ATTRIBUTION-EMOTION RELATIONSHIPS IN SPORTING CONTESTS

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Abstract

Attribution theory has been a popular area for research in sports psychology since the middle of the 1970s. However, much of this research has focused on the antecedents of attributions with relatively little research on the consequences of making attributions. It has been proposed in educational psychology that there are emotional consequences of making attributions for achievement. The present research investigated attribution-emotion relationships in the context of sporting achievements using one versus one sporting contests. Four studies were conducted, two in laboratory settings and two in field settings. Using self-report measures of attributions and emotions results suggested that attributions and emotions in sporting contests are related. Winners tended to make internal attributions while losers tended to make internal and external attributions for outcome. But attributions that correlated with emotions were primarily internal for both winners and losers. A similar pattern emerged when a comparison was made between players satisfied with their performance and those players dissatisfied with their performance. The importance subjects attached to winning the contests was found to be a significant moderating variable in relationships between attributions and emotions. Some emotions were only correlated with attributions when it was important to win. These emotions

were primarily esteem-related. Similarly, there was some evidence for losers using defences against certain emotions when they made particular attributions and when it was important to win. Outcome importance was also correlated mainly with negative rather than positive emotions. Finally, in predicting emotion it was found that the strongest predictor was performance satisfaction. Attributions for performance were relatively weak predictors of emotion and attributions for outcome weaker still. It was concluded that attributions can be related to emotions, that the importance of the event can moderate these relationships, and that attributions for outcome and performance both need assessment in sport attribution studies as they are likely to differ in their relationship with emotion. Implications for further research are discussed.

CHAPTER 1

INTRODUCTION

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Sport is an important part of our society in many ways. Not only has it been central to some prominent political issues, including such events as international boycotts, armed conflict, and overseas promotion, but it is also playing an expanding role in the economy of the country in terms of the physical leisure pursuits related to sport (Gratton & Taylor, 1987; Sports Council, 1986). Also, physical activity, including some sports, is now becoming an important area of public health promotion as the inverse relationship between coronary heart disease and physical activity becomes more apparent (Powell, Thompson, Caspersen & Kendrick, 1987). Similarly, the role of competition in education, and in physical education in particular, has been an important topic of debate across the educational and political spectrum in the 1980's. All of these issues suggest that the scientific study of sport is important, although it is only relatively recently that a significant literature expansion in the sports sciences, including sports psychology, has taken place.

Sports science and sports psychology

Although early sports science research concentrated on more 'tangible' aspects of performance, such as training methods, physiology, and sports techniques, more recently encouragement has been given to the psychological study of

sport. For example, a Canadian survey (Gowan, Botterill & Blimkie, 1979) reported that National Sport Governing Bodies cited sport psychology as the most important sport science discipline.

Early attempts at studying psychological aspects of sport tended to focus on motor learning and control (see Schmidt, 1982), as these perspectives were deemed most useful for the work of physical educators and sports coaches. The increase in interest in sports psychology in the 1960's and 1970's saw an expansion into other areas, including personality theory and behaviour modification (Landers, 1983; Wiggins, 1984). However, sports psychology has generally relied on 'mainstream' psychology to initiate new directions, and so it was not until the middle 1970's that a more cognitive approach was adopted in sports psychology research, with motivation, and attribution theory in particular, prominent topics. This mirrored developments in other areas of psychology where a paradigmatic shift towards a cognitive approach has been evident in studies of motivation (Weiner, 1980) and emotion (Averill, 1983).

Attribution theory and the study of emotion in sport

A major part of this cognitive emphasis has been 'attribution theory'. This is an umbrella term used to describe a number of theories about person and self-perception, most of which stem from the seminal work of

Fritz Heider (Heider, 1944, 1958). Essentially, attribution theorists investigate the antecedents and consequences of causal beliefs. For example, questions such as "why did I fail that psychology test?"; "why did she reject my offer of dinner tonight?"; "why did I get such a good score today in the golf match?", are likely to initiate a search for causal attributions. Initial research focused on attribution antecedents, such as achievement motivation (Weiner, 1980) and gender differences (Frieze, Whitley, Hanusa & McHugh, 1982) and on a description of the attributions made. Little has been written on the consequences of making particular attributions in sport (Biddle, 1984; Rejeski & Brawley, 1983).

The study of emotion in sport, despite speculative position papers by Vallerand (1983, 1984), has rarely progressed beyond the study of anxiety (Martens, 1977; Sonstroem, 1984) and arousal (Landers, 1980). This is surprising given the emotional investment in sport often shown by players, officials, coaches and spectators. Research in educational psychology (Weiner, 1986) suggests that emotions may be related to attributions in some circumstances yet this point has not received systematic attention in the sports psychology literature.

The purpose of the research reported here, therefore, was to investigate the patterns of attributions given by participants in sporting contests, to study the self-

reported emotions of these participants and to investigate the relationship between these attributions and emotions. An attempt is made to extend current sports attribution studies by investigating the relationships between attributions and emotions using a wide range of emotions. The research also investigated the role of potential moderator variables, such as the perceived importance of winning or playing well. It is hoped that the research will stimulate further work and ultimately have implications for those involved in sport in terms of the potential for creating positive experiences.

CHAPTER 2

REVIEW OF LITERATURE

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REVIEW OF LITERATURE

Introduction

> "The 1970's surely may be called the decade of attribution theory in social psychology." (Weiner, 1985a, p. 74)

The trend alluded to by Weiner (1985a) seems to be continuing well into the 1980's as attribution theorists attempt to apply their theoretical perspective in ever-more diverse areas. Attributions are the perceived causes and reasons people give for an occurrence and since it is perceived causality that is the focus, the term 'causal attributions' is sometimes used. However, the extent to which attributions are causes or reasons has been the subject of some debate (Buss, 1978), suggesting that researchers must look carefully at their methodologies when eliciting and studying attributions.

The appeal of attribution theory can probably be explained by its apparently high ecological validity demonstrated through the apparently frequent use of attributions in everyday life (Stratton, Heard, Hanks, Munton, Brewin & Davidson, 1986; Weiner, 1985a). However, despite the upsurge of interest in attribution theory in the 1970's, mainly due to the concurrent emphasis on a cognitive perspective, as outlined in Chapter 1, the origins of the theory can be traced back to Heider's work on social psychology in the 1940's and 1950's, with his book 'The

psychology of interpersonal relations', in 1958, being seen as the cornerstone of this work.

The voluminous literature now available on attribution theory generally agrees that a variety of theoretical perspectives exist and these primarily developed from the work of Heider (1958). Prominent developments include those by Jones & Davis (1965), Kelley (1967), and Weiner and colleagues (Weiner, 1980, 1985b, 1986; Weiner, Frieze, Kukla, Reed, Rest & Rosenbaum, 1971). Comprehensive reviews of attribution theory can be found in various sources (Antaki & Brewin, 1982; Hewstone, 1983; Weiner, 1980, 1985b, 1986). Similarly, sport attribution research now has a number of review papers (Biddle, 1984; Brawley, 1984a; Brawley & Roberts, 1984; Rejeski & Brawley, 1983). The purpose of this chapter, therefore, is to outline briefly the main perspectives of attribution theories. This will be followed by a more detailed and critical discussion of the application of attribution theory to achievement in educational and sporting contexts. The main focus of the research reported is the relationship between emotions and attributions for achievement in sporting contests. Consequently, a critical review will be presented on the relationship between attributions and emotions in achievement situations, drawing primarily on the work in educational and sport psychology.

Heider: naive analysis of action

Fritz Heider is considered the founding father of attribution theory with his seminal works on the psychology of 'everyday actions', sometimes referred to as 'naive psychology'. Building on his early work in pre-war Germany, Heider published his most influential work in the United States (Heider, 1944, 1958), although it was not until later, with a wider acceptance of attribution theory, that his work was more fully appreciated (Weiner, 1980).

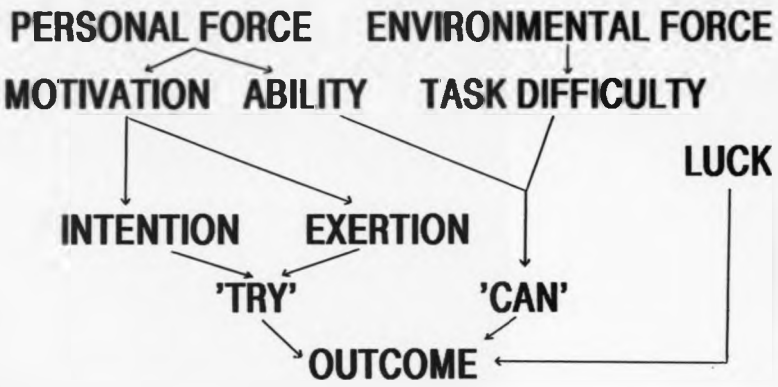
Heider's theory sought to explain the actions of everyday life. In his early work he referred to the understanding of social behaviour through attribution when he said "one of the features of the organisation of the social field is the attribution of a change to a perceptual unit" (Heider, 1944, p358). Later, Heider (1958) outlined three fundamental propositions. First, an adequate understanding of individual behaviour is dependent on knowing how people perceive their social environment. Second, it was assumed that people seek a stable and predictable environment, hence they are liable to frequently indulge in causal thinking. Third, he believed that similarities exist between person and object perception such that people look to dispositional properties of the person (themselves or others) to account for actions, as well as assessing environmental influences - hence Heider subscribed to the

classic Lewinian perspective that behaviour would be influenced by both personal and environmental factors. In extending this argument, he said that personal 'force' was dependent on both motivation (eg. effort) and personal 'power' (eg. ability), and that events could be explained by an interaction of these factors with environmental 'force'. Figure 2.1 shows how an outcome could be explained by a combination of personal motivational factors ('try') and a person x environment interaction ('can'). These concepts were clearly developed by Weiner (1980, 1986) in his work on achievement attributions, to be reviewed later.

Jones & Davis: theory of correspondent inferences

Although drawing on the work of Heider, Jones & Davis' (1965) influential paper focused primarily on attributions of other peoples' actions, rather than self-perception. Essentially, they argued that two types of information are processed prior to making an attribution about another's action. First, information pertaining to the social desirability of the behaviour is assessed. For example, more information may be given about someone's behaviour if they act in an unusual way, hence their behaviour is low in social desirability. Such a case could be the early morning winter jogger; one could assume that such behaviour is indicative of a keen exerciser, although this will likely only be true in situations where few

Figure 2.1 Heider's attribution model.



other influences are present. For example, the jogger may be participating because he/she is under pressure from a friend.

The second type of information processed, according to Jones & Davis, is associated with choice. Again, more information is given when people indulge in an activity which has relatively 'unique effects'; this allows for a better assessment of why one action was taken in preference to another. Attributions will best be arrived at, therefore, under conditions of high 'correspondence of inference' - when the behaviour in question is not particularly commonplace and has relatively unique effects. This landmark paper by Jones & Davis (1965), although focusing on other-person perception, brought a new perspective to attribution theory (Jones, 1979). However, little research in sport has used this approach, despite speculation on its possible application (Biddle, 1984, 1986), and the theory may only be applicable to situations devoid of other influences. In other words, the interaction of social desirability and unique effects may be too simplistic an explanation for others' behaviour given the extent of other possible influences.

Kelley: covariation model

Similar to Jones & Davis (1965), Kelley (1967) used an information processing approach in analysing attributional activity. However, Kelley's approach was seen to be

equally applicable to both self and other-person perception, and was more oriented towards the location of the locus of causality, whereas the Jones & Davis model centred on the intentionality of action. Kelley (1967) used the analogy of the ANOVA statistical model to explain how people use information to explain events. He argued that by studying the covariation between types of information people are able to ascertain the source of variation, or, in simpler terms, the attribution for the action. He argued that three types of information are processed prior to arriving at an attribution. 'Distinctiveness' information refers to the extent that people act in similar or dissimilar ways in other situations. More information is yielded under conditions of low distinctiveness, such as a sportsperson being a consistent winner, not only in sport but in other areas of life too. This is likely to produce attributions to the person (eg. "this person is talented"). 'Consistency' information refers to the extent that the person acts in a consistent way in similar situations, such as being a regular winner or loser in sport. 'Consensus' information refers to how other people behave in that situation. A person scoring well on a golf course which everyone else finds difficult (low consensus) is likely to produce personal attributions (eg. he/she is a good golfer). Kelley (1967), however, says that people process all three types of information and therefore attributions are arrived at by an interaction of these factors. Kelley more

recently has suggested that such information processing may be too complex to be a regular occurrence (Kelley & Michela, 1980). Nevertheless, his work has been important in attribution theory and has subsequently been found to have some explanatory value in a number of areas, including education (Jaspars, Hewstone & Fincham, 1983) and health decision-making (King, 1983).

ATTRIBUTIONS FOR ACHIEVEMENT: EDUCATION

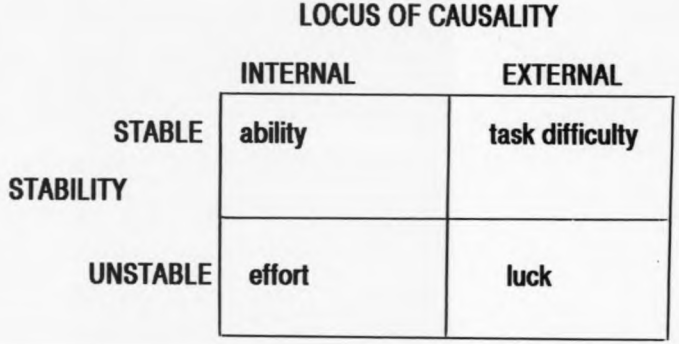
The use of attribution theory in achievement settings has been extensively researched and documented by a number of individuals, with the work of Bernard Weiner being most influential (eg. Weiner, 1979, 1980, 1985b, 1986; Weiner et al., 1971). Again, this work has been strongly influenced by Heider's theorising, although Weiner also extended the work on achievement motivation (Atkinson & Raynor, 1974) and locus of control (Rotter, 1966). Although Weiner's initial research was in educational contexts, his focus on achievement attributions makes it a suitable base from which to study achievement attributions in sport. Indeed, Weiner later extended his work in achievement attributions to include application in sports contexts (Weiner, 1981, 1986).

Weiner's original work (Weiner et al., 1971) was primarily concerned with the types of attributions given for academic success/failure in the classroom. Similar to Heider's model, illustrated in Figure 2.1, Weiner et al.

(1971) identified four main causal factors: ability, effort, task difficulty and luck. However, these were not meant to be the only attributions, despite criticisms on this point from some sources (see Weiner, 1980). However, they were suggested by Weiner et al. (1971) after a consideration of Heider's work. These four factors were not derived from experimentation and it was only later that researchers began to question the assumption that four main attributions were made in achievement contexts. Indeed, subsequent research in sport by Roberts & Pascuzzi (1979) has questioned this for competitive sport achievement environments and this will be discussed in more detail later.

In their early research, Weiner et al. (1971) produced a classification scheme for these attributions, as illustrated in Figure 2.2. The two dimensions refer to locus of control (internal/external) - that is whether the perceived cause is primarily associated with the person (eg. ability) or the environment (eg. the task) - and stability/instability over time. Unstable attributions are relatively transient (eg. effort) while stable attributions are those perceived to be relatively unchanging over time (eg. ability). However, Weiner (1979) later modified this model and included a third dimension of 'controllability'. He also renamed the locus dimension 'locus of causality' to make it more applicable for postdictive cognitions, and to avoid confusion with the

FIGURE 2.2 Weiner's original 2 x 2 attribution classification.



controllability dimension. The distinction between locus of causality and control is best illustrated by a comparison of stable ability (eg. believing that one is 'born' a fast runner) and effort. Ability in this context is internal and uncontrollable and effort is internal but controllable. However, such a classification scheme, as illustrated in Figure 2.3, is not without problems and these will be discussed now and in the section on attribution dimensions in sport research.

Although Weiner's (1979) model has received much support (Forsterling, 1980; Meyer, 1980; Russell, 1982), other researchers have questioned the dimensional categorisation of the model. However, even Weiner states that much of the early work on attribution dimensions was based on the 'logical structure' of attributions rather than derived evidence (Weiner, 1986). This led him to say that "the logical analysis of causal structure has an inherent flaw: causal dimensions are derived from attribution theorists rather than from their subjects" (Weiner, 1986, p.51). Similarly, Wimer & Kelley (1982) said that "for the most part, causal dimensions derive from the minds of attribution theorists, not laypeople" (p.1143).

The few factor analytic and multidimensional scaling studies on attribution dimensions show mixed results, although Weiner (1986) appears to accept these results more readily as being supportive of his model. Certainly the internal-external distinction has been found on a

Figure 2.3 Weiner's reconceptualised 2 x 2 x 2 attribution classification.

	internal attribution		external attribution	
controllability	stable	unstable	stable	unstable
controllable	stable effort	unstable effort	stable effort (other's)	unstable effort (other's)
uncontrollable	ability	mood	task difficulty	luck

consistent basis, but other dimensions are less clear (Ronis, Hansen & O'Leary, 1983). Wimer & Kelley (1982), in a factor analytic study of attributions, requested subjects to read a series of sentences and to give attributions for the events described. These attributions were then rated by the subjects on 44 scales which represented underlying properties (dimensions) of causes. These were constructed on the basis of a) the major causal dimensions/distinctions proposed by attribution researchers, b) the major causal distinctions found in philosophy, and c) other dimensions/distinctions judged to be of importance to laypeople. The factor analysis revealed three bi-polar dimensions labelled 'good-bad', 'simple-complex' and 'enduring-transient'. In addition, two main unipolar dimensions were found and were labelled 'the person' and 'motivation'.

