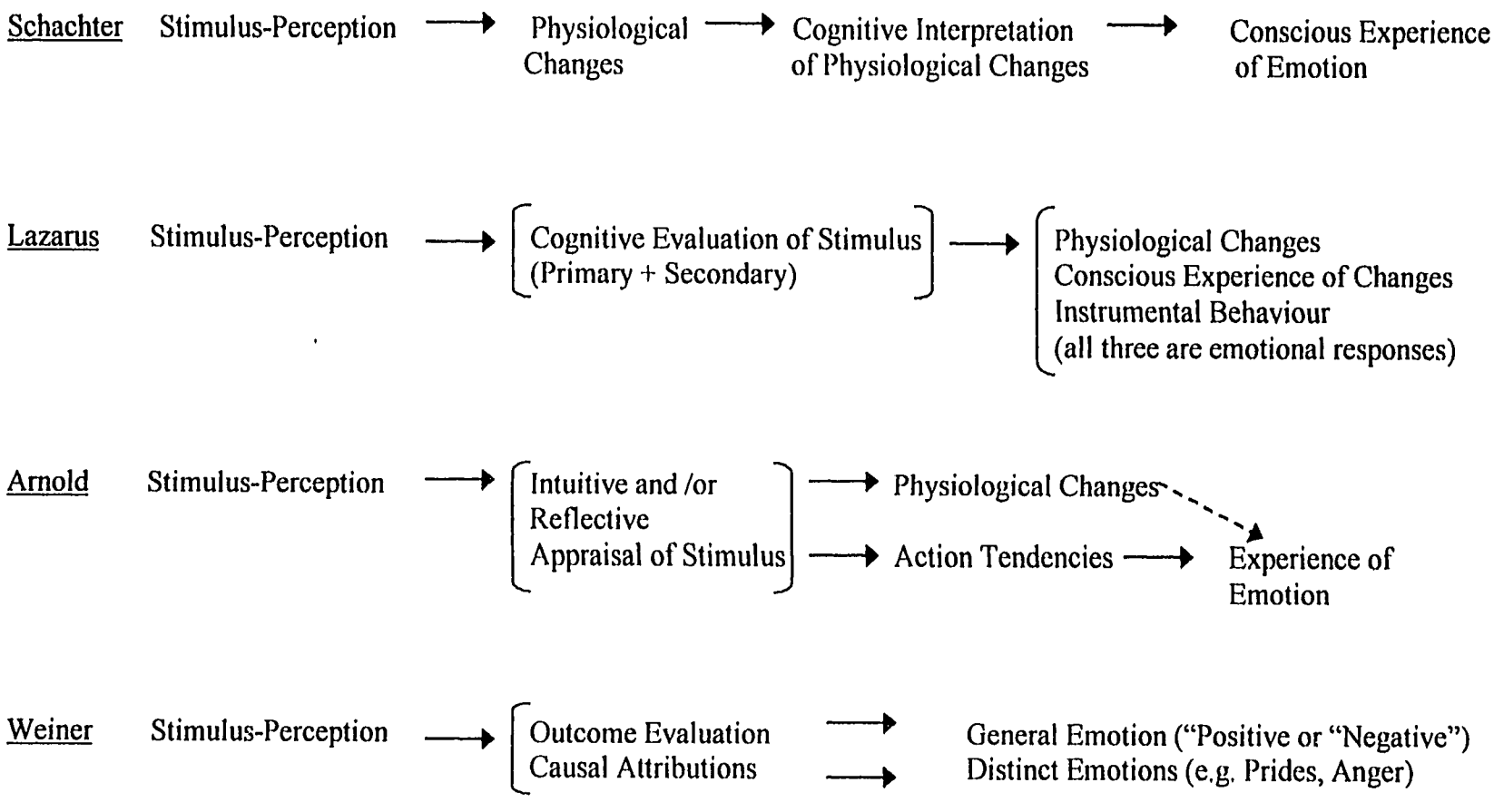

Figure 1. Summary of the cognitive theories of emotion (from Vallerand, 1983)