These results support the locus of causality ('the person') and stability ('enduring-transient') dimensions of Weiner, but with other dimensions being found, and the mix of bi-polar and unipolar structures, the 3-dimensional model proposed by Weiner can be seriously questioned. However, the Wimer & Kelley (1982) study suffers from two main problems. First, it deals with subjects reacting to hypothetical events rather than events they have actually experienced, and second, the dimensions were presented to the subjects for rating. This study, therefore, was not a true study of laypeople's

thinking on the structure of attributions.

In summary, there has often been an uncritical acceptance of a) a limited range of achievement attributions, and b) Weiner's (1979) 3-dimensional model. Subsequent research which has addressed these issues, not surprisingly, has found that attributions are not restricted to the factors of ability, effort, task and luck, and that serious doubt exists as to the structure and nature of dimensions (Marsh, Cairns, Relich, Barnes & Debus, 1984), although the internal-external dimension seems to be consistently observed. Research has yet to be convincing on the measurement of dimensions and the generality of these dimensions, if they exist, across situations. Ultimately, it may be better to study attribution elements (ie. the component parts of supposed attribution dimensions), if these are the entities actually used by people in the attribution process. It has yet to be demonstrated that people actually think in terms of attribution dimensions.

The self-serving bias

A common assumption in early theorising in attribution theory was that successful experiences elicited internal attributions and failure experiences led to external attributions (Iso-Ahola, 1985). This came to be known as the 'self-serving bias', or 'hedonic bias', because it was believed that people operated such strategies in an effort to protect or enhance their own self-esteem (Weiner,

1980). This process is believed to be the result of either a conscious decision to distort causal perceptions, or the result of 'accurate' reflections of self-perception. In the latter case, for example, subjects may actually perceive themselves to be more responsible for positive outcomes compared with failure. This would be an 'accurate' perception rather than a conscious decision to distort causality. The conscious distortion is likely to be the result of motivational influences, such as the need to protect self-esteem in failure contexts. This would appear to be more likely under conditions of high motivation, yet rarely have attribution studies analysed causal perceptions as they relate to task-specific motivation. This may be even more critical in achievement attributions.

In educational psychology, Marsh (1986) has reported that the self-serving effect is greater for students with higher academic self-concepts, higher ability and when referring to ability rather than effort attributions. Individual differences, therefore, may also account for self-serving biases.

A review by Miller & Ross (1975) found that self-enhancing attributions were common under success conditions, but that self-protective attributions in failure were not so common. They also questioned the assumption that the self-enhancing attributions were a function of motivational distortion. Rather they argued that such a bias is due to

expectations of success, the tendency for people to perceive a closer relationship between behaviour and outcome under success conditions, and the tendency for people to misconstrue the meaning of contingency. However, Zuckerman (1979) suggested that the self-serving bias, and the motivational explanation, was 'alive and well'. Tetlock & Levi (1982), on the other hand, steered a middle course and concluded that it was not possible to explain biases in terms of either motivation or information-processing as they are "empirically indistinguishable". Brawley (1984b), however, suggests that self-serving biases are a function of memory processes. In a study of tennis doubles matches, he found evidence for players more easily and frequently remembering their own inputs to team efforts. Other research in sport psychology has called for a closer investigation of the conditions which could lead to self-serving biases (Mark, Mutrie, Brooks & Harris, 1984). Such evidence leads to the conclusion that the self-serving bias has yet to be clearly understood.

Gender differences

Reviews of research on gender differences in attributions in both general psychology (Lochel, 1983) and sport psychology (Blucker & Hershberger, 1983; McHugh, Duquin & Frieze, 1978) suggest that men have higher perceptions of competence in achievement settings, and therefore tend to attribute success to internal factors, more than women.

Certainly sport environments, due to historical and social precedent, are pervasive contexts for sex-role stereotyping, although research has shown that self-confidence can be the same for both sexes if equal success experiences are encountered, even on tasks labelled 'masculine', such as those involving strength and power (Corbin & Nix, 1979).

Some people have argued successfully that women have lower beliefs in their ability (Dweck & Goetz, 1978), while others have suggested that a reappraisal is needed of initial goals and motives prior to making causal attributions. For example, Maehr & Nicholls (1980) argued that success and failure are subjective states and hence will be perceived differently by different groups. To assume, therefore, that men and women will appraise success in the same way, and to the same extent, may be a mistake, particularly in the light of original conceptualisations of achievement motivation being entirely male-oriented. However, despite research supporting gender differences in educational (Lochel, 1983) and industrial (Kaufman & Shikiar, 1985) settings, sport attribution studies have sometimes not found such differences (Mark et al., 1984, study 2; Spink & Roberts, 1980). For example, Mark et al. (1984) found that winning racketball players attributed their result more to controllable and stable factors than losers, but this effect was the same for men and women. No differences

between men and women, or winners and losers, were found on locus of causality. These results could be due to similar personalities of men and women in sport or the fact that in the majority of cases competition, and therefore comparison, is within-sex rather than between-sex, unlike in education. Future research may wish to address the issue of sex-role perceptions and attributions as preliminary evidence would suggest that these are more important in determining attributional style than gender per se (Crombie, 1983).

ATTRIBUTIONS FOR ACHIEVEMENT: SPORT

A number of sport psychologists followed in the footsteps of Weiner by conducting studies on achievement attributions, although instead of focusing on classroom cognitions they investigated attributional thinking in the sports environment. Field, laboratory, individual and team settings were all used (Brawley & Roberts, 1984). Initial studies tended merely to describe the attributions made to a sports outcome (ie. win/loss), or to investigate individual differences in attributional thinking, such as gender and achievement motivation differences.

In a review of the field, Brawley & Roberts (1984) identified the following characteristics of laboratory sport attribution research during the latter part of the 1970's.

a). subjects were mainly university students or

children;

b). the focus was almost exclusively on self attributions;

c). the experimental tasks were usually novel;

d). the independent variables were usually win/loss or prior wins/losses;

e). some attempts were made to manipulate ego-involvement, but this was rarely checked for effectiveness;

f). almost always subjects were asked to choose causal attributions from a list provided by the experimenters. These were predominantly ability, effort, task difficulty and luck.

Despite these biases and problems, the results of these studies suggested that patterns of attributions could be identified in sport, and in particular internal attributions of winners. Most of the studies interpreted such results from the motivational self-serving bias perspective. However, there are important questions that remain. For example, no studies in sport psychology have addressed the issue of 'spontaneous' attributions in naturalistic settings. All studies have elicited attributions in response to direct questioning. This issue will be addressed in a later section of this chapter. Also, the use of students and children has meant that little is known about attributions made in sport by older participants. Similarly, sport attributions have been

exclusively self-oriented in competitive environments, suggesting that a broader approach is required which investigates attributions in recreational and health/fitness settings from both self and 'observer' perspectives (Biddle, 1986; Jones & Nisbett, 1971; Rejeski, 1979).

Problems were also identified by Brawley & Roberts (1984) for field studies of sport attributions. For example, although both individual and team sports were investigated, most were field studies with no manipulation of independent variables, and both team and individual perceptions of outcome were assessed. Such a mix of methodologies has made comparisons difficult.

Most of the early sport attribution studies concentrated on two processes. These were the attributions themselves, and factors which led to the making of such attributions, such as the game outcome and individual differences in achievement motivation (eg. Iso-Ahola, 1977; Roberts, 1978; Spink, 1978). All of these studies relied exclusively, and relatively uncritically, on the work of Weiner et al. (1971). Measurement issues went unaddressed, as did the issues of attribution consequences and actor/observer differences (see Bukowski & Moore, 1980, for an exception), although speculation on the actor/observer issue in exercise and sport contexts has been made (Biddle, 1986; Rejeski, 1979).

Attribution elements

The early sport attribution research required attributions to be made almost exclusively to the four elements identified by Weiner et al. (1971) - ability, effort, task difficulty and luck -although some studies (Spink, 1978) added more sport-specific elements, such as 'officials'. Roberts & Pascuzzi (1979) investigated the types of attributions made in sport to see if the traditional four elements identified were the dominant factors. They administered an open-ended questionnaire to American university students. The subjects were asked to respond to a variety of different sports situations and to provide possible attributions for outcome in each of the hypothetical scenarios. The questionnaire provided eight stimulus items varied according to involvement (player or spectator), nature of the sport (team or individual), and outcome (win or loss).

On coding the responses the investigators found that subjects used ability, effort, task difficulty and luck only 45% of the time, suggesting that prior sport attribution research which had relied on these four elements had been over-restrictive. However, in classifying these elements, the researchers were able to utilise the basic locus x stability model advocated by Weiner et al. (1971) in placing all of the attributions made. The dimensional categorisation of attributions made

Figure 2.4 Roberts & Pascuzzi's (1979) classification of sport attributions

in the Roberts & Pascuzzi (1979) study is shown in Figure 2.4. It is likely that the sport environment provides opportunities for a greater range of attributions than academic settings, with such factors as the weather, officials and teamwork being possible attributions. However, while this study provided useful evidence of the range of attributions, the use of hypothetical achievements raises doubts about the extent to which the findings can be generalised to real sporting outcomes. Further research in 'real' sport contexts, therefore, is essential. It is surprising that few researchers have addressed the issue of types of attributions made in sport, although the Roberts & Pascuzzi (1979) study, despite the methodological weaknessess outlined, did provide a useful starting point. Further use of open-ended assessments, as well as interview and naturalistic methods, may also be fruitful.

Attribution dimensions

Sport psychologists, while initially accepting the Weiner et al. (1971) model of locus and stability dimensions (Roberts & Pascuzzi, 1979), later adopted the reformulated model proposed by Weiner (1979) which added a third dimension, controllability. However, the problem over who should categorise the attributions into dimensions (subject or experimenter) was recognised. A psychometric advance appeared to be made on this issue with the publication of the Causal Dimension Scale (CDS; Russell,

1982), although some doubt exists about the adequacy of this measure (as discussed later). The CDS is a nine-item questionnaire yielding three dimensional scores: locus of causality, stability and controllability. First, subjects are requested to give an attribution for the event in question (eg. winning a squash match). Then they are asked to categorise that attribution on each of the nine statements. The scoring of these responses gives the three dimension scores.

McAuley & Gross (1983) were the first to use the CDS in sport psychology. They used the scale to assess the attributional patterns of recreational table tennis players. Multivariate analysis revealed a significant difference between winners and losers on all three dimensions, with winners making more internal and controllable, and less unstable attributions. However, the results showed that losers also made internal, unstable and controllable attributions. This was also found in a similar study investigating the emotional consequences of attributions following table tennis matches (McAuley, Russell & Gross, 1983). These results show that although differences can be detected between winners and losers, they may be relative differences only.

Mark et al. (1984) used the CDS with tournament squash players and their analysis revealed that winners gave significantly stronger stable attributions than losers,

this difference being 'absolute' and not just relative. A trend also showed that winners gave slightly stronger controllable attributions than losers. However, this difference was merely relative. No difference was found on locus of causality. In a follow-up study with racketball players, Mark et al.(1984, study 2) found that winners made more unstable and internal attributions than losers, although these differences were relative, with both groups giving internal and unstable attributions. These results were the same for both men and women.

Subsequent studies have also found differences in attributional style in sport using the CDS (McAuley, 1985), but there is some doubt about the psychometric clarity of this inventory, and in particular the controllability subscale. Although Biddle & Jamieson (in press) found a trend for winner/loser differences on controllability after table tennis matches, supplementary analysis of the three controllability subscale items showed an interesting finding. The three items refer to 'controllability', 'intentionality' and 'responsibility' (see Russell, 1982). Although winners were higher on the overall controllability subscale than losers, this was wholly attributable to their scores on intentionality and responsibility. The controllability item showed no difference between winners and losers. Russell (1982) also found low internal reliability coefficients for the controllability subscale, and recent research by Vallerand

& Richer (1987), while finding some support for the CDS factor structure via confirmatory factor analysis, found internal reliability acceptable only for the locus and stability subscales. Similarly, Russell, McAuley & Tarico (1987) found low internal reliability for the controllability scale and concluded that "the controllability measure appears to be less reliable than the locus of causality and stability measure. The level of internal consistency is below that recommended ... for an instrument used in research contexts. In order to increase the reliability of the measure, it will be necessary to add additional items to this subscale" (Russell et al., 1987, pp. 1255-1256). These authors state that work along those lines is proceeding, and a CDSII has been tested in preliminary research (E. McAuley, personal communication, June, 1986). However, Russell et al. (1987) also report that the CDS is a superior assessment of attribution dimensions when compared with experimenters coding either specific attribution ratings or open-ended attributions.

The use of the controllability dimension, at least as measured by the CDS, would appear to be problematic. First, the psychometric robustness of the controllability subscale on the CDS is relatively poor. Second, the degree of interrelationship between locus of causality and controllability dimensions is not known, and in some studies the two dimensions are highly correlated, thus questioning the discriminant validity of the scales

(Russell et al., 1987; Vallerand & Richer, 1987). Third, the measurement of controllability via the CDS has confounded internal and external control. The CDS asks whether the stated cause was "controllable/uncontrollable by you or other people". It could be argued that a) control by others is not the same as control by you, and b) it is difficult, or even impossible, to have control if the cause is perceived to be external. The CDS items, therefore, are confounded by the addition of the statement "...or other people". Finally, the conceptual clarity of 'controllability' is poor. Weiner (1980) says that "intentionality differs from controllability. However, the differentiation between intentionality and controllability is difficult to support with any surety" (p. 347). Despite these comments, the CDS has both of these items contributing to scores on the overall controllability subscale. In addition, it has yet to be determined, when asking subjects to rate controllability, whether they are rating actual control or whether the event could have been controlled (hence it is 'controllable'). Indeed, Anderson & Arnoult (1985) suggest that controllability could be more characteristic of the event itself rather than a perception of the cause of the outcome.

Tenenbaum & Furst (1986), in asking subjects to give more than one attribution for a sporting outcome, found that there was marked inconsistency of responses when coded on the CDS, although the coding of the subject's first

attribution was consistent with prior research. Tenenbaum & Furst (1986) asked subjects to give up to three attributions for their sports outcome. All three attributions were then rated separately on the CDS. These results were supported by Tenenbaum, Gal-Or, Dekel & Hovav (1987). Given the likelihood of multiple attributions being made in sport, consistency of attribution dimensions is an important issue for future research. These studies also suggest that restricting subjects to their 'main' attribution is limiting. Clearly, further research is required on the nature of attribution dimensions (Biddle, 1987; Ronis et al., 1983), and there is much to be said for working with elements rather than dimensions.

Subjective versus objective sporting outcomes

Since the initial research in educational psychology focused on the objective outcomes of passing or failing classroom tests (Weiner et al., 1971), so sport psychology studies of attributions investigated objective wins and losses. However, Spink & Roberts (1980) questioned the sole use of objective outcome as a measure of success and failure. They elicited attributions for winning and losing from tournament racketball players. Based on post-game assessment of satisfaction with their performance, subjects were classified into one of four cells. The 'clear win' cell comprised satisfied winners, 'clear loss' was for dissatisfied losers, 'ambiguous win' was for dissatisfied winners, and 'ambiguous loss' was for

satisfied losers. Their results showed main effects for both objective and subjective outcome, such that winners made more internal attributions than losers, and clear outcome players made more internal attributions than those experiencing ambiguous outcomes. More specifically, in a clear win situation, subjects made attributions to high ability and effort, but to low task difficulty in an ambiguous win situation. Attributions to low ability and effort were made in a clear loss situation, while for an ambiguous loss, attributions were primarily to the difficulty of the task (Spink & Roberts, 1980).

These results suggest that attribution research should account for both objective and subjective outcomes. Moreover, it is likely that subjective perceptions of performance will play a more dominant role in sport contexts than in educational environments. It is reasonable to suppose that sport involves a greater awareness, on the part of the participant, of the process of playing well in addition to the 'product' of winning. In educational contexts, particularly when assessments are used for such extrinsic goals as employment, the product of achievement is likely to be more salient than the process of learning. Such an analysis is, probably, over-simplistic but it could point towards a much-needed extension of Weiner's work in the field of sport psychology.

The study by Spink & Roberts (1980) has usefully alerted the attribution researcher to study both objective and subjective outcomes. However, their study had a flaw. Although they analysed their results by both objective and subjective outcomes, they only assessed attributions for objective outcome. A more complete understanding would have been gained had they assessed the attributions made in response to the perceived outcome as well as the objective win/loss. With the methodology used, it is not possible to know whether players actually used attributions for win/loss, the way they played, or a mixture of both. Thus it seems important to obtain separate attributions for outcome and for subjectively perceived performance.

Are attributions really made for achievement outcomes?

Early studies in attribution research, both in general and sport psychology, failed to verify whether people actually made attributions in achievement situations other than when a researcher asked for responses on an attribution questionnaire! Indeed, some researchers have questioned the whole process of conscious awareness of mental processes (Nisbett & Wilson, 1977). It is quite possible, of course, that some attributions, particularly those made in public settings, will simply be post-hoc rationalisations. However, in an effort to demonstrate the extent and reality of attributional processes, Weiner (1985a) located 17 published studies investigating

'spontaneous' attributional thought and found clear support for such cognitive activity, particularly under the conditions of a) the non-attainment of a goal, and b) the occurrence of an unexpected event. Assuming that participants have some commitment to the goals of winning and playing well, it is likely in sport that those who lose (especially unexpectedly lose) and/or are dissatisfied with their performance will engage in more attributional thought than others. This does not, of course, satisfy the critics who believe that attributions are solely post-hoc rationalisations, but it does suggest that attributions are made in everyday situations as well as research settings, and that certain situations are more likely to encourage real and spontaneous attributions than others.

The methods reported by Weiner (1985a) also provide some interesting possibilities for future sport psychological research. For example, spontaneous attributions were researched using available documentary material (eg. newspaper reports: Lau & Russell, 1980), recording of verbal responses (Diener & Dweck, 1978), as well as using 'indirect attributional indexes', such as free recall and the content of sentence completion (Weiner, 1985a). Such qualitative methodology may prove to be a fruitful expansion of current methods in sport psychology (Martens, 1987), although a reliance on memory is not strongly advocated. The method of recording verbal responses, used

by Diener & Dweck (1978), could be used in laboratory studies of sporting contests. Subjects would be asked to verbalise their thoughts as they participate in the experimental task and these responses would then be analysed at a later date. This would provide a more naturalistic method of eliciting and studying attributions although the possibility still exists that using such a method may still elicit thoughts which may not have necessarily existed.

RELATIONSHIPS BETWEEN ACHIEVEMENT ATTRIBUTIONS AND EMOTIONS: EDUCATION

The attribution process, in its most basic form, can be conceptualised as a three-step model, as depicted by Kelley & Michela (1980), and shown in Figure 2.5. This model suggests that attributions serve as possible precursors of a variety of consequences. Early attribution theorising (Weiner et al., 1971) sought to outline the consequences of making attributions along the locus and stability dimensions. Essentially, it was believed that attributions along the locus dimension were associated with affective consequences, while attributions on the stability dimension were related to future expectancies (Frieze, 1976; Weiner et al., 1971). Therefore, attributions to stable factors are considered to enable people to better predict future outcomes than when unstable attributions are given, and similarly,

Figure 2.5 A model of the attribution process (Kelley & Michela, 1980).

attributions to internal factors are thought to intensify, and external attributions to reduce, emotional reactions. These notions have, in part, withstood the test of time, although Weiner (1983) has argued that sometimes expectancy change, rather than expectancy per se, should be assessed.

Emotion researchers generally agree that emotion is a difficult concept to define (Frijda, 1986; Vallerand, 1983). However, there is general agreement that emotion consists of at least three components: physiological, behavioural, and subjective experience. In terms of the research reviewed here, the literature has mainly been restricted to the behavioural and subjective experience components. This method, however, may not be particularly informative in respect of the nature of emotions leading to variability in behaviours like persistence. For example, much of the work in learned helplessness has centred on depression. Little is known of the influence of other emotions on behavioural deficits. As far as emotional consequences are concerned, the simple locus-affect relationship was initially derived from achievement motivation theory (see Atkinson & Raynor, 1974; Dweck & Elliott, 1983; Weiner, 1980, 1986) since the achievement motive was seen as the ability or capacity for experiencing pride in accomplishment. The pride/shame dimension is clearly a limiting view of emotion, and Weiner has argued cogently for the researching of a full

range of affects in achievement contexts (Weiner, 1980, 1983, 1985b, 1986). Similarly, sport psychological research has been over-restrictive in its study of emotion, relying almost exclusively on investigations of arousal (Landers, 1980) and anxiety (Sonstroem, 1984), despite pleas for a wider look at emotion in sport (Vallerand, 1983, 1984).

The clinical literature has dealt extensively with attribution processes in the study of emotion (Abramson, Garber & Seligman, 1980; Harvey & Galvin, 1984; Peterson & Seligman, 1984). This work is primarily limited to pathological, usually depressogenic or at least depressive, states of emotion. It would appear, therefore, at this stage, to offer only a limited overlap with the achievement attribution literature. However, speculation on the role of learned helplessness and attribution in sport has been made (Dweck, 1980).

As already stated, early work in achievement motivation, and current work in sport psychology, can be criticised for being over-restrictive in the range of affect studied. As a result, Weiner, Russell & Lerman (1978) stated:

> "there is neither experimental nor anecdotal evidence supporting the belief that the affect one experiences in a 'pure' achievement setting is pride or shame. It is equally reasonable to propose that following success or failure one experiences feelings of

competence (incompetence), safety (fear), contentment (agitation), or gratitude (vindictiveness)". (Weiner et al., 1978, p.67)

Consequently, Weiner et al. (1978) set about studying a range of affects in academic achievement settings and the extent to which they were related to attributions. This was the first such study in educational psychology and has subsequently proved to be the foundation on which Weiner has built his attribution-emotion theory (Weiner, 1980, 1985b, 1986).

Weiner et al. (1978) first compiled, using a dictionary, a list of potential emotional reactions to success and failure. They then selected the dominant attributions found in previous achievement research. Their methodology involved subjects being presented with a hypothetical story of academic success and failure, with an appropriate attribution given for the outcome (eg. high test score due to having studied hard). Subjects were then asked to report both the type and intensity of emotion that would be experienced in such a situation. Such methodology is weak, and was acknowledged as such by the researchers. Not only were the subjects reacting to a hypothetical situation, thus not experiencing 'real' emotion, but they were also presented with the attributions rather than being allowed to produce their own.

In a follow-up investigation, Weiner, Russell & Lerman

(1979) asked subjects to recall a 'critical incident' in their lives when they had experienced academic success or failure. However, they were still presented with the attributions (ability, unstable effort, stable effort, personality, other people, and luck) which were selected from their previous study (Weiner et al., 1978). Again, the type and intensity of emotion were assessed, this time also using free recall. Although the critical incident allowed for a more realistic situation to be appraised, it still provided methodological problems. First, memory processes are involved and the results assumed that all subjects were able to recall their incident in equal ways. Second, and similar to the earlier study by Weiner et al (1978), subjects did not actually experience 'real' emotion in the experimental setting.

Despite these methodological problems, both these studies (Weiner et al., 1978, 1979) provided possible guidelines for attribution-emotion research in achievement contexts. First, the two studies supported the notion of 'outcome-dependent' emotions - those related to success and failure rather than to the attributions given for that success/failure. Weiner et al. (1978) referred to these as a 'general reaction' to outcome, such as pleasure and happiness. Second, they found 'attribution-dependent' emotions - those distinct emotions related to the attribution given for the outcome. Examples in the success conditions were: stable effort with relaxation,

personality with self-enhancement, and luck with surprise. For failure, examples were: ability with incompetence, and personality with resignation (Weiner et al., 1978).

In subsequent work, Weiner and colleagues have proposed that attribution dimensions also relate to emotions (Graham, Doubleday & Guarino, 1984; Weiner, 1985b, 1986; Weiner, Graham & Chandler, 1982; Weiner & Handel, 1985; Yirmiya & Weiner, 1986). The basic findings of these studies are that self-esteem emotions, such as pride, are associated with internal attributions on the locus of causality dimension, expectancy-related emotions, such as hopefulness and hopelessness, are associated with the stability dimension, and social emotions are associated with the controllability of the attributions. Social emotions could be self-directed, such as shame and guilt, or other-directed, such as anger, gratitude and pity. Weiner's complete attributional theory of motivation and emotion, including the attribution-emotion links hypothesised, is shown in Figure 2.6 (Weiner, 1986).

Although the initial studies by Weiner et al. (1978, 1979) provided promising results, the methodologies used were poor. Neither the hypothetical nor recollective method assessed 'real' emotion in an actual achievement context. Despite this, some researchers have persisted in continuing with this type of methodology, and usually have supported Weiner's findings (Graham et al., 1984; Lefcourt, Martin & Ware, 1984; McMillan & Spratt, 1983;

Figure 2.6 Weiner's attributional theory of motivation and emotion (Weiner, 1985b, 1986)

Russell & McAuley, 1986, Study I).

Russell & McAuley (1986) conducted two studies to investigate the relationship between attributions and emotion, with Study I involving an imaginery achievement setting, and Study II an actual achievement outcome (examination performance). In Study I, they presented subjects with different hypothetical achievement situations varying by outcome (success/failure) and the attributions given for the outcome. One of eight attributions was presented in each situation. Subjects were also asked to rate these attributions on the CDS. Fourteen positive and 14 negative emotions were presented to the subjects for rating in each situation. Only the success conditions received the positive emotions and the failure conditions the negative emotions.

The results showed that attribution elements were associated with particular emotions. For example, the success attributions of ability and effort were associated with high ratings of competence, and attributing failure to lack of effort was associated with feelings of guilt. Overall, these results were consistent with Weiner et al. (1978, 1979). In terms of the attribution dimensions elicited from the CDS, Russell & McAuley (1986) found that the dimensions were predictive of both success and failure emotions, with the locus of causality dimension being the most consistently

influential. Using emotion factors derived from a factor analysis, Russell & McAuley found that scores on competence, gratitude and 'positive affect' were all related to the attribution dimension of locus of causality. Similarly, relationships were found between competence and the stability and controllability dimensions, and gratitude and stability. For the failure emotions, again grouped according to a factor analysis, locus of causality was related to ratings of anger, guilt and surprise, but not the 'negative emotion' factor. The stability dimension was related only to anger, and controllability only to anger and surprise.

The methodology adopted by Russell & McAuley (1986) was somewhat unsatisfactory and suffers from the same flaws identified in the studies conducted by Weiner et al. (1978, 1979). In particular, the subjects did not experience real emotion as the scenarios presented were hypothetical. Secondly, the use of the CDS to categorise the attributions in this context is conceptually unsound. It makes little sense to ask subjects to give their impressions about the dimensional properties of attributions that they did not actually give themselves.

In an effort to overcome some of these weaknesses, Russell & McAuley (1986) conducted a second study, this time using a real achievement situation. One week after examination results were available, students were asked to rate, in response to their result, their attributions (using the

CDS) and emotions. The same emotions were used as in Study I. The results in Study II did not support relationships between attribution elements and emotions. None of the success attributions was significantly related to emotions, and only the task difficulty attribution for failure was significantly related to a failure emotion (anger). However, these analyses were considerably weakened by the relatively narrow range of attributions given by subjects. At the level of attribution dimensions, the results gave only weak support for relationships between attributions and emotions. For success attributions, using multiple regression analysis, only competence was significantly predicted by a combination of the dimensions, with a trend for feelings of competence to be related to perceptions of controllability. Only anger was predicted from failure attribution dimensions such that a relationship was found between anger and external attributions. A weakness of this study, however, is that attributions and emotions were not assessed until one week after the examination results were known. One can only speculate that the reported attributions and emotions were those actually generated at the time. Research by McMillan & Forsyth (1983), reported later, showed that attributions and emotions moderated with time such that outcome-dependent emotions weakened one week after their initial assessment.

Russell & McAuley (1986) concluded, after assessing both

elements and dimensions, that both types of attributions are, in some circumstances, related to emotion. They referred to this as the 'attribution-dimension additive model', and it is illustrated in Figure 2.7. Their results, however, although appearing to offer some support for Weiner's research, show that attribution-emotion links were only clearly evident in the imaginary situation. This might suggest that such methodology exaggerates such associations by encouraging subjects to think in terms of attributions and emotions in ways that would not normally occur.

A more recent study by Russell and his co-workers (Russell et al., 1987), tested the construct validity of three measures of attribution dimensions in terms of the attribution-emotion relationships proposed by Weiner (1985b, 1986). The three methods used by Russell et al. (1987) for assessing dimensions were: the coding of open-ended attributions, the coding of specific attributions rated for importance, and the CDS. No single measure provided support for all proposed attribution-emotion relationships in Weiner's model. However, Russell et al. (1987) concluded that, overall, the CDS showed superior construct validity. In terms of CDS-emotion results, they found that ratings of pride, following examination results, were enhanced after internal attributions for success, and feelings of anger and guilt were greater following internal attributions for failure.

Figure 2.7 An 'attribution-dimension additive model' (Russell & McAuley, 1986).

Interestingly, many of the predicted attribution-emotion links involved the controllability dimension. However, Russell et al. (1987) found little support for relationships between this dimension and emotions, whereas clearer links were found with the locus of causality dimension. This could be due to the nature of attribution-emotion relationships or the instability and lack of validity of the CDS controllability subscale, as discussed previously.

McMillan and colleagues have also studied attribution-affect links in real academic settings (Forsyth & McMillan, 1981; McMillan & Forsyth, 1983; McMillan & Spratt, 1980). McMillan & Spratt (1980) investigated attributions and emotions following an examination result. They asked students to assess 15 emotions and the four attributions of ability, effort, task difficulty and luck. The results used two emotion factors derived from factor analysis. These two factors were labelled 'general happiness, pride, satisfaction' and 'surprise'. Regression analyses, using the attributions and a measure of performance satisfaction, found that although internal attributions were related to the 'general happiness' factor, most of the variance was accounted for by the general perception of success and failure (ie. performance satisfaction). However, this study failed to analyse the individual emotion ratings. Although data reduction through factor analysis may serve a purpose, the factors

derived in this study were largely unhelpful in the differentiation of emotion. The attribution assessment was also unsatisfactory in so far as the subjects had to rate only four factors and these ratings had to add up to 100%. Such a forced technique seems likely to yield measures which give a distorted reflection of the real attributions experienced.

Forsyth & McMillan (1981) also investigated affective reactions to examination performance. They asked three questions after examination results were presented to students. These questions related to perceptions of locus of causality, stability and controllability. In addition, subjects were asked to rate 16 emotions. Some support was found for Weiner et al. (1978, 1979) such that subjects felt more relaxed, competent, calm, adequate and good when success was attributed to internal factors. Similarly, competence and adequacy perceptions were enhanced in subjects who failed and made external attributions. Greater happiness was reported by those using internal, stable and controllable attributions, presumably accounted for primarily by successful subjects. These results, although lending support to Weiner's research, failed to account for attribution elements, preferring instead to ask subjects to rate dimensions. As already stated, it is difficult to support the idea that the subjects actually thought in those terms when attributing their examination performance.

McMillan & Forsyth (1983) conducted two experiments in classroom contexts to investigate the relationship between attributions and emotions. In Study I they asked students to rate 12 attributions and 7 emotions (pride, contentment, pleasantly surprised, competence, relaxation, general affect, value) immediately following their examination result. Outcome was assessed in terms of the students' perceptions of success/failure and results were analysed by a gender x outcome x attributions MANOVA, with emotions as the dependent variables. No gender differences were found, and, as expected, all emotions differed in the expected direction as a result of the outcome. Attributions to high effort, ease of the test, instruction, and textbook, all showed differences in emotion ratings.

McMillan & Forsyth (1983) conducted a follow-up study along similar lines. In addition to the methodology adopted in Study I, they assessed an additional four emotions (hostility, guilt, gratefulness, resignation) and also asked subjects to rate their attributions and emotions one week after the results were known. This was in addition to the immediate assessment procedure used in Study I. No gender differences were found and emotions varied in the expected direction as a function of outcome. For attributions, only material difficulty, effort, and luck showed significant relationships with emotion. The outcome-dependent emotions were shown to moderate after

one week.

McMillan & Forsyth (1983), therefore, provided additional support for relationships between attributions and emotions. However, their results showed strong outcome-dependent emotions when outcome was operationally defined as satisfaction with performance. The distinction between objective pass/fail and subjective assessment of satisfaction with performance is an important one. The two situations may well act in different ways with respect to post-examination feelings. The different effects of outcome and attributions on emotions will be discussed in more detail in the section on attribution-emotion relationships in sport.

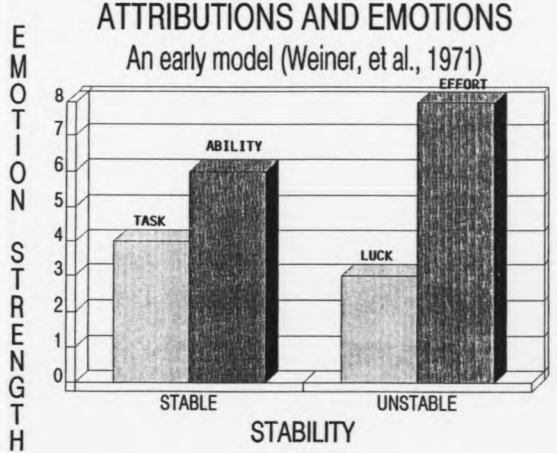
Within the boundaries of the methodologies used, some of these results provide support for attribution-emotion links in an educational context (see Graham, 1984). However, few of the methodologies are comparable, and most of the studies ignore potentially important moderator variables such as task expectancy and value. Given the early links between attribution theory and achievement motivation, an expectancy-value analysis of attributions is logical (Weiner, 1980). It would appear sensible to investigate the role of value, or outcome importance, in any study of emotion, and in particular in an achievement context. For example, the earlier discussion on the self-serving bias suggested that prior motivational states may

influence attribution patterns. Similarly, expectation of success/failure is not only likely to be related to the amount of causal search (Weiner, 1985a), but also the type of emotion felt. Such potential moderators, therefore, need further investigation. Most of the studies reported so far have been conducted without reference to potentially important moderators. It is unlikely that relationships between attributions and emotions will exist independently of such factors.