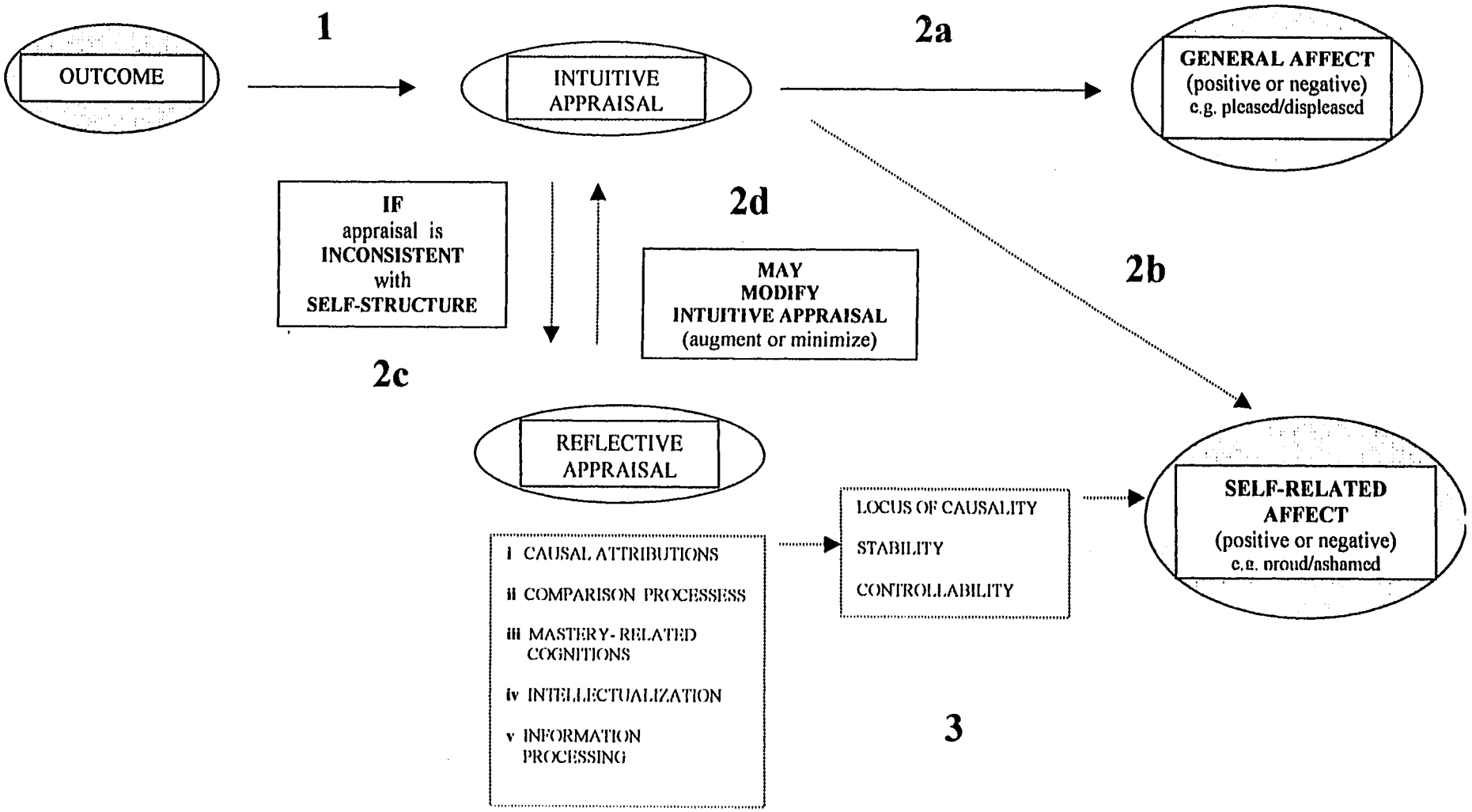

Figure 2. Intuitive-reflective appraisal model for self-related affects (proposed by Vallerand, 1987)

*Note: Dashed lines indicate possible effects.