The effort versus ability debate

The early conceptualisations of attribution consequences proposed that internal attributions heightened emotion (pride/shame) whereas external attributions reduced the intensity of emotion (Weiner et al., 1971). It was also suggested that effort would produce stronger emotion than ability, as illustrated in Figure 2.8. Weiner (1977) argues that effort produces this elevated emotional reaction for two main reasons. First, effort is associated with moral values - 'trying' is socially valued in our culture. Second, studies on reinforcement have shown that effort/lack of effort is strongly reinforced/punished since it is something under volitional control. Nevertheless, whilst there is general agreement that the attributions of effort and ability are the dominant ones in achievement settings, there is disagreement about the relative effects of effort versus ability on emotion. This debate has relatively early origins in attribution

FIGURE 2·8


ATTRIBUTIONS AND EMOTIONS
An early model (Weiner, et al., 1971)
EMOTION STRENGTH
8
7
6
5
4
3
2
1
0
TASK
ABILITY
LUCK
EFFORT
STABLE
UNSTABLE
STABILITY

research (Sohn, 1977; Weiner, 1977), and has continued more recently (Brown & Weiner, 1984; Covington & Omelich, 1984a, 1984b, 1984c; Weiner, 1983; Weiner & Brown, 1984).

The ability versus effort debate centres on both attribution theory, as posited by Weiner, and the 'self-worth theory' of Covington and colleagues (Covington, 1983; Covington & Beery, 1976; Covington & Omelich, 1979, 1981). Self-worth theory states that both effort and ability are important sources of worth and esteem, but that individuals rely primarily on ability perceptions.

> "The basic assumption is that personal worth depends heavily on one's accomplishments, and because ability is perceived as a prime ingredient for success and inability a major cause of failure, ability becomes critical to self-definition". (Covington & Omelich, 1984a, p.159)

Effort, according to self-worth theory, is the 'double-edged sword' in school achievement (Covington & Omelich, 1979). Because teachers often reward effort, and society expects people to try hard in achievement settings, effort becomes a valued quality. However, if an individual tries hard and still fails, this increases the likelihood of attributing that failure to low ability. Similar frameworks in motivation, based on perceptions of ability, have been proposed (Maehr & Nicholls, 1980; Nicholls, 1978) and application has been made to sport (Duda, 1987;

Roberts, 1984).

Weiner & Brown (1984) have argued that some agreement between self-worth theory and an attributional theory of emotion is evident. However, the primacy of ability over effort has not been adequately demonstrated and is likely to depend on the situation, although it is likely that ability will be associated with self-esteem variables because of its instrumental value for future successes. Weiner & Brown (1984) also state that task importance must be considered before assessing the relative impact of ability and effort attributions since individuals perceiving they have low ability in a task seen to be important are more likely to try hard and thus refer to effort attributions.

RELATIONSHIPS BETWEEN ACHIEVEMENT ATTRIBUTIONS AND EMOTIONS: SPORT

As already mentioned, sport psychology research on emotion has been limited in scope although calls for a more extensive study of emotion in sport have been made (Vallerand, 1983, 1984).

Gill & Gross (1979) investigated the influence of winning and losing a laboratory group task on attributions, state anxiety, satisfaction and perceived ability. However, although they found evidence for a self-serving bias in attributions, as well as winners having lower post-game state anxiety and higher satisfaction and perceived

ability, no analyses were conducted to test for relationships between these variables. It is not possible, therefore, to know whether the positive emotion experienced by winners was due to the outcome or their appraisal of the outcome.

The sport psychology literature on attribution-emotion links made a significant advance with the publication of Weiner's 1980 keynote address to the North American Society for the Psychology of Sport and Physical Activity (Weiner, 1981). Whilst this address was based on his own research in academic achievement (eg. Weiner et al., 1978, 1979), he identified sports activities as areas of "dramatic external evidence of affective reactions" (Weiner, 1981, p.37). Indeed it is interesting to note the increasing use of sports examples Weiner now makes to illustrate his attribution theory (Weiner, 1985b, 1986). However, despite the speculations made in Weiner's (1981) paper, and the positive reaction given by Ryan (1981) at the same conference, relatively little published research exists on attribution-affect links in sport. Excluding the data from this thesis, only six studies have been located which investigate attributions and emotions in sport (McAuley et al., 1983; Robinson & Howe, 1987; Singer, Grove, Cauraugh & Rudisill, 1985; Vallerand, 1987; Willimczik & Rethorst, 1987; Willimczik, Rethorst & Riebel, 1986).

McAuley et al. (1983) investigated attribution-emotion relationships following table tennis matches. They assessed attributions using the CDS, hence they used attribution dimensions in their analyses. Results were analysed separately for winners and losers using multiple regression analyses, with the three attribution dimensions as the independent variables. For success emotions, these researchers found that only the satisfaction rating was significantly predicted by the attributions, with a trend also showing for confidence. Overall, the controllability dimension appeared to be the most important factor in relation to success emotions. For the failure emotions, there were no statistically significant findings, although a trend was observed between internal attributions for failure and ratings of depression. Overall, therefore, McAuley et al. (1983) found only weak support for the existence of attribution-emotion relationships, at least at the dimensional level of attributions. However, they made the assumption that because the assessments were made in physical education classes, the subjects "apparently cared about their performances" (p.284), although there was no evidence presented on how important the subjects rated the task. The literature on learned helplessness (Abramson, Seligman & Teasdale, 1978) and academic achievement emotions (Weiner et al., 1978, 1979) states that affective reactions are likely to be influenced by the importance attached to events. Pre-game expectancies could also influence emotion. Weiner (1986) reports

evidence for feelings of surprise following attributions to luck for example. This is likely to be the result of an unexpected outcome. Overall it seems reasonable to hypothesise that variables such as task importance and expectancy may prove to be important factors in clarifying attribution-emotion relationships.

Singer et al. (1985) investigated the consequences of failure using a balance stabilometer task. However, subjects were given (by the experimenters) attributions to either ineffective strategy, lack of effort, both of these factors, a low level of natural ability, or nothing (control). The results showed that subjects given the lack of effort attribution felt less anxious and frustrated than the other groups. However, the study suffers from not knowing the extent to which the subjects internalised the given attributions. Also, no strength of association analyses between the attributions and emotions were possible since the given attribution was not scaled for intensity. The weakness of studies which attempt to impose attributional 'sets' on subjects is self-evident.

A recent small-scale study of soccer players (Robinson & Howe, 1987) found support for controllability attributions being related to post-game emotions. The CDS was used to assess attribution dimensions, and the Profile of Mood States (POMS; McNair, Lorr & Droppelman, 1971) to assess emotion. The POMS is a measure purporting to assess the

following moods: tension, depression, anger, vigour, fatigue, and confusion. The instructions given prior to the test determine whether subjects respond in terms of their mood "during the past week including today", "generally", "today" or "right now". Robinson & Howe (1987) failed to state the instructional set used in their study and also claimed that POMS represented "the full range of emotion" (p.139), but with only one positive emotion on the scale this is doubtful. However, the researchers did analyse separately for outcome (win and loss) and performance (perceived success/failure). For the performance analysis, they found that for successful players there was a significant and negative correlation between controllable attribution scores and total mood disturbance, depression and confusion. For the unsuccessful players, controllable attributions were significantly and positively correlated with vigour, and negatively correlated with frustration and confusion.

The frustration result is a curious one as this affect did not appear in their method section, nor is it part of the POMS. Similarly, they report that attributions were requested for "performance outcome" (p.139). It is not clear, therefore, given the performance and outcome analyses, and the problems of individuals making attributions within a team sport, whether these subjects were making attributions to performance or outcome. For the outcome analysis, further relationships between

attribution dimensions and emotions were found. However, the study included only 17 subjects, and mood and attributions were assessed the day after the games in question. As shown by McMillan & Forsyth (1983), a delay in the assessment of emotion can produce different results. It is likely that players, given time to think about their performance, will appraise failure more logically than immediately after the game. Similarly, those expressing highly positive emotion after the game may, in time, feel more moderate emotions if the game is seen to be just one of many. The timing of attribution and emotion assessment, therefore, is likely to be critical but goes unaddressed by Robinson & Howe (1987).

Willimczik et al. (1986) investigated attributions and emotions of West German and Indonesian volleyball players. However, their analyses did not extend to attribution-emotion links as they restricted their results to cross-cultural differences in attributions and emotions, and emotional reactions to the game outcome. However, in another study, Willimczik & Rethorst (1987) provided a more direct test of Weiner's theory using both volleyball and badminton players. Path analytic procedures provided support for attribution-emotion relationships. For example, although feelings of joy reported by badminton players were only related to the game outcome, and not to attributions, feelings of shame were associated with internal and external attributions.

The most sophisticated analysis to date has been provided by Vallerand (1987). Based on the work of Arnold (1970), Vallerand (1987) proposes an 'intuitive-reflective appraisal model' of emotion in sport. This model proposes two levels of analysis. First, the intuitive appraisal, which is the immediate and relatively automatic appraisal of the event, and second, there is the more reflective appraisal where greater cognitive activity is likely. One of the mechanisms involved in the reflective appraisal is attribution. Vallerand (1987; Study I) investigated the attributions and emotions of basketball players and he assessed intuitive appraisal of the game by asking subjects to rate their general impression of whether they had a 'good or bad game today'. Assessments were made of eight attributions for performance and these were: luck, support from coach, help from teammates, mood, ability, discipline, effort, and the basketball court. Emotions were classified as either 'self-related' (competence-incompetence, pride-shame, insecure-confident, discouraged-encouraged), or 'general' (satisfied-dissatisfied, happy-sad). The attribution measures were then reduced to internal and external dimensions through factor analytic procedures. In analysing the results for those subjects perceiving their performance as successful, multiple regression analyses showed that both self-related and general emotions were significantly predicted by the intuitive appraisal, with both internal and external

attributions playing a significant augmenting role. The intuitive appraisal, therefore, was the most important predictor, but in combination with the attributions. 56% of the variance was explained in self-related emotions, and 43% for general emotions.

The results were weaker for subjects perceiving their performance as a failure. Self-related emotions were affected by the intuitive appraisal, but not by attributions, whereas the general emotions were not predicted by either, at least from a statistically significant perspective. A combination of the intuitive appraisal and attributions only explained 22% of the variance in self-related emotions and 17% for general emotions. One of the problems with the way Vallerand (1987) analysed his data is that the global labels of self-related and general emotions are not broken down into their individual emotions. This would have provided valuable information on the nature of attribution-emotion relationships. The results of Vallerand's (1987) first study, therefore, only state that attributions augment the influence of the intuitive appraisal on two global sets of emotion.

In a second study, Vallerand (1987) included a measure of objective success/failure, in addition to perceived success/failure, on a visual-motor coordination task in the laboratory. Subjects were male undergraduate psychology students. However, the 'objective' outcome was

manipulated by assigning subjects to success, failure and control groups, and was not used in the testing of attribution-affect links.

In addition to assessing the intuitive appraisal, subjects were also asked to rate how important it was to do well on the task. Attributions were measured using the CDS, and 14 emotions were presented. The 7 self-related emotions were: incompetent-competent, ashamed-proud, insecure-confident, stupid-smart, unskilful-skilful, ineffective-effective, and inadequate-efficient. It is difficult to see the logic of some of these bi-polar pairings and some could be misunderstood. For example, 'inadequate' may be seen by some subjects as referring to feelings of personal incompetence rather than 'inefficiency'. The 7 general emotions were: dissatisfied-satisfied, displeased-pleased, sad-happy, discontented-contented, bad-good, pessimistic-optimistic, and blue-joyful. Results were analysed by a series of 2 x 2 (perceived success/failure x high/low scores on attribution dimension) ANOVAs on self-related and general emotions. Unfortunately, despite there being a set of dependent variables, multivariate analyses were not used and it is impossible to say whether appropriate data analyses would have supported the conclusions drawn.

As far as the attribution dimensions were concerned, there were significant attribution x success/failure interactions on both the stability and controllability

dimensions. The results for the controllability dimension showed that positive self-related affects were enhanced under conditions of success when controllable attributions were high, and in failure when controllable attributions were low. A similar interaction was found for stability attributions. No effect for the locus of causality dimension was found for emotions. The ANOVA on task importance showed no effect for this variable. It was suggested by Vallerand (1987) that this could have been due to the nature of the laboratory task. He proposed that task importance is likely to be of greater significance in real sports events. The results showed that only self-related emotions were affected by attributions. This is consistent with Weiner et al. (1978, 1979) who suggested that outcome-dependent emotion is the more general type. However, as with Vallerand's (1987) first study, the global labels of self-related and general emotions need further analysis at the level of individual emotions.

In summary, Vallerand (1987) concluded that his two studies: i). support an intuitive-reflective appraisal model; ii). the intuitive appraisal is an important antecedent of self-related emotion in both success and failure situations; iii). the intuitive appraisal has a greater impact on emotion than objective outcome; iv). attributional reflective appraisal is also related to emotion but to a lesser extent than the intuitive appraisal. It is unclear at this stage in his research of

the model whether the intuitive appraisal is the immediate appraisal of outcome, with reflective appraisal being the same as an appraisal of performance, or whether the intuitive appraisal can also include perceptions of performance. Vallerand (1987) asked his subjects to rate how well they played, and this was used as the measure of intuitive appraisal. However, players could also intuitively appraise the outcome. Immediately after a sporting contest the player knows the result and this information, therefore, is readily available to contribute towards an intuitive appraisal, this being similar to Weiner et al.'s (1978, 1979) outcome-dependent emotion process. However, once the result has been processed, it is likely that players will indulge in greater attributional thinking concerning their personal performance. Although one could propose that the reflective (attributional) appraisal would relate more strongly to emotion than the intuitive appraisal, Vallerand's (1987) results suggest otherwise. However, although the global self-related and general emotions showed this trend, it is possible that some of the individual emotions assessed will be more related to the reflective appraisal than the intuitive appraisal. However, this was not assessed in Vallerand's (1987) two studies. Certainly, there is a need to look at the influence of outcome, outcome attributions, and performance attributions on emotions, and to have greater clarity as to what exactly is meant by the two types of

appraisal.

CONCLUSION

The interest shown in the researching of cognitive processes in psychology has sustained and developed the study of attributions from Heider's (1944, 1958) seminal work. Although developments have been forthcoming through Jones & Davis (1965), Kelley (1967), and others, it has been the work of Weiner (1980, 1985b, 1986) that has been most influential in the field of achievement attributions. However, the initial research, mainly in educational achievement contexts, has not been without its problems. Studies have been over-reliant on the four attribution elements of ability, effort, task, and luck, and although ability and effort attributions have been found consistently, it is also clear that other factors are used to explain achievement. Many sport attribution studies uncritically accepted the four elements, although Roberts & Pascuzzi (1979) suggested that many other attributions were possible in the sport environment.

The early achievement attribution research also restricted itself in other ways. First, it considered objective pass/fail in examinations, rather than subjective assessments of performance made by the subjects. Second, it relied on initially two, and later three, dimensions of attributions thought to adequately categorise the attribution elements. However, the validity and

reliability of these dimensions has rarely been satisfactory. Sport attribution research tended to copy the methodologies used in education and so they also uncritically accepted the dimensional models, particularly that of Weiner's (1979).

Much of the early work in attribution theory focused on the antecedents of making attributions, such as individual difference factors (eg. gender, achievement motivation), and the types of attributions made (eg. the relative strength of attributions made by successful and unsuccessful subjects). However, although the original theorising of Weiner et al. (1971) suggested that attributions were related to emotional and cognitive consequences, the evidence from experimental verification was weak. In terms of the emotional consequences of making attributions, the initial thinking was merely in terms of a link between internal/external attributions and pride/shame. Weiner et al. (1971) suggested that internal attributions heightened feelings of pride in success and shame in failure, whereas external attributions would reduce feelings of pride in success and shame in failure. Little was known about other emotions or the role of attribution elements in this process.

As a result of this, Weiner et al. (1978, 1979) studied a wider range of affect and their links with attributions. However, these studies, and many subsequently, have used

unsatisfactory methodologies, such as hypothetical stories or recollections of previously occurring events. When real achievement events were used, they were often found to produce weaker evidence for attribution-emotion links than the hypothetical methodologies (Russell & McAuley, 1986). This suggested that further work was required in real achievement settings before statements about attributional consequences could be made. Very few studies have investigated the role of potential moderator variables in attribution-emotion relationships and as early achievement attribution research was based on achievement motivation theory (Weiner, 1980), two potentially important variables are value (importance of the task outcome) and expectancy. In sport attribution research these variables have virtually been ignored, although a recent study by Vallerand (1987), using a contrived laboratory task, did assess task importance. Despite having little influence in Vallerand's investigation, it seems possible that in realistic sporting contexts, task importance is likely to be an influential variable.

In conclusion, therefore, research into achievement attributions in sporting contests, and their relationship with emotions, needs to address several critical issues:

a). the nature of attribution-emotion relationships in real sporting contests using a full range of attributions and emotions;

b). the role of potential moderator variables in

attribution-emotion relationships, such as task importance;

c). the nature of the attributions being assessed (ie. outcome or performance attributions) and their relationship with emotions.

CHAPTER 3

STUDY 1:

LABORATORY BICYCLE 'RACE'

CHAPTER 3

STUDY 1: LABORATOPY BICYCLE 'RACE'

The research reviewed in Chapter 2 suggested that emotions experienced following success/failure in the achievement contexts of education and sport may, to some extent, be related to the attributions given for the cause of the success/failure. However, as indicated in Chapter 2, not all studies have investigated emotions and attributions in real achievement environments, preferring instead the artificiality of hypothetical or recollective methodologies. Similarly, almost no attempt has been made in these studies to assess the impact of task importance on the relationship between attributions and emotions.

Purpose of the study

The purpose of this first study was to assess attributions and emotions, the links between them, and the role of the importance of winning, following a laboratory bicycle ergometer 'race'.

This study had four major aims:

1. To investigate the attributions made for outcome in a competitive sporting task. Based on prior work on the self-serving bias (Miller & Ross, 1975) it was specifically hypothesised that a). winners would attribute their outcome more to internal factors than losers, b). winners would report primarily internal attributions, c). losers would report both internal and external

attributions.

2. To investigate the nature and intensity of self-reported emotions following a sporting contest. It was hypothesised, after Weiner et al. (1978, 1979), that the most intensely reported emotions would be those of a 'general' nature which Weiner found to be outcome-dependent, such as pleasure and satisfaction.

3. To investigate the nature and strength of relationships between attributions and emotions. No specific hypotheses were formulated on this point.

4. To investigate whether perceptions of the importance of winning would moderate relationships between attributions and emotions. No specific hypotheses were made about this.

METHOD

Subjects

Forty-six undergraduates (24 men and 22 women aged 18-25 years) took part in this study. All subjects were studying either Physical Education or Sport and Recreation Studies, and all were active sports competitors, some at a high level, although none specialised in cycling. Normal informed consent (see Appendix K1) and debriefing procedures were used. Due to the fact that all subjects knew the author well, including the nature of his sport psychology interests, the experiment was conducted by a

female psychology student unknown to the subjects.

Apparatus

Two Monark bicycle ergometers, loaded at 6 kpm for men and 4 kpm for women, were placed 1m apart in a laboratory and separated by an opaque screen which prevented riders from observing how quickly the other machine was being pedalled. Auditory cues to pedalling speed were masked by the effects of one bicycle on the other. Dummy wires led from the ergometers to counters and timers on the experimenter's console. These were to give the impression that pedalling speed and 'distance' covered were being assessed objectively. Debriefing confirmed that this was what subjects believed.

Procedures

After adjusting saddle height to their preference and completing a brief warm-up ride, same-sex pairs competed in a 30 second 'race'. The members of each pair were approximately equal in height and weight and they were told that the winner of the race would be the person who covered the greater 'distance', as judged by the electronic equipment. In an attempt to increase ego-involvement, subjects were told that performance from members of their institution would be compared with scores from another institution, which was a named sporting rival.

Prior to the race, each participant rated the importance of winning the contest (referred to as 'outcome importance') on a 7-point scale. On completion of the race, the experimenter announced who had won. Pilot testing revealed that some subjects could pedal the wheels so fast that the specially devised counting mechanism mounted on the wheel would not function correctly. Outcome was therefore determined by a subjective impression of pedalling speed. Immediately after the outcome was announced, participants completed two questionnaires:

i). an attribution questionnaire: this was the same for winners and losers with the exception of appropriate word changes to reflect the outcome. Twelve attributions, derived from the work of Elig & Frieze (1979) and Roberts & Pascuzzi (1979), were presented, each on 9-point scales anchored by 'not at all' and 'very much so'. The attributions assessed were: luck, mood, previous experience, effort, ability, motivation and interest, form (unstable ability), personality, opponent's ability, opponent's effort, opponent's form, and opponent's personality. At the end of this questionnaire, subjects were asked to state how satisfied they were with their performance. This was assessed on a 9-point scale. The attribution questionnaire is shown in Appendix A.

ii). an emotion questionnaire: different questionnaires were presented to winners and losers. All affect adjectives were rated on 9-point scales and were based on the work reported by Weiner et al. (1978, 1979). Winners

rated: satisfied, pleased, cheerful, happy, good, contented, competent, delighted, confident, proud, appreciative, secure, and thankful. Losers rated: displeased, dissatisfied, frustrated, regretful, discontented, disgusted, irritated, concerned, troubled, upset, lousy, disturbed, sad, unhappy, depressed, and bitter. The emotion questionnaire is shown in Appendix B1 and B2.

RESULTS

The sample as a whole appeared to display quite high ego-involvement with the mean rating of outcome importance being 4.72 (SD=1.41) on the 7-point scale. A gender x outcome ANOVA on ratings of importance showed no significant main effects for gender or outcome. A significant gender x outcome interaction was found ($F=7.96$, df 12,31, $p<0.007$) which revealed that the greatest importance attached to winning was shown by male winners and female losers (means 5.17 and 5.36 respectively). Corresponding means for male losers and female winners were 3.67 and 4.73.

A similar 2 x 2 ANOVA on ratings of performance satisfaction showed the expected main effect for outcome ($F=21.12$, df 12,31, $p<0.00001$), with winners ($M=6.96$) more satisfied with their performance than losers ($M=4.74$). No main effect for gender, and no significant interaction, was found.

Table 3.1. Means and standard deviations of attribution ratings for winners and losers.

ATTRIBUTIONS	WINNERS (N=23) Mean	SD	LOSERS (N=23) Mean	SD
EFFORT *	7.87	1.01	3.83	2.35
MOTIVATION *	7.00	1.88	4.35	2.35
ABILITY	6.09	1.81	4.91	2.73
PERSONALITY *	6.04	2.40	3.44	2.08
MOOD	4.61	2.48	4.56	2.98
FORM	4.48	1.65	4.70	2.80
OPPONENT'S FORM	4.26	1.63	4.44	2.17
PREVIOUS EXPERIENCE	3.91	2.64	4.13	2.75
OPPONENT'S ABILITY	3.65	1.87	4.70	2.10
OPPONENT'S PERSONALITY *	2.87	2.05	4.91	2.50
LUCK	2.17	1.70	2.48	1.95
OPPONENT'S EFFORT *	2.00	1.13	6.04	2.16

Notes: 1. maximum attribution rating = 9; minimum = 1.
2. * group difference $p<0.01$.

Attributions: hypotheses 1a, 1b, 1c

Table 3.1 shows the means and standard deviations of the 12 attributions for winners and losers. Differences were assessed by a 2 x 2 MANOVA (outcome x gender). Results showed a highly significant main effect for outcome (winning/losing), no effect for gender, and no interaction. The multivariate main effect for outcome ($F=10.68$, df 12,31, $p<0.00001$) was further analysed with univariate F-tests. These revealed that winners attributed their result significantly more than losers to their own effort, motivation, and personality. Losers, on the other hand, were significantly higher on the attributions of opponent's effort and opponent's personality. Losers also used the attribution of low ability, therefore these results clearly support hypotheses 1a, 1b and 1c.

Emotions: hypothesis 2

Winners

Table 3.2 shows the descriptive statistics for the emotion ratings made by winners. Multivariate comparison of males and females showed no significant difference (Hotelling's $T^2=63.62$, $F=2.096$, df 13,8, $p>0.1$). Ratings on all but one of the emotions were above the scale mid-point, suggesting moderately strong emotional reactions to the contest. As the most intensely reported emotions were pleasure and satisfaction, which are two of the 'outcome-dependent' general emotions reported by Weiner et al. (1978, 1979), reasonable support for hypothesis 2 was found for winners.

Table 3.2. Means and standard deviations of emotion ratings for winners.

EMOTIONS	WINNERS (N=23) Mean	SD
PLEASED	7.27	0.88
CHEERFUL	6.78	1.73
HAPPY	6.56	1.31
SATISFIED	7.17	1.37
GOOD	6.70	1.40
CONTENTED	6.70	1.61
COMPETENT	6.26	1.14
DELIGHTED	5.48	1.68
CONFIDENT	6.04	1.77
PROUD	5.32	1.84
APPRECIATIVE	5.09	1.73
SECURE	4.87	2.10
THANKFUL	5.09	2.37

Note: maximum emotion rating = 9, minimum = 1.

Table 3.3. Means and standard deviations of emotion ratings for losers.

EMOTIONS	LOSERS (N=23) Mean	SD
DISPLEASURE	4.26	2.36
DISSATSIFIED	4.65	2.42
FRUSTRATED	4.09	2.86
REGRETFUL	3.27	2.37
DISCONTENTED	3.09	2.17
DISGUST	3.00	2.49
IRRITATED	3.13	2.55
CONCERNED	3.32	2.23
TROUBLED	2.56	2.08
UPSET	2.70	1.96
LOUSY	2.70	2.36
DISTURBED	2.64	2.36
SAD	2.26	2.16
UNHAPPY	2.27	1.88
DEPRESSED	2.13	1.66
BITTER	1.30	0.93

Note: maximum emoting rating = 9, minimum = 1.

Losers

Table 3.3 shows the descriptive emotion data for losers. Although women showed higher ratings than men on all emotions, multivariate analysis did not support a significant gender difference (Hotelling's T^2=84.15, F=1.503, df 16,6, p>0.3). Only feelings of dissatisfaction, displeasure and frustration approached moderate intensity, suggesting that, in general, relatively low emotional intensity was experienced by losers. The emotions of dissatisfaction and displeasure are two of the 'outcome-dependent' general emotions reported by Weiner et al. (1978, 1979), therefore hypothesis 2 has reasonable support for losers.

Relationships between attributions and emotions for winners: aims 3 and 4

The data for males and females were pooled as no gender differences emerged from either the attribution or emotion analyses. Correlations showed that little relationship existed between the importance attached to winning, and the strength of emotional feeling following the win, with only 3 of the 14 positive emotions showing significant correlations with importance (see Table 3.4).

To investigate the nature and strength of relationships between attributions and emotions (aim 3), Pearson product-moment correlation coefficients were calculated for all possible attribution-emotion pairs. To assess the

Table 3.4 Attribution-emotion correlation matrix for winners showing zero-order and partial correlations(a)

AFFECT ADJECTIVES / ATTRIBUTIONS & TASK IMPORTANCE	SATISFIED	PLEASED	CONFIDENT	APPRECIATIVE	COMPETENT	GOOD	CHEERFUL	DELIGHTED	PROUD	HAPPY	SECURE	CONTENTED	THANKFUL	IMPORTANCE OF WINNING(c)
LUCK	-09 / 08	-24 / -19	-33 / -31	-16 / -11	-09 / -01	-21 / -16	-08 / 12	-25 / -17	-10 / 09	-41* / -34	02 / 18	-15 / 09	-23 / 17	-35
MOOD	25 / -09	38 / 28	30 / 12	33 / 39*	30 / 24	29 / 09	52* / 39*	45* / 46*	47* / 23	43* / 29	38 / 27	06 / 17	-09 / -27	52*
PREVIOUS EXPERIENCE	-21 / -15	-05 / 04	12 / 22	28 / 28	19 / 22	18 / 33	-20 / -16	20 / 25	-35 / -30	-17 / -13	-25 / -25	05 / 08	02 / 02	-21
EFFORT	67** / 49*	59** / 57**	38 / -05	29 / 08	35 / 09	58** / 32	47* / 29	20 / 16	55** / 36	67** / 55**	46* / 26	53** / 22	50* / 36	29
ABILITY	-12 / -37	03 / -01	58** / 55**	07 / -02	50* / 45*	39 / 29	25 / 16	18 / 16	-25 / 50*	09 / -05	03 / -11	56** / 53**	27 / 20	15
MOTIVATION & INTEREST	37 / 07	21 / 10	20 / -12	-10 / -26	02 / -20	45* / 25	67** / 58**	06 / 03	50* / 27	48* / 31	62** / 55**	40 / 26	24 / 13	43*
UNSTABLE ABILITY	20 / 20	00 / -01	-12 / -21	29 / 25	12 / 08	03 / 01	42* / 41*	16 / 11	19 / 17	29 / 28	23 / 19	-15 / -25	19 / 14	12
OPPONENT'S FORM	12 / 03	14 / 07	-19 / -33	17 / 27	08 / 11	26 / 22	34 / 38*	18 / 22	23 / 16	14 / 11	34 / 38*	-05 / -11	18 / 24	14
PERSONALITY	58** / 40*	36 / 26	05 / -35	27 / 24	19 / 03	27 / 05	53** / 31	29 / 18	57** / 35	53** / 37	31 / 09	-01 / -37	31 / 21	63**
OPPONENT'S ABILITY	-13 / -11	-11 / -05	15 / -19	-28 / -35	09 / 10	-01 / -02	10 / 23	-09 / -02	-21 / -17	03 / 09	14 / 21	11 / 11	08 / 13	-26
OPPONENT'S EFFORT	-15 / 09	-42 / -35	-34 / -24	-23 / -20	-32 / -26	-32 / -21	-19 / 01	-24 / -18	-31 / -13	-12 / 07	-17 / -03	-10 / 05	-51* / -49*	-36
OPPONENT'S PERSONALITY	33 / 31	-06 / -11	-08 / 20	00 / -01	-10 / -16	03 / -07	21 / 18	-07 / -09	26 / 21	25 / 22	22 / 19	-16 / -30	-15 / -20	11
IMPORTANCE OF WINNING (c)	41*	26	24	09	17	23	45*	25	48*	36	30	15	17	-

NOTES: a. zero-order correlations are above the diagonals, partial correlations below
b. decimal points have been omitted
c. zero-order correlations only

* $p < .05$
** $p < .01$

influence of outcome importance, partial correlation analyses were conducted. In these the rating of outcome importance was partialled from the zero-order correlations. In cases where both the zero-order and partial correlations are significant, this suggests that outcome importance is not influential in the relationship between attributions and emotions. In other words, the attribution-emotion link is independent of the importance attached to winning. In cases where the zero-order correlation is significant, but the partial correlation is not, the influence of outcome importance would appear to be strong. These cases illustrate examples where the attribution-emotion link is only occurring under conditions of high outcome importance where all three variables are positively correlated. Finally, when no significant zero-order correlation is found, but a significant partial correlation is, this suggests a masking, or suppressing, effect [see Nie, Hull, Jenkins, Steinbrenner & Bent (1975) and Appendix L].

Table 3.4 shows the correlations between attributions and emotions for winners. The three attributions on which winners were significantly higher than losers (effort, motivation and personality) showed relationships with a variety of emotions, some of which were influenced by outcome importance. An effort attribution for winning was related to the emotions of satisfaction, pleasure and happiness, regardless of how important it was to win. A

similar pattern emerged for the motivation attribution with the emotions of cheerfulness and security, and for the personality attribution with satisfaction. However, the partial correlation analyses showed that the effort attribution only correlated with good, cheerful, proud, secure, contented and thankful when it was important to win. This was also true for the personality attribution with good, proud and happy.

In terms of the attributions where winners and losers did not differ, there were also links with emotions. Attributing the win to mood related to being cheerful and delighted, regardless of perceptions of outcome importance, whereas the same attribution only correlated with proud and happy when it was important to win. Ability attributions for winning were related to competence, confidence and contentment, independent of outcome importance. These ability-emotion relationships closely mirror those found by Weiner et al. (1978, 1979).

Relationships between attributions and emotions for losers: aims 3 and 4

For the same reasons as winners, losers data were pooled for males and females. Losers' emotions were strongly influenced by the importance attached to winning, with all but 2 of the 16 emotions being significantly correlated with importance, some very strongly (eg. frustrated r=0.769; dissatisfied r=0.742; discontented r=0.737; see

Table 3.5).

The two attributions which were significantly more strongly endorsed by losers compared with winners (opponent's personality and opponent's effort) showed little relationship with emotion, although interestingly losers making attributions to opponent's personality showed significant partial correlations, but not zero-order correlations, between this attribution and the emotions sadness and concern. Such results suggest that losers may have evoked defences against these emotions. This was the result of a positive relationship between the emotions and outcome importance and a negative (though close to zero) correlation between the attribution and outcome importance [see Nie et al.(1975) and Appendix L].