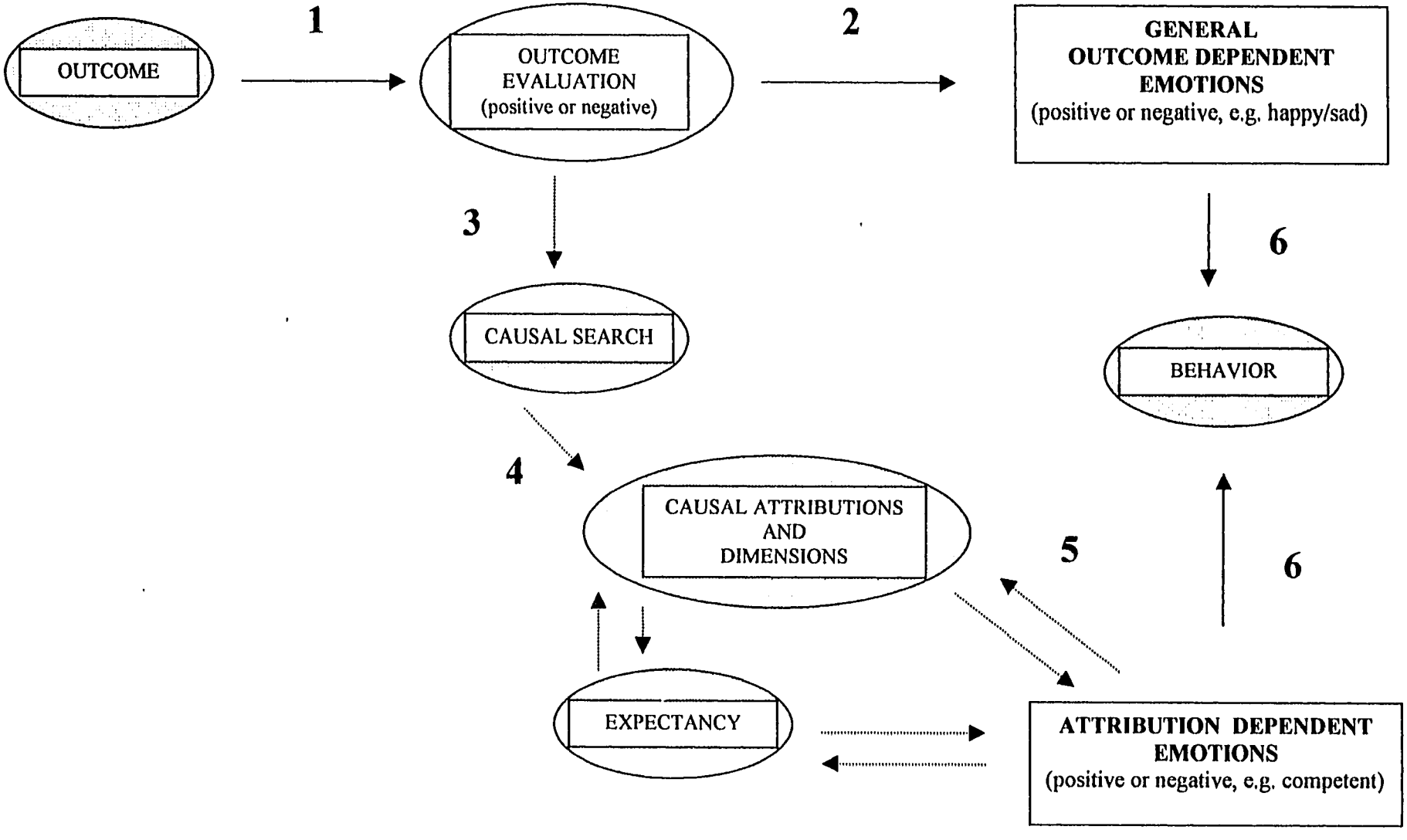

Figure 3. The cognition-emotion process (as proposed by Weiner, 1985)

*Note: Dashed lines indicate possible effects.

	Locus of Causality			
	Internal		External	
	Stability Dimension			
Controllability Dimension	Stable	Unstable	Stable	Unstable
Controllable	Stable Effort	Unstable Effort	Other's Stable Effort	Other's Unstable Effort
Uncontrollable	Ability	Mood	Task Ease	Luck

Note. Specific attributions (e.g. ability, luck) are a combined effect of the dimensions as perceived by the participant.

Figure 4. Dimensions and Elements of Wiener's (1979) Three-dimensional Taxonomy

APPENDIX A

Classification Process

A fencer's National Ranking is based upon three factors: (a) their top five finishes of the year (b) their placing at Regionals (e.g. the Ontario Championships) and (c) their placing at the Canadian Nationals. Each competition is rated on a point system, which depends on (a) the number of fencers and their classifications at that time and (b) if it was an Elite competition (Elites are weighted differently than Open competitions).

A fencer's classification (A, B, C) is based upon specific competition results. If a fencer does better than half of a certain class then that fencer will obtain that classification as well (i.e. with a result better than half of the A's, the fencer will get an A classification). An A is the top level of classification. This is important for matters of National team selection and government funding.

APPENDIX B

Relay Format and Bout Order

Total Score	Team A Fencer Order	Bout Score	Team B Fencer Order	Total Score
5	1	5 - 1	4	1
10	2	5 - 6	5	7
14	3	4 - 8	6	15
20	2	6 - 4	4	19
25	3	5 – 5	5	24
30	1	5 - 2	6	26
33	3	3 - 8	4	35
40	2	7 - 3	6	38
45	1	5 - 3	5	41

Fencing Format for one team match

- All weapons follow the same bout format.
- Each team has three fencers, plus one alternate.
- Each bout may last only four minutes. Each fencer engages in a maximum of three bout per match.
- The first fencer to reach the designated multiple of 5 hits wins, i.e. the first bout is to 5 hits, the second to 10 and so on, until one team reaches 45 hits.
- The maximum score is 45, however the match may conclude at a lower score, based on elapsed time.

APPENDIX C

Letter Of Introduction

Club Address

Dear coach's name,

I am a Master's student in sport psychology at the University of Ottawa and I would like to ask your fencers' permission to participate in a study that I am conducting on competitive fencers.

The research project is a necessary requirement for the Master of Arts degree in Human Kinetics, and is directed by myself, under the supervision of Dr. Michelle Fortier. The main objective of this project is to examine the relationship between perceptions of performance and emotions in sport, through fencers' bout descriptions. A brief questionnaire shall be completed by each fencer after their last bout in their team matches. This procedure will be the least intrusive to the individuals and the teams during the competition. Every attempt will be made not to interfere with fencers' focus and preparation.

It is hoped that the findings from this study shall provide insight into an area and a sport that have not been fully explored in sport psychology research. This knowledge may contribute to athletes' self-awareness and provide targets for performance enhancement.

Permission to conduct the study at the Carleton University Invitational has been given by Mr. Sean Rae, Head Coach Carleton University Fencing Club.

To assure confidentiality and anonymity, all questionnaires shall be collected immediately after their completion, and no names shall appear in any publications or on

any data collection forms. **The information that you provide us with is strictly confidential (private) and will be used for research purposes only**. That is, no one (not your teammates or your coaches) except us will see your answers and we will not be able to identify you.

Please contact us to answer any questions and discuss your fencers' participation. Thank you in advance for your cooperation. Please feel free to contact us at any time:

Terry Lee McPherson, Researcher
School of Human Kinetics
125 Montpetit Hall, University of Ottawa
Tel: (613) 224-6605

Michelle Fortier, Ph.D., Professor
School of Human Kinetics
125 Montpetit Hall, University of Ottawa
Tel: (613) 562-5800 *ext.* 4275

If you have any questions regarding the ethical conduct of this research you may contact:

J. Roger Proulx, Ph.D.
Chair of the faculty of Health Sciences Human Research Ethics Committee
University of Ottawa
Tel: (613) 562-5800 *ext.* 8055

APPENDIX D

PERCEPTIONS OF PERFORMANCE AND EMOTIONS

We are presently conducting an important study that aims to better understand fencers perceptions of their performance, specifically how they evaluate and feel about their bout performance. The following pages consist of questions regarding your performance at this tournament. Please read each question carefully and indicate the extent to which the questions correspond to YOUR personal experience. It is important to answer, i.e. circle a number/indicate a reason for EVERY question

This is neither a test nor an evaluation. Therefore, there are no correct of incorrect answers. We are interested in your HONEST and SERIOUS responses to the questions. It is important to carefully read all of the instructions. If you do not understand a question, we will be pleased to help you.

You do not have to write your name on the questionnaire, so we cannot identify you. However, for the study to be conducted successfully, we require your date of birth and the last 4 digits of your telephone number. **The information that you provide us with is strictly confidential (private) and will be used for research purposes only**. That is, no one (not your teammates or your coaches) except us will see your answers and we will not be able to identify you.

DATE OF BIRTH (DAY/MONTH/YEAR) : ____/____/____

TELEPHONE NUMBER (LAST 4 DIGITS) : _____

Thank you for your participation.