The attributions showing most relationships with emotions were all internal attributions (form, effort and mood). Outcome importance moderated the relationships for losers between attributions to lack of effort and emotion. Effort correlated with 5 emotions independently of importance and with 2 emotions only when it was important to win. Also, losers seemed to evoke defences against feeling dissatisfied, discontented and disturbed, all emotions which strongly correlated with outcome importance. Similarly, attributing losing to being in the wrong mood was associated with concern, dissatisfaction, unhappiness, depression, sadness and irritation. All of these were independent of the importance attached to winning. But

Table 3.5 Attribution-emotion correlations matrix for losers showing zero-order and partial correlations (a)

ATTRIBUTIONS + TASK IMPORTANCE \ AFFECT ADJECTIVES & TASK IMPORTANCE	CONCERNED	REGRETFUL	DISGUST	FRUSTRATED	DISPLEASURE	DISSATISFIED	UPSET	TROUBLED	UNHAPPY	DEPRESSED	DISCONTENTED	IRRITATED	SAD	DISTURBED	BITTER	LOUSY	IMPORTANCE OF WINNING (c)
LUCK	+33 18	34 34	06 -04	11 -08	19 12	36 25	25 09	09 11	15 -05	16 -06	25 23	23 17	25 23	34 43*	29 29	19 10	- 25
MOOD	40* 48*	38 61**	35 47*	36 37	33 22	33 58**	40* 40*	20 52*	35 57**	33 46*	49 46*	46* 72**	43* 61**	29 57**	36 46*	39 64**	- 11
PREVIOUS EXPERIENCE	03 28	26 21	19 03	26 21	23 09	20 31	-14 -08	21 -05	-09 -15	01 06	29 23	24 15	15 16	27 13	32 41*	33 27	- 06
EFFORT	53** 47*	57** 53**	32 13	35 33	33 21	35 43*	41 24	21 33	45* 31	42* 34	32 47*	51* 59**	37 36	32 43*	46* 46*	46* 59**	- 15
ABILITY	-12 -06	-05 -23	01 -22	05 -14	-03 -25	-06 -06	-25 -29	04 -30	-11 -24	-25 -31	03 -24	02 -17	08 08	10 -07	-10 -10	04 -17	- 03
MOTIVATION & INTEREST	11 -10	03 -01	-16 -21	-03 -04	-22 -34	-04 -15	-12 -28	-26 -27	-17 -25	-04 -15	-09 -02	-03 -03	07 -02	02 07	37 32	-01 02	- 04
UNSTABLE ABILITY	43* 22	44* 51*	41 52*	40 38	34 35	53** 43*	53** 34	21 39	50* 39	57** 43*	35 42*	48* 56*	37 42*	21 31	46* 47*	48* 62**	- 37
OPPONENT'S FORM	-03 -12	00 16	14 31	07 18	05 18	18 22	37 22	-11 03	26 -03	08 01	08 14	-01 01	05 17	-02 15	09 15	01 12	- 02
PERSONALITY	-14 -19	-22 -23	-18 -16	09 -01	-12 -06	-18 -25	-29 -18	-24 -24	-27 -25	-08 -10	-12 -09	-21 -21	-17 -17	-17 -13	02 04	-13 -12	- 04
OPPONENT'S ABILITY	17 16	-01 12	05 02	10 08	00 17	05 33	13 01	-17 00	07 -08	04 05	-12 04	-09 -02	-07 -11	-22 -12	-04 -08	-06 08	- 17
OPPONENT'S EFFORT	02 -01	-09 03	-02 22	-09 19	02 03	07 32	23 21	-22 11	04 09	19 26	-22 06	-15 02	-03 -08	-25 -07	11 07	-12 11	- 18
OPPONENT'S PERSONALITY	-13 -50*	-24 -03	-26 -22	-28 -03	-08 02	-11 -19	-14 -25	-33 -21	-27 -22	-08 05	-31 -02	-27 -25	-26 -44*	-43* -44*	09 00	-18 -09	- 06
IMPORTANCE OF WINNING (c)	46*	53*	56**	77**	64**	74**	46*	55**	57**	54**	74**	62**	20	47**	21	61**	-

NOTES: a. Zero-order correlations are above the diagonals, partial correlations below
b. Decimal points have been omitted
c. Zero-order correlations only

* $p < .05$
** $p < .01$

high outcome importance seemed to be associated with defences against the emotions of upset, regret, discontent, disturbed, troubled, bitter and lousy when a mood attribution was made.

Finally, attributing losing to poor form resulted in 6 links with emotions independent of outcome importance and 3 links only when it was important to win. The emotions of sadness, disgust and discontented appeared to be supressed given an attribution to form.

DISCUSSION

Support was found for hypotheses 1a, 1b and 1c, with winners attributing their outcome to internal factors (effort, motivation, personality) more than losers. Losers, while significantly endorsing two external attributions (opponent's effort, opponent's personality) more than winners, also used the lack of ability attribution. The self-serving bias was therefore found but not uniformly across all attributions. This bias could be the result of a fairly high pre-contest motivational state. Ratings of the importance of winning were generally high for the whole sample, thus the propensity for subjects to protect self-esteem was probably high (Brawley, 1984b).

Although the winner/loser differences on attributions were generally along the internal-external dimension, the attribution-emotion correlations showed that it was

predominantly internal attributions which had significant relationships with emotions. The self-serving bias, therefore, does not appear to be upheld when attribution-emotion links are concerned. This is consistent with early attribution work (Weiner, et al., 1971), when it was suggested that emotion is intensified following internal attributions. The pre-contest rating of the importance attached to winning was found to be a significant moderator variable, supporting the untested assumptions of Abramson et al. (1978) and Weiner et al. (1978, 1979), as well as Vallerand's (1987) suggestion that sport environments are likely to be places where task importance has a significant role. However, this variable was not found to influence all attribution-emotion relationships uniformly. Perhaps the clearest result for winners concerned the emotion of pride. This was only linked to attributions when it was important to win the contest. Pride could be classified as an esteem-related emotion, and is therefore more likely to follow the making of internal attributions when it is important to win.

Of interest was the finding that losers may have used defences against some emotions (discontent, disgust and feeling disturbed) after certain attributions.

Concerning the 'ability versus effort' debate discussed in Chapter 2, effort was found to be a major attribution for both winners and losers in terms of links with emotion.

However, ability was not a significant factor for losers in terms of emotion relationships, even though it was fairly strongly reported as an attribution. A tentative conclusion, therefore, is that Weiner's proposition that greater affect intensity is experienced following effort rather than ability attributions, is supported (Weiner, 1983, 1986). However, several other internal attributions were also important in the correlations with emotion.

A possible explanation for the tendency for only internal attributions to correlate with emotions, despite winners and losers showing evidence of a self-serving bias, can be found in the work of Spink & Roberts (1980). They found that when subjective perceptions of performance were taken into account, those with a clear outcome (ie. satisfied winners and dissatisfied losers) made internal attributions. However, those with ambiguous outcomes (dissatisfied winners and satisfied losers) tended to make external attributions. This suggests that dissatisfaction with performance is associated with a breakdown in the self-serving bias. In the Spink & Roberts (1980) study, this could have been the result of subjects being asked to focus on the way they played (ie. standard of performance) as well as the outcome. Feelings of dissatisfaction with performance may well override the usual self-serving bias and force the participants to consider (and give) attributions for performance, rather than outcome.

The present results show that losers were dissatisfied

with their performance and winners were satisfied. This is congruent with the 'clear' outcome categories used by Spink & Roberts (1980). Since the subjects in the bicycle 'race' were asked to rate outcome attributions first, this was likely to produce the self-serving bias. However, once they were asked to focus on their feelings, it is likely that losers also considered their performance, with a greater emphasis, possibly, on internal attributions and emotional reactions. However, this remains speculative, although the results are consistent with Spink & Roberts (1980).

The results of Study I suggest the following conclusions can be drawn concerning attributions and emotions, and the relationships between them:

1. Winners tended to make internal attributions and losers both internal and external attributions for outcome.
2. Although winners made more internal attributions than losers, both winners and losers showed that it was predominantly internal attributions that linked with emotions.
3. For both winners and losers, some attributions were related to emotions independently of the importance attached to winning.
4. For both winners and losers some attributions were related to emotions when it was especially important to win.

5. For losers only, high outcome importance suppressed correlations between attributions and emotions and this is interpreted as relating to the use of defences against some emotions following certain attributions.

6. The importance attached to winning was highly correlated with negative emotion for losers, but not with positive emotion for winners.

CHAPTER 4

STUDY 2:

AN EXTENSION OF STUDY 1 IN A FIELD SETTING

CHAPTER 4

STUDY 2: AN EXTENSION OF STUDY I IN A FIELD SETTING

The data reported in Study 1 (Chapter 3) suggest emotions, in some cases, are related to the attributions given for a sporting outcome, and that the importance attached to winning can influence some of these relationships. However, to see how robust these results are, further work is required. An extension of Study I to a different sporting activity was therefore conducted.

The methodology used in Study I was extended in two ways. First, although the first study involved a 'real' achievement situation, the task could still be classified as relatively 'novel'. It was also a competition staged specifically for the experiment. Both such methodologies have been criticised for giving a distorted picture of attributions (Brawley & Roberts, 1984; Rejeski & Brawley, 1983). Consequently, Study II involved a sports competition in a naturally occurring field setting. Second, Study I found that outcome importance was a significant moderator variable in the analyses of attribution and emotion relationships. However, given the expectancy-value approach to achievement motivation and attributions (Weiner, 1980), one could argue that both outcome importance (value) and outcome expectancy should be assessed. A measure of expectancy was therefore included in Study II.

Purpose of the study

The purpose of this second study was to extend the laboratory bicycle 'race' study. Based on prior research, and the results from Study I, the following aims and hypotheses were identified:

1. To investigate the attributions made to a naturally occurring sports contest. It was hypothesised that a) winners would make stronger internal attributions for outcome than losers, b) winners would make internal attributions, c) losers would make both internal and external attributions.

2. To investigate the nature and intensity of self-reported emotions. It was hypothesised that a) winners would report strong positive emotions, and in particular pleasure and satisfaction, and b) losers would report strong negative emotions, in particular displeasure and dissatisfaction.

3. To investigate the nature and strength of relationships between attributions and emotions. It was hypothesised that emotions would show relationships only with internal attributions, for both winners and losers.

4. To investigate the role of outcome importance and expectancy in i) attribution-emotion relationships and ii) emotion intensity. It was hypothesised that the importance attached to winning would be a) a significant moderator of attribution-emotion relationships, and b) an influence on the intensity of negative affect only. No hypotheses were

formulated concerning outcome expectancy.

METHOD

Subjects

Fifty-eight sixth-form students (24 boys, 34 girls) took part in the study. All subjects were either 16 or 17 years old and participated on a weekly basis in a series of recreational classes at a local sports centre as part of their physical education programme. Normal informed consent (see Appendix K1) and debriefing procedures were employed, and supervising teachers were fully aware of the nature of the study.

Procedures

Testing took place at two recreational badminton classes at the sports centre. All data were collected by the author. Subjects were organised, with the assistance of the physical education teacher, into same-sex pairs of approximately equal ability at badminton. Prior to competing in a one-set badminton singles match, and after knowing who their opponent was, subjects were asked to complete a pre-game questionnaire which included their rating of how important it was for them to win the game, and to what extent they expected to win. Both ratings were made on 7-point scales.

On completion of the game, the result was noted and subjects were requested to complete two questionnaires:

i). an attribution questionnaire: subjects were asked to rate, on 9-point scales, the extent to which each of the following factors contributed to their win or loss: effort, ability, motivation, previous experience, form, fitness, mood, personality, luck, opponent's ability, opponent's effort, opponent's personality, opponent's form, and opponent's fitness. These attributions were based on the work of Elig & Frieze (1979) and Roberts & Pascuzzi (1979). The attribution questionnaire is shown in Appendix C.

ii). an emotion questionnaire: subjects were asked to rate, again on 9-point scales, the degree to which they experienced certain emotions as a result of the game outcome. Winners rated: pleased, cheerful, satisfied, happy, contented, good, competent, appreciative, confident, delighted, secure, thankful, and proud. Losers rated: dissatisfied, regretful, frustrated, displeased, concerned, shame, discontented, irritated, disgusted, lousy, troubled, upset, unhappy, disturbed, depressed, sad, and bitter. These were based on the work of Weiner et al. (1978, 1979). The emotion questionnaire is shown in Appendix D1 and D2.

In addition, and as a check on the responses elicited in the questionnaires, subjects were asked to list attributions and emotions in response to the open-ended questions 'what reasons are there for your win (loss) in the game today?' and 'how do you feel having won (lost)

the game today?' These questions were counterbalanced with the attribution and emotion ratings questionnaires so as to avoid ordering effects.

RESULTS

The subjects generally reported a level of outcome importance below the scale midpoint (M=3.68, SD=1.64 on 7-point scale), suggesting that the recreational competition was not particularly ego-involving. A gender x outcome ANOVA on the outcome importance scores showed no main effects for either gender or outcome, nor a significant interaction. However, a similar ANOVA on outcome expectancy scores showed a significant main effect for outcome [$F=4.65$ $(1,56)$, $p<0.04$] with winners (M=4.34) having higher expectations of winning compared with losers (M=3.54). There was also a trend ($p=0.058$) for men to have higher expectations than women. No significant interaction between gender and outcome was found.

A gender x outcome ANOVA on performance satisfaction scores showed, as expected, a main effect for outcome such that winners reported greater satisfaction (M=6.04) than losers (M=3.81). No other effects were found.

Attributions: hypotheses 1a, 1b and 1c

Table 4.1 shows the descriptive data for attributions for winners and losers. Winners reported strong attributions to previous experience, effort, motivation, ability, form,

Table 4.1. Means and standard deviations of attribution ratings for winners and losers.

ATTRIBUTIONS	WINNERS (N=29) M	SD	LOSERS (N=28) M	SD
PREVIOUS EXPERIENCE	6.48	2.67	5.11	2.74
EFFORT	5.93	2.39	3.96	2.27
MOTIVATION	5.24	2.13	3.86	2.14
ABILITY	5.24	2.17	5.11	2.12
FORM	5.10	2.23	4.36	2.64
FITNESS	5.04	2.35	4.18	2.89
MOOD	4.62	2.71	3.96	2.74
PERSONALITY	4.25	2.69	3.52	2.53
OPPONENT'S FORM	4.28	2.19	4.86	2.64
OPPONENT'S ABILITY	4.11	2.53	5.29	2.65
OPPONENT'S EFFORT	3.39	2.11	4.46	2.08
LUCK	3.36	2.06	4.39	2.53
OPPONENT'S FITNESS	3.36	2.08	3.96	2.51
OPPONENT'S PERSONALITY	3.25	2.22	2.82	2.04

Note: maximum rating = 9; minimum = 1.

and fitness, showing a marked internal bias, thus supporting hypothesis 1b. Losers were characterised by attributions to ability (both self and opponent), lack of previous experience, and opponent's form. Losers, therefore, had a mix of both internal and external attributions, thus supporting hypothesis 1c. These data were also generally supported by the open-ended responses (see Appendix J1 and J2). To test for a difference in attributions between winners and losers, a gender x outcome MANOVA, with attributions as dependent variables, was computed. The hypothesised main effect for outcome did not reach significance [Hotelling's T^2=0.717, approx F (14,35)=1.79, p>0.05]. Although a trend is clearly evident, hypothesis 1a was rejected. A similar result was found for gender [Hotelling's T^2=0.705, approx F (14,35)=1.76, p>0.05]. The outcome x gender interaction was not significant [Hotelling's T^2=0.675, approx F (14,35)=1.69, p>0.05].

Emotions: hypotheses 2a and 2b

Winners

Table 4.2 shows the descriptive emotion data for winners. This reveals that the strongest emotions reported are pleased, cheerful and satisfied, thus supporting hypothesis 2a. However, the self-esteem emotions (eg. pride and competence) were not so strongly endorsed. No multivariate gender difference was found for winners [Hotelling's T^2=43.35, F(13,14)=1.77, p>0.05]. These

results were generally supported by the open-ended data (Appendix J3).

Losers

Table 4.3 shows the results for losers. Again no gender difference was found (Hotelling's T^2=65.12, $F(17,10)$=1.41, $p>0.05$). Overall, the strength of reported emotion was low, with only dissatisfaction approaching the scale midpoint. This was supported by the open-ended data with the weak emotional consequences of losing being reflected in 54% stating "no particular feeling" in response to the question 'how do you feel having lost the game today?' (see Appendix J4). Hypothesis 2b, therefore, was rejected.

Relationships between attributions and emotions for winners: hypotheses 3 and 4a

As with Study I, correlation analyses were used to test for relationships between attributions and emotions. Zero-order Pearson correlation coefficients were calculated for each attribution-emotion pair, as well as between outcome importance, expectancy and all attributions and emotions. In addition, and to test for the influence of outcome importance, partial correlation analyses were carried out, as in Study I.

Table 4.4 shows the results for winners. To simplify the data presentation, only the zero-order correlations and the first-order partial correlations (controlling for outcome importance) are shown in Table 4.4. The effects

Table 4.2. Means and standard deviations of emotion ratings for winners.