Terry Lee McPherson, Researcher & Michelle Fortier, Ph.D., Supervisor
School of Human Kinetics
University of Ottawa, Winter, 1998

1. BOUT RESULTS

Your Last bout: Score _____ (Win/Loss)

Team Results: Score _____ (Win/Loss)

Opposing Team's name: _____

2. TASK IMPORTANCE

Please indicate how important your last bout in the match was to you. Circle the score that best describes your assessment of the importance of your last bout.

There are no right or wrong answers. Remember that all of your responses will remain confidential. If at any time you no longer want to complete this questionnaire, you may stop without fear of reprisal from the researcher.

Not At All			Moderately So			Extremely So
1	2	3	4	5	6	7

1. How important was it for you to do well in the bout? 1 2 3 4 5 6 7

3. PERFORMANCE EVALUATION

Please evaluate your performance in your last bout in the match. Circle the score that best describes your assessment of your performance.

Not Good At All			Moderately Good			Extremely Good
1	2	3	4	5	6	7

1. How would you evaluate your performance during your last bout? 1 2 3 4 5 6 7

2. How well do you think you did in your last bout? 1 2 3 4 5 6 7

4. PERFORMANCE ASSESSMENT

(1) *Please identify the* **main reason** *for your assessment of your performance.*

_____

_____

_____

Think about the reason you have written above. The items below concern your impressions or opinions of this cause of your performance. ***Circle*** *one number for* ***each*** *of the following questions.*

Is the cause something:

1. That reflects an aspect of yourself	9 8 7 6 5 4 3 2 1	reflects an aspect of the situation
2. Manageable to you	9 8 7 6 5 4 3 2 1	not manageable to you
3. Permanent	9 8 7 6 5 4 3 2 1	temporary
4. You can regulate	9 8 7 6 5 4 3 2 1	you cannot regulate
5. Over which others have control	9 8 7 6 5 4 3 2 1	over which others have no control
6. Inside of you	9 8 7 6 5 4 3 2 1	outside of you
7. Stable over time	9 8 7 6 5 4 3 2 1	variable over time
8. Under the power of other people	9 8 7 6 5 4 3 2 1	not under the power of other people
9. Something about you	9 8 7 6 5 4 3 2 1	something about others
10. Over which you have power	9 8 7 6 5 4 3 2 1	over which you have no power
11. Unchangeable	9 8 7 6 5 4 3 2 1	changeable
12. Other people can regulate	9 8 7 6 5 4 3 2 1	other people cannot regulate

(2) *Please identify the* **second most important reason** *for your assessment of your performance.*

_____

_____

_____

Think about the reason you have written above. The items below concern your impressions or opinions of this cause of your performance. ***Circle*** *one number for* ***each*** *of the following questions.*

Is the cause something:

1. That reflects an aspect of yourself	9 8 7 6 5 4 3 2 1	reflects an aspect of the situation
2. Manageable to you	9 8 7 6 5 4 3 2 1	not manageable to you
3. Permanent	9 8 7 6 5 4 3 2 1	temporary
4. You can regulate	9 8 7 6 5 4 3 2 1	you cannot regulate
5. Over which others have control	9 8 7 6 5 4 3 2 1	over which others have no control
6. Inside of you	9 8 7 6 5 4 3 2 1	outside of you
7. Stable over time	9 8 7 6 5 4 3 2 1	variable over time
8. Under the power of other people	9 8 7 6 5 4 3 2 1	not under the power of other people
9. Something about you	9 8 7 6 5 4 3 2 1	something about others
10. Over which you have power	9 8 7 6 5 4 3 2 1	over which you have no power
11. Unchangeable	9 8 7 6 5 4 3 2 1	changeable
12. Other people can regulate	9 8 7 6 5 4 3 2 1	other people cannot regulate

(3) *Please identify the* **third most important reason** *for your assessment of your performance.*

_____

_____

_____

Think about the reason you have written above. The items below concern your impressions or opinions of this cause of your performance. ***Circle*** *one number for* ***each*** *of the following questions.*

Is the cause something:

1. That reflects an aspect of yourself	9 8 7 6 5 4 3 2 1	reflects an aspect of the situation
2. Manageable to you	9 8 7 6 5 4 3 2 1	not manageable to you
3. Permanent	9 8 7 6 5 4 3 2 1	temporary
4. You can regulate	9 8 7 6 5 4 3 2 1	you cannot regulate
5. Over which others have control	9 8 7 6 5 4 3 2 1	over which others have no control
6. Inside of you	9 8 7 6 5 4 3 2 1	outside of you
7. Stable over time	9 8 7 6 5 4 3 2 1	variable over time
8. Under the power of other people	9 8 7 6 5 4 3 2 1	not under the power of other people
9. Something about you	9 8 7 6 5 4 3 2 1	something about others
10. Over which you have power	9 8 7 6 5 4 3 2 1	over which you have no power
11. Unchangeable	9 8 7 6 5 4 3 2 1	changeable
12. Other people can regulate	9 8 7 6 5 4 3 2 1	other people cannot regulate

5. EMOTION QUESTIONNAIRE

Below is a list of emotions that you may have felt after you finished your ***last bout*** *in the match. Using the scale below, indicate the degree to which you may have felt any of these emotions by circling the most appropriate score.*

Not At All				**Moderately So**			**Extremely So**
1	**2**	**3**	**4**	**5**	**6**	**7**	
1. Happy	1	2	3	4	5	6	7
2. Guilty	1	2	3	4	5	6	7
3. Depressed	1	2	3	4	5	6	7
4. Satisfied	1	2	3	4	5	6	7
5. Proud	1	2	3	4	5	6	7
6. Despair	1	2	3	4	5	6	7
7. Insecure	1	2	3	4	5	6	7
8. Bad	1	2	3	4	5	6	7
9. Joyful	1	2	3	4	5	6	7
10. Sad	1	2	3	4	5	6	7
11. Concerned	1	2	3	4	5	6	7
12. Disappointed	1	2	3	4	5	6	7
13. Contented	1	2	3	4	5	6	7
14. Embarrassed	1	2	3	4	5	6	7
15. Relaxed	1	2	3	4	5	6	7
16. Discouraged	1	2	3	4	5	6	7
17. Calm	1	2	3	4	5	6	7
18. Discontented	1	2	3	4	5	6	7
19. Competent	1	2	3	4	5	6	7
20. Displeased	1	2	3	4	5	6	7
21. Encouraged	1	2	3	4	5	6	7
22. Frustrated	1	2	3	4	5	6	7
23. Good	1	2	3	4	5	6	7

24. Angry	1	2	3	4	5	6	7
25. Pleased	1	2	3	4	5	6	7
26. Incompetent	1	2	3	4	5	6	7
27. Ashamed	1	2	3	4	5	6	7
28. Surprise	1	2	3	4	5	6	7
29. Unconcerned	1	2	3	4	5	6	7
30. Tense	1	2	3	4	5	6	7
31. Elated	1	2	3	4	5	6	7
32. Confident	1	2	3	4	5	6	7

6. BACKGROUND INFORMATION

FENCER INFORMATION

Age: _____

Gender: Female _____ Male _____

What is your nationality: Canadian ___ If other please specify _____

Team: _____

Weapon: _____

Years Fenced: _____

Ranking: _____ Classification (A, B, C): _____

Thank you very much for your participation!

Terry Lee McPherson, Researcher & Dr. Michelle Fortier, Supervisor

APPENDIX E

Match 1 Independent T-tests for Gender Differences (N = 63)

Variable		Male N = 45	Female N = 18	t	p
Task Importance [a]	M	5.22	4.94	-.74	.46
	SD	1.29	1.47		
Intuitive Appraisal [a]	M	4.00	4.19	.43	.67
	SD	1.52	1.84		
Locus of Causality [b]	M	6.52	5.85	-1.41	.16
	SD	1.60	1.93		
External Control [b]	M	3.78	4.43	1.29	.20
	SD	1.66	2.14		
Personal Control [b]	M	6.50	6.46	-.07	.94
	SD	1.62	1.67		
Stability [b]	M	3.29	3.02	-.60	.55
	SD	1.65	1.44		
Self-related Affect [c]	M	5.74	5.18	-1.81	.08
	SD	1.01	1.39		
General Affect [d]	M	4.70	4.47	-.504	.62
	SD	1.25	1.82		

Note. [a] Scores reflect the mean of two items and range between 1 and 7.