EMOTIONS	WINNERS (N=29) M	SD
PLEASED	6.67	1.98
CHEERFUL	6.31	2.24
SATISFIED	6.19	2.13
HAPPY	5.93	2.05
CONTENTED	5.66	2.04
GOOD	5.33	2.11
COMPETENT	5.15	1.70
APPRECIATIVE	5.14	2.13
CONFIDENT	5.10	2.30
DELIGHTED	4.83	2.49
SECURE	4.62	2.37
THANKFUL	4.48	2.55
PROUD	3.96	2.38

Note: maximum rating = 9; minimum = 1.

Table 4.3: Means and standard deviations of emotion ratings for losers.

EMOTIONS	LOSERS (N=28) M	SD
DISSATISFIED	4.32	2.75
REGRETFUL	3.70	2.70
FRUSTRATED	3.63	2.73
DISPLEASURE	3.18	2.51
CONCERNED	2.70	1.77
SHAME	2.56	2.17
DISCONTENTED	2.54	2.03
IRRITATED	2.50	2.13
DISGUST	2.41	1.93
LOUSY	2.36	2.67
TROUBLED	2.18	2.13
UPSET	1.89	1.50
UNHAPPY	1.86	1.72
DISTURBED	1.71	1.76
DEPRESSED	1.61	1.37
SAD	1.43	1.03
BITTER	1.21	0.50

Note: Maximum rating = 9; minimum =1.

obtained by partialling importance and expectancy were very similar. Inspection of Table 4.4 reveals that the initial zero-order correlation analysis does not support a strong attribution-emotion relationship for winners. Only 11 significant correlations were found, these being associated with attributions to personality (5), opponent's effort (2), luck (1), ability (1), and opponent's fitness(1).

Inspection of other correlations showed that outcome importance generally correlated in a low but negative way with the positive emotions. These 'relationships' were close to zero, but the negative direction could suppress expected attribution-emotion correlations (see Appendix L). This shows that attribution-emotion relationships are evident at varying levels of pre-game motivation (outcome importance and expectancy), thus supporting hypothesis 4a. These relationships are most numerous for the internal attributions of personality, effort, and motivation, as well as for opponent's fitness. When the effects of outcome importance are removed, attributions to effort significantly correlated with pleasure, confidence, cheerfulness, pride, and feeling thankful, cheerful and good. With the exception of pride, the same emotions were related to attributions to personality, as did the emotions of contented, competent and satisfied. Attributing the win to motivation was associated with feeling delighted, proud, good and happy (when the effects

of outcome importance were removed). These results suggest that the internal attributions are related to emotions, although attributions to opponent's fitness correlated with feeling pleased, confident, thankful and proud. This may be the result of a comparison process whereby a player reports positive emotion when winning is attributed to their opponent's (lack of) fitness since this implies that they did not lack fitness. However, this shows that relationships between attributions and emotions are not restricted to internal attributions. Hypothesis 3 for winners, therefore, is only partially supported.

Relationships between attributions and emotions for losers: hypotheses 3, 4a and 4b

Data for the correlations between attributions and emotions for losers is shown in Table 4.5. There was a trend for outcome importance to correlate positively with losers' emotions, although only four reached statistical significance (regret, frustrated, depressed, irritated). Hypothesis 4b, therefore, is tentatively supported.

The zero-order correlations between attributions and emotions showed that attributing losing to mood, lack of previous experience, poor form, own and opponent's personality were all related to a range of emotions. This gives some support to hypothesis 3 for losers. Attributions to mood were associated with feeling dissatisfaction and discontentment, independent of outcome

TABLE 4.4 Attribution-emotion correlations for winners showing zero-order and partial correlations (controlling for importance).

ATTRIBUTION \ EMOTION	PLEASED	CHEERFUL	SATISFIED	HAPPY	APPRECIATIVE	GOOD	SECURE	COMPETENT	CONFIDENT	DELIGHTED	THANKFUL	PROUD	CONTENTED	IMPORTANCE	EXPECTANCY
Luck	-105 / -064	-157 / -118	[illegible] / -041	[illegible] / 036	-136 / -112	[illegible] / -229	075 / 174	[illegible] / -021	-391 / -281	[illegible] / 102	[illegible] / -251	[illegible] / -048	[illegible] / 129	001	-242
Ability	098 / 174	[illegible] / 346	[illegible] / 118	241 / 364	032 / 053	157 / 138	[illegible] / -121	247 / 057	368 / 281	-127 / -019	-073 / 077	[illegible] / 251	144 / 244	-013	396
Effort	[illegible] / [illegible]	[illegible] / 453	[illegible] / 323	[illegible] / 428	128 / 220	[illegible] / 504	-144 / -175	[illegible] / [illegible]	253 / 551	[illegible] / 232	[illegible] / 425	275 / 349	[illegible] / 346	-141	195
Fitness	[illegible] / 368	130 / 363	[illegible] / -051	[illegible] / 272	[illegible] / 048	[illegible] / 345	[illegible] / 116	-024 / 169	[illegible] / 508	[illegible] / 059	[illegible] / 156	[illegible] / 044	[illegible] / 073	-253	336
Motivation	[illegible] / 239	[illegible] / 240	105 / 306	[illegible] / 408	[illegible] / -080	[illegible] / 368	[illegible] / 107	[illegible] / -089	[illegible] / 293	[illegible] / 497	[illegible] / 069	[illegible] / 419	[illegible] / 237	-299	-085
Personality	[illegible] / 515	[illegible] / 456	[illegible] / 452	[illegible] / 460	[illegible] / 273	[illegible] / 611	[illegible] / 133	[illegible] / 427	[illegible] / 661	257 / 272	[illegible] / 413	264 / 268	405 / 385	-086	184
Form	[illegible] / 257	044 / 253	035 / 164	330 / 593	[illegible] / 056	072 / 189	103 / 131	-182 / -070	-009 / 101	216 / 415	-259 / -115	118 / 221	331 / 450	-192	-115
Mood	[illegible] / 163	[illegible] / 169	[illegible] / 089	[illegible] / 404	[illegible] / -086	[illegible] / 152	[illegible] / -085	[illegible] / -080	[illegible] / 057	[illegible] / 301	[illegible] / -208	-002 / 054	280 / 339	179	-379
Previous Experience	[illegible] / -089	[illegible] / 170	[illegible] / -232	136 / 212	[illegible] / 188	[illegible] / 174	[illegible] / -046	077 / 019	334 / 224	[illegible] / 174	094 / 099	143 / 098	-014 / -017	344	066
Opponents Form	-012 / -021	-128 / -129	-161 / -128	[illegible] / -157	-100 / -138	096 / -158	036 / -032	-354 / -231	001 / 044	[illegible] / 382	203 / 074	051 / 021	054 / -044	008	-347
Opponents Ability	[illegible] / -100	014 / -017	[illegible] / -169	[illegible] / -153	-090 / -140	-263 / -275	240 / 065	-006 / -145	092 / -068	[illegible] / -147	-101 / -036	014 / -089	-006 / -021	193	143
Opponents Effort	[illegible] / -293	[illegible] / -326	[illegible] / -340	[illegible] / -291	[illegible] / -332	[illegible] / -29	[illegible] / -209	[illegible] / -425	-300 / -140	[illegible] / -172	[illegible] / -210	[illegible] / -235	[illegible] / -278	-015	-259
Opponents Fitness	231 / 383	-007 / 049	[illegible] / 164	[illegible] / -032	098 / 147	[illegible] / 195	[illegible] / 139	-176 / -086	114 / 363	[illegible] / 219	[illegible] / 437	[illegible] / 456	[illegible] / 048	-017	-049
Opponents Personality	151 / 215	161 / 216	[illegible] / 164	[illegible] / 106	110 / 163	[illegible] / 347	[illegible] / 174	[illegible] / 402	300 / 507	[illegible] / 163	[illegible] / 290	[illegible] / 056	[illegible] / 147	041	167
Outcome Importance	-278	-179	-076	-193	-287	-186	242	-012	013	-094	-246	107	-109	-	176
Outcome Expectancy	030	163	019	018	035	266	093	341	381	-162	-058	138	-216	176	-

NOTES 1. Critical values $p<0.05$ $r = 0.361$; $p<0.01$ $r = 0.463$ (zero-order).
$p<0.05$ $r = 0.360$; $p<0.01$ $r = 0.470$ (partial)

2. Zero order correlations shown above partials.

TABLE 4.5 Attribution-emotion correlations for losers, showing zero-order and partial correlations (controlling for importance).

EMOTION / ATTRIBUTION	DIS-SATISFIED	REGRET	FRUSTRATED	PLEASED	CONCERN	SHAME	CONTENT	IRRITATED	DISGUST	LOUSY	TROUBLED	UPSET	UN-HAPPY	DIS-TURBED	DEPRESSED	SAD	BITTER	IMPORTANCE	EXPACTANCY
Luck	114 043	344 351	077 -038	064 -139	-082 -275	179 046	-064 -078	072 -045	155 050	220 073	331 216	275 089	-021 -235	276 217	-039 -251	-010 -305	195 -052	184	275
Mood	508 376	418 136	287 -052	243 312	240 -182	061 031	510 427	149 003	294 166	194 227	344 391	089 053	046 026	343 407	193 148	006 -027	060 110	214	-048
Previous Experience	-241 010	-416 -154	-448 -251	-099 068	-330 -049	176 311	-384 -142	-535 -484	080 067	-016 143	-086 053	039 166	-052 048	068 185	-018 221	101 155	172 406	-287	-171
Effort	204 240	216 212	055 002	125 117	-002 -071	316 329	238 486	126 065	082 -217	351 456	178 132	271 229	313 378	118 095	353 411	259 249	203 350	259	006
Ability	-038 245	-117 297	-171 011	-098 098	-167 149	102 062	099 273	045 352	113 292	006 239	-062 225	-207 057	-057 128	-081 071	-138 055	-283 -221	-163 -130	-309	-188
Motivation	-124 -023	-187 -039	-221 -085	-064 183	-185 -151	016 122	-144 017	-252 -114	194 028	-056 114	014 174	064 138	-056 055	176 328	-058 175	213 245	134 301	-282	158
Form	392 286	141 -147	269 096	208 215	371 206	303 268	433 365	013 -085	465 487	407 429	292 320	394 468	224 288	309 360	204 164	294 296	165 -037	011	196
Opponents Form	114 041	-000 -062	186 219	273 621	074 -088	-302 -306	147 109	-257 -310	132 -019	-061 081	044 152	249 466	069 288	143 219	158 372	064 208	109 519	-128	364
Personality	097 -082	455 321	285 160	059 -079	176 -069	108 056	465 436	397 373	-042 -133	404 344	442 373	302 164	224 121	298 260	158 023	058 144	123 094	236	-166
Opponents Ability	-145 -214	-229 -381	010 004	076 272	111 129	-170 -123	232 213	-190 -194	006 096	-125 -022	-042 093	036 298	132 397	121 216	165 333	008 280	-048 262	-140	-003
Opponents Effort	-008 -303	160 -181	105 -154	210 170	009 -419	-014 -163	272 072	-271 -468	035 -069	009 -188	031 -094	361 352	-002 -073	310 313	105 -033	300 278	436 545	106	195
Opponents Personality	031 -141	028 -360	329 197	340 311	416 383	-070 -190	248 310	226 048	217 199	223 218	435 387	260 204	448 515	388 366	465 445	284 370	039 123	440	-098
Fitness	-217 -109	-054 255	-235 002	-305 -185	-349 -275	-036 079	027 289	021 156	-293 -325	-090 118	-186 -093	-098 089	-345 -183	-070 -028	-290 -185	-200 -024	-233 057	-018	-278
Opponents Fitness	-280 -407	115 058	179 170	046 143	-094 -226	-367 -399	156 163	135 093	-229 -400	-189 -138	-079 -070	041 163	-109 -008	077 096	-038 -019	-083 082	-117 173	208	095
Outcome Importance	282	543	478	343	353	160	121	380	048	219	342	302	270	198	375	138	054	-	101
Outcome Expectancy	227	255	191	279	192	-094	200	129	-026	024	150	170	239	085	242	221	229	101	-

NOTES: As for Table 4.4

importance, whereas the relationships between attributions to mood and feeling regretful occurred only when it was important to win. This was also the case for relationships between regretful, frustrated and discontented, and attributions to previous experience.

Attributions to poor form were associated with feeling disgusted, upset and lousy independently of outcome importance whereas the relationships with dissatisfied and discontented were evident only when it was important to win.

These results for losers suggest that the internal attributions are dominant in relationships between attributions and emotions. However, attributions to opponent's personality significantly correlated, independently of outcome importance, with concerned, troubled, unhappy and depressed, as well as with feeling disturbed, although this last correlation occurred only when it was important to win. The attribution-emotion correlations for losers, therefore, again support the suggestion that outcome importance is a significant influence on relationships between attributions and emotions, thus giving support to hypothesis 4a, although the nature of its influence is far from clear.

DISCUSSION

The purpose of this second study was to extend the laboratory bicycle 'race' study in a field setting. Many

of the general conclusions drawn from Study I are applicable to Study II, with certain amendments and qualifications.

First the badminton players were less ego-involved in their contest than were the students in the bicycle study [$t(101\ df) = 3.38$, $p<0.005$]. However, the badminton environment was one of recreational, often casual, 'competition' between school students of, presumably, heterogeneous personality. However, the subjects in Study I were all physical education and sport and recreation studies students, all likely to be relatively high in competitiveness.

This lack of ego-involvement could account for the failure to support a self-serving bias in attributions between winners and losers. Although the trend was for winners to make stronger internal attributions, the multivariate profiles were not statistically different from each at the 95% level of confidence. The attributions showed a limited range of means and high standard deviations compared with the results from Study I. Table 4.1 shows that the range between the highest and lowest scoring attributions for winners is only 3.23. This compares with 6.87 from Study I (Table 3.1). This is also true for losers, who have a range of 2.47 in Study II (Table 4.1) compared with 3.56 in Study I (Table 3.1). The field setting, and the game itself, are likely to provide subjects with a greater

range of attributions compared with a laboratory 'race' since the game of badminton involves interaction with an opponent in an 'open-skill' environment. However, the self-serving bias trend was in evidence in Study II, even if the statistical significance level was unacceptable for hypothesis 1 to be supported.

The self-reported emotion showed similar results to Study I with winners reporting fairly strong emotional feelings, and rating pleased, cheerful and satisfied as the dominant emotions. This lends support to Weiner et al. (1978, 1979) who suggested that such emotions are likely to be fairly strongly felt. Losers, on the other hand, reported emotions of low intensity. These results are best explained in the light of the low outcome importance scores for both winners and losers. It would appear likely that winning produces positive emotion whether or not winning is considered important before hand, and such emotion is likely to be of a general nature such as satisfaction and pleasure. However, losing is unlikely to evoke strong reactions unless it is considered important to win in the first place. This interpretation is consistent with conclusion 6 in Study I, as well as the results here. None of the positive emotions was correlated with outcome importance whereas several of the negative emotions were.

Relationships between attributions and emotions

Partial support was found for hypothesis 3 with predominantly, although not exclusively, the internal attributions linking with emotions. This replicates the results from Study I, and the explanation offered in the Discussion section of Chapter 3 remains viable. However, the nature of these relationships proved to be complex with the pre-game perceptions of outcome importance again shown to be a significant moderator variable. This was also true of outcome expectancy with the two variables having similar effects.

The major finding for winners was that the expected relationships between attributions and emotions were not evident until the effects of outcome importance were controlled for. This was because winners had correlations between importance and emotions which were negative, although were generally low and often close to zero. However, the direction of the correlations was enough to suppress the zero-order correlations which indicated little relationship between attributions and emotions for winners.

These results also need to be seen in the light of outcome expectancy. The gender x outcome ANOVA analysing expectancy scores showed that winners expected to win more than losers. Winners, therefore, were characterised by i). a high expectation of winning, and ii).a low importance

attached to winning. These are conditions where attribution-dependent emotions are unlikely to be strong. Weiner (1985a) argues that attributional thinking is often greatest under conditions of goal non-attainment and unexpected outcomes. Winners, therefore, could be expected to show relatively weak relationships between attributions and emotions because they are unlikely to be involved in much attributional thinking. Indeed, most of the attribution-importance correlations for winners were negative, suggesting that the more important it was to win, the less likely they were to endorse the attributions. This is consistent with the argument that few people seek a reason for a win when it is expected and unimportant. The results of the losers can be explained in similar fashion given the expected outcome of losers, although the results do suggest a stronger positive relationship between importance and both attributions and emotions for losers.

Once the effects for importance were removed from the zero-order correlations, numerous relationships were evident. These associations showed that internal attributions correlated with positive emotions.

Internal attributions were also dominant in the relationships between attributions and emotions for losers. Attributions to wrong mood, poor form, own personality, and lack of effort all showed relationships with ratings of negative emotion, as did attributions to

opponent's personality. However, such feelings were negatively related to attributions of lack of previous experience and opponent's fitness. On some occasions for losers, attribution-emotion relationships were found only when it was important to win. These emotions were primarily 'self-directed' (eg. regret, frustration, discontent). However, attribution-related emotions experienced independent of outcome importance, did not show such a consistent link with self-directed emotions. The results for losers are similar to those for winners in Study I where it is the esteem or 'self-directed' emotions that are likely to be related to attributions only under conditions of high outcome importance.