[b] Scores reflect the mean of three items and range between 1 to 9.

[c] Scores reflect the mean of six items and range between 1 to 7.

[d] Scores reflect the mean of ten items and range between 1 to 7.

Match 2 Independent T-tests for Gender Differences (N = 63)

Variable		Male N = 45	Female N = 18	t	p
Task Importance [a]	M	4.58	4.94	.80	.43
	SD	1.62	1.73		
Intuitive Appraisal [a]	M	4.18	4.44	.62	.54
	SD	1.52	1.61		
Locus of Causality [b]	M	6.17	6.89	1.18	.24
	SD	2.25	1.99		
External Control [b]	M	3.84	3.56	-.56	.58
	SD	2.47	1.52		
Personal Control [b]	M	6.27	6.78	.86	.40
	SD	2.20	1.84		
Stability [b]	M	3.45	2.69	-1.65	.10
	SD	1.67	1.66		
Self-related Affect [c]	M	5.82	5.16	-1.93	.06
	SD	1.04	1.58		
General Affect [d]	M	4.88	4.40	-1.26	.21
	SD	1.27	1.61		

Note. [a] Scores reflect the mean of two items and range between 1 and 7.

[b] Scores reflect the mean of three items and range between 1 to 9.

[c] Scores reflect the mean of six items and range between 1 to 7.

[d] Scores reflect the mean of ten items and range between 1 to 7.

APPENDIX F

Descriptive Statistics and Correlation Matrices

Match 1 Descriptive Statistics

	Intuitive Appraisal[a]	Locus of Causality[b]	Personal Control[b]	External Control[b]	Stability[b]	Self-related Affect[c]	General Affect[d]	Task[a]
M	4.06	6.33	6.49	3.96	3.21	5.58	4.63	5.14
SD	1.60	1.71	1.62	1.82	1.58	1.15	1.43	1.34
N	63	63	63	63	63	63	63	63

Note. [a] Scores reflect the mean of two items and range between 1 and 7.

[b] Scores reflect the mean of three items and range between 1 to 9.

[c] Scores reflect the mean of six items and range between 1 to 7.

[d] Scores reflect the mean of ten items and range between 1 to 7.

Match 1 Correlation Matrix

	Intuitive Appraisal	Locus of Causality	Personal Control	External Control	Stability	Self-related Affect	General Affect	Task
Intuitive Appraisal		-.15	.18	.07	.20	.64**	.75**	.23
Locus of Causality			.35**	-.49**	.23	-.07	.02	.14
Personal Control				-.26*	-.17	.19	.24	.03
External Control					.06	-.05	.06	.01
Stability						.06	.19	.11
Self-related Affect							.78**	.001
General Affect								.11
Task Importance								

*Correlation is significant at the 0.01 level (2-tailed).

** Correlation is significant at the 0.05 level (2-tailed).

Match 2 Descriptive Statistics

	Intuitive Appraisal[a]	Locus of Causality[b]	Personal Control[b]	External Control[b]	Stability[b]	Self-related Affect[c]	General Affect[d]	Task[a]
M	4.25	6.38	6.42	3.76	3.23	5.63	4.75	4.68
SD	1.54	2.19	2.10	2.23	1.69	1.24	1.38	1.64
N	63	63	63	63	63	63	63	63

Note. [a] Scores reflect the mean of two items and range between 1 and 7.

[b] Scores reflect the mean of three items and range between 1 to 9.

[c] Scores reflect the mean of six items and range between 1 to 7.

[d] Scores reflect the mean of ten items and range between 1 to 7.

Match 2 Correlation Matrix

	Intuitive Appraisal	Locus of Causality	Personal Control	External Control	Stability	Self-related Affect	General Affect	Task
Intuitive Appraisal		.04	.12	-.04	-.001	.65**	.74**	.14
Locus of Causality			.61**	-.57**	.01	-.06	.02	.25*
Personal Control				-.46**	.03	.06	.20	.16
External Control					.09	.07	.05	-.22
Stability						.09	.08	-.09
Self-related Affect							.88**	-.19
General Affect								-.10
Task Importance								

*Correlation is significant at the 0.01 level (2-tailed).

** Correlation is significant at the 0.05 level (2-tailed).

IMAGE EVALUATION TEST TARGET (QA-3)

150mm

6″

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