The results from Study II, therefore, suggest the following conclusions may be drawn:

1. Winners and losers did not differ in their attributions and this could be due to high variances, a low range of scores, relatively low ego-involvement in the task, and a large number of attributional possibilities. However, a trend did show winners using internal attributions more than losers.
2. Winners reported moderately high positive emotions after winning, and in particular pleasure, satisfaction and cheerfulness.
3. Losers reported low levels of negative emotion.
4. Emotions tended to correlate mainly with internal

attributions for both winners and losers. Most relationships between attributions and emotions were only evident after controlling for outcome importance and/or expectancy suggesting that these are important variables in the analysis of such relationships.

5. Losers' emotions that were related to attributions only when it was important to win tended to be 'self-directed' emotions.

6. Outcome importance and expectancy were significant moderator variables in this study. The attribution-emotion relationships, and the attribution and emotion results separately, can only be adequately interpreted with reference to these variables.

In summary, while there is some consistency between the results of the first two studies, differences have been found. However, these differences mainly centre on the pre-game perceptions of importance (and expectancy), and the subsequent relationships between these variables and both attributions and emotions. In Study I, the subjects were generally highly motivated to win, whereas this was not the case in Study II. In the light of this, the results so far provide evidence of links between attributions and emotions in both laboratory and field settings and the necessity of continued research using pre-game perceptions of motivation.

CHAPTER 5

STUDY 3:

LABORATORY FENCING CONTEST

CHAPTER 5

STUDY 3: LABORATORY FENCING CONTEST

The first two studies, reported in Chapters 3 and 4, concluded that relationships between attributions and emotions were evident following laboratory and field-based sporting contests. The importance attached to winning was found to be a significant moderator of these relationships. However, Study 2 had three possible limitations: (i) the subjects reported relatively low levels of outcome importance; (ii) the magnitude of winning and losing was not controlled; (iii) winners did not rate negative emotions and losers did not rate positive emotions. These three issues, therefore, were addressed in Study 3.

To date, research on attribution-emotion links in sport has merely investigated the nature and extent of such proposed relationships. There is no evidence in sport on the behavioural effects of such emotion. However, in clinical psychology, and in research on depression in particular, laboratory analogues of mood have been used to look at the effects of emotion on behaviour. For example, depressogenic mood induction procedures (MIPs) have been used for some time now (Velten, 1968). MIPs usually involve the reading of negative self-referent statements which "progress from relative mood neutrality to dysphoria, the overall tone being that of indecisiveness, tiredness, unhappiness, inefficiency and pessimism"

(Goodwin & Williams, 1982, p.373). There is evidence to suggest that depression, and depressive MIP techniques, produce a slowing of psychomotor activation, a reduced capacity for problem solving, and lowered task persistence. Decision time appears to be sensitive to elation-producing MIPs such that decision time becomes faster. The use of failure feedback has also been used to induce negative emotion for the purpose of assessing changes in behaviour (Goodwin & Williams, 1982). Controlled failure feedback was therefore incorporated into this third study and two measures of behaviour, psychomotor speed and decision time, were investigated.

Study 3, therefore, sought to extend the methodologies adopted in the first two studies as follows:

1. outcome was manipulated so that all subjects experienced the same magnitude of victory or defeat. Although this required a 'novel' task, and hence being open to criticism concerning the limited efficacy of attribution studies which use novel tasks, it was the best way that outcome could be manipulated.
2. the outcome importance variable was dichotomised to enable an analysis of 'high' and 'low' outcome importance groups in a factorial design;
3. all subjects were required to respond to both positive and negative emotions.
4. the effects of winning and losing on two measures of behaviour were examined.

Purpose of the study

The purpose of Study 3 was to extend the methodology adopted in the first two studies and to return to the laboratory environment in an attempt to have closer control over the procedures. A one-versus-one competition on a simulated fencing task was employed. Specifically, the following aims and hypotheses were identified:

1. To investigate the attributions made after a laboratory sporting contest. It was hypothesised that a) winners would make stronger internal attributions than losers, b) winners would make internal attributions and c) losers would make both internal and external attributions. Based on the results from the previous two studies, no effects for outcome importance or gender were expected on attributions.

2. To investigate the nature and intensity of self-reported emotions, and to study the effect of outcome importance on such emotions. Specifically, it was hypothesised that a) winners would report greater positive emotion than losers; b) losers would report greater negative emotion than winners; c) the importance attached to the outcome would only have an effect on negative emotions.

3. To investigate the nature and strength of relationships between attributions and emotions. Specifically, it was hypothesised that a) emotions would correlate primarily

with internal attributions; b) emotions correlating with attributions when it is important to win will primarily be esteem-related emotions, such as pride, confidence and competence.

4. To explore the possibility that winning and losing will be sufficiently emotion-producing to the extent that two specific measures of behaviour (decision time and psychomotor speed) will be differentially affected by winners and losers. It was hypothesised that losers attaching high importance to winning will experience the greatest dysphoric mood and therefore the greatest performance deficits on psychomotor speed, and winners attaching high importance to winning will experience the greatest euphoric mood and therefore the greatest increments on decision time.

METHOD

Subjects

Subjects were students from a polytechnic, sixth-form college and university. 94 people were tested but due to the difficulty of operating an extended deception paradigm, it was found after debriefing that 25 subjects believed that the outcome was controlled by the experimenter. Their results were discarded from all analyses. Similarly, 11 sets of data were incomplete and were also discarded, leaving a final sample of 58 (32 men, 26 women; 31 winners, 27 losers). Ages ranged from 16 to

26 years (M=19.28).

Design

A 2 x 2 x 2 (gender x outcome x outcome importance) design was used with outcome importance split into two levels. This was done by classifying those subjects who scored 5 or below on the 9-point scale as 'low importance' and those those who scored 6 and above as 'high importance'.

Apparatus

The apparatus used for the simulated fencing contest was specially constructed for the experiment. Two boxes were constructed and measured 1m x 1m x 1m, each with a 15 cms hole in the side facing the subjects. On the inside rear wall of each box was a 10 cms square target wired to the experimenter's console. Two timers were also wired to the same console but these were bogus timers used to add realism to the apparatus. Each box had one white light placed on the top surface of the box, and between the boxes were red and green lights for start/stop signals.

Procedure

Subjects competed in a one-versus-one simulated fencing contest against a member of the same sex. On arrival at the laboratory they were shown the two boxes described above. The boxes were placed approximately 1m apart on a bench at waist level. Subjects were asked to view inside

the boxes via the 15cms hole in the side facing them. Inside each box they were able to see the 10 cms square target. Subjects were told that the object of the experiment was to compete against an opponent of the same sex in a contest to strike the concealed target. Wooden fencing foils were used. At this point all subjects were allowed to strike their target and observe that the white light, secured to the top of their box, was illuminated as a result. They were informed that during the experiment proper, only the light of the subject who hit the target first would light up. The full instructions, read by all subjects prior to taking part, were:

"You have kindly volunteered to participate in an experiment investigating aspects of the sport of fencing. In particular you will be performing a lunge-type movement and attempting to hit a target concealed in a box. To add realism to the task, you will compete against another subject and you should make every effort to beat your opponent to the target. The light on top of your box will light up if you hit the target before your partner, and vice versa. You will receive 10 sets of 10 lunges and you will be told your score, and whether you have won or lost the set, after each set.

The task requires you to react to the green centre light. As soon as it lights up you should lunge at the target. The experiment is primarily concerned with testing the notion that once a decision to lunge has been made, you do not require vision to hit the target. The box apparatus used will evaluate a training technique based on this principle, and hence the target is concealed in the box.

Various measurements will be taken and you will be requested to complete different questionnaires before and after the fencing task. These different types of tasks and questions are required so that our evaluation of the apparatus and training technique is as comprehensive as possible. Thank you for your cooperation."

Subjects were then seated away from the apparatus and

asked to read and sign an informed consent document (see Appendix K1), including the explanation given above. At this time the experimenter unobtrusively depressed two switches on the console which meant that the two lights on top of the boxes were under his control. Debriefing checked whether this manipulation had gone unnoticed. Those subjects deceived by the procedure believed that the console was for controlling the red and green signal lights and timers.

Within one week prior to the experiment, or on arrival at the laboratory, subjects completed the Beck Depression Inventory (BDI; Beck, 1967). No subjects displayed levels of depression likely to affect results and therefore this variable will not be discussed further (M=6.06, SD=4.76, range 0-12).

After signing the informed consent, subjects were assessed on psychomotor speed and decision time, as well as a pre-task questionnaire (see 'Measures taken' below).

The fencing contest then began. At the beginning of each trial the experimenter ensured that both subjects placed the tips of the foils on the edge of the 15 cms hole so that no part of the foil was inside the box. Ten sets of 10 trials were conducted. Since the experimenter had full control over the lights, great care had to be taken to make the contest realistic. Since both subjects were likely to miss the target fairly often in the initial

stages, 'no hit' calls were given frequently. This also served to allow the experimenter the chance to see the timing adopted by the subjects, helping him to illuminate the light of the 'winner' in a realistic way. Once this was done, a 'winner' and 'loser' were created such that progressively heavier wins/losses were observed over the 10 sets of 10 trials. The loser eventually lost the final three sets of trials 8-2, 9-1 or 10-0. It was not possible to have all subjects win/lose by exactly the same amount for reasons of realism stated earlier. It was considered more important to create an atmosphere of realism rather than artificial standardisation.

Measures taken

Subjects were assessed in the following ways:

i). the psychomotor speed and decision time tasks were assessed pre- and post-contest. Psychomotor speed was measured with a symbol copying task (see Appendix I) and decision time was assessed using five pairs of discrimination weights. The pairs varied in weight and the difference within pairs was five grams. Both tasks were timed unobtrusively and no clue was given that speed was being assessed. This was checked during the debriefing. The psychomotor speed task required subjects to copy the same symbols but presented in a different order, while the same discrimination weights were used for the decision time test, also presented in a different order. Pilot testing determined that the difference in weight within

pairs was so small that performance did not vary with practice.

The subjects also completed a pre-contest questionnaire asking for descriptive data (gender and age) as well as the importance that subjects attached to winning the contest. This was assessed on a 9-point scale. Due to the novelty of the task, it was not considered realistic to assess expectancy.

ii). an attribution questionnaire: this comprised of 12 attributions, rated in relation to outcome, all on 9-point scales and is shown in Appendix E. The attributions given were: luck, mood, previous experience, effort, ability, motivation, form, personality, opponent's effort, opponent's ability, opponent's form, and opponent's personality.

iii). an emotion questionnaire: a list of 28 positive and negative affect adjectives was presented to subjects and is shown in Appendix F. The subjects were requested to rate their "current feelings" on 9-point scales. The emotions listed were: pleased, cheerful, satisfied, happy, contented, competent, good, confident, proud, gratitude, relaxed, surprised, dissatisfied, regret, frustrated, displeased, concern, shame, depressed, sorry, discontent, unhappy, incompetent, angry, guilty, disappointed, upset, and sad. These were presented in random order on the questionnaire. Subjects were also asked to rate, on a 9-point scale, their satisfaction with their performance. A

thorough debriefing then took place.

RESULTS

Attributions: hypotheses 1a, 1b and 1c

Table 5.1 shows that winners tended to use attributions to effort, ability and personality in explaining their result while losers used the attributions of (lack of) ability, opponent's ability and opponent's effort. These results clearly support hypotheses 1b and 1c. A 2x2x2 MANOVA (gender x outcome x high/low importance) on attribution scores showed a significant main effect for outcome [$F(12,43)=10.38$, $p<0.00005$]. Univariate ANOVAs applied to this data showed that winners attributed their outcome more than losers to effort, motivation, personality, and form. Losers attributed their outcome more than winners to lack of previous experience, opponent's effort, and opponent's ability. No effects were found for gender or importance, nor were there any significant interactions. Hypothesis 1a was therefore supported.

Emotions: hypotheses 2a, 2b and 2c

Table 5.2 shows that the highest ratings for winners were on the emotions satisfied, pleased and contented, and for losers on dissatisfied and disappointed. However, dissatisfied was the only emotion substantially above the

Table 5.1. Means and standard deviations of attributions for winners and losers

ATTRIBUTIONS	WINNERS		LOSERS	
	Mean	SD	Mean	SD
LUCK	3.97	1.85	3.93	1.95
MOOD	3.24	2.32	2.97	2.28
PREVIOUS EXPERIENCE **	1.97	1.91	5.13	2.65
EFFORT **	6.97	1.41	3.87	2.43
ABILITY	6.00	1.98	6.31	1.76
MOTIVATION **	6.21	2.09	3.90	2.16
FORM *	4.76	1.99	3.47	2.06
OPPONENT'S FORM	5.06	2.12	4.90	2.54
PERSONALITY **	5.70	2.40	3.70	2.20
OPPONENT'S ABILITY *	4.67	1.80	5.60	2.08
OPPONENT'S EFFORT **	3.21	1.98	5.60	1.92
OPPONENT'S PERSONALITY	3.61	2.13	3.93	2.12

Notes: 1. maximum rating = 9; minimum = 1.
2. group differences * $p<0.05$; ** $p<0.01$.

Table 5.2: Means and standard deviations of emotion ratings for winners and losers.

EMOTIONS	WINNERS		LOSERS	
	Mean	SD	Mean	SD
PLEASED **	7.54	1.50	2.83	1.53
CHEERFUL **	6.52	1.75	4.53	1.83
SATISFIED **	8.00	1.17	2.79	1.40
HAPPY **	7.12	1.58	4.07	1.60
CONTENTED **	7.42	1.66	3.79	1.50
COMPETENT **	6.27	1.84	3.59	1.52
GOOD **	6.67	2.04	3.03	1.70
CONFIDENT **	6.60	2.05	3.43	1.70
PROUD **	5.49	2.54	2.33	1.37
GRATITUDE	2.67	2.06	2.47	1.63
RELAXED *	5.91	1.81	5.00	2.27
SURPRISED **	5.76	2.05	3.43	1.70
DISSATISFIED **	1.64	1.03	5.83	2.15
REGRETFUL **	1.61	1.32	3.37	2.34
FRUSTRATED **	1.24	0.66	4.23	2.76
DISPLEASED **	1.30	0.68	4.17	2.51
CONCERNED *	1.94	1.62	2.79	1.82
SHAME **	1.36	1.06	2.62	2.11
DEPRESSED **	1.00	0.00	2.07	1.67
SORRY	2.03	1.91	2.59	1.86
DISCONTENTED **	1.21	0.33	4.07	2.33
UNHAPPY **	1.06	0.24	2.50	1.80
INCOMPETENT **	1.58	1.06	4.10	2.28
ANGRY **	1.09	0.29	2.43	1.83
GUILTY	1.85	1.82	2.37	1.61
DISAPPOINTED **	1.12	0.42	5.03	2.34
UPSET **	1.06	0.24	2.57	2.00
SAD *	1.27	1.07	2.17	1.64

Notes: 1. maximum rating = 9; minimum = 1.
2. group differences * $p<0.05$; ** $p<0.01$.

scale midpoint. A 2x2x2 (gender x outcome x high/low importance) MANOVA was computed on emotion ratings. Significant main effects were found for outcome [$F(28,27)=12.49$, $p<0.00005$] and importance [$F(28,27)=2.58$, $p<0.008$]. No effect was found for gender ($p>0.05$) nor were there any interactions (all $p>0.05$).

Univariate ANOVAs on emotions showed the expected difference between winners and losers such that, with the exception of gratitude, all positive emotions were significantly higher for winners than losers (all $p<0.00005$ or better with the exception of 'relaxed' which was significant at the level of $p<0.03$) and, with the exception of sorry and guilty, all negative emotions were higher for losers than winners [all $p<0.0003$ except concerned ($p<0.05$) and sad ($p<0.02$)]. Winners were also higher on the rating of surprise. Hypotheses 2a and 2b are therefore supported.

Univariate ANOVAs which analysed the multivariate main effect for outcome importance showed that, with the exception of one emotion, subjects believing it important to win reported greater negative emotion than subjects who did not believe it was important to win (all $p<0.05$; see Table 5.3). The positive emotions were unaffected. The exception (relaxation), however, is also consistent with these findings as it showed that low importance subjects were more relaxed than those in the high importance group. These results provide clear support for hypothesis 2c.

Table 5.3: Means and standard deviations of emotion ratings for high and low outcome importance groups.

EMOTIONS	HIGH OUTCOME IMPORTANCE (N=28)		LOW OUTCOME IMPORTANCE (N=30)	
	M	SD	M	SD
Positive				
PLEASED	5.70	3.04	5.06	2.51
CHEERFUL	5.77	2.18	5.50	1.85
SATISFIED	5.80	3.21	5.34	2.63
HAPPY	6.20	2.23	5.22	2.09
CONTENTED	6.13	2.64	5.34	2.15
COMPETENT	5.40	2.08	4.66	2.21
GOOD	5.33	2.60	4.63	2.64
CONFIDENT	5.63	2.58	4.72	2.22
PROUD	4.43	2.86	3.66	2.28
GRATITUDE	2.37	1.75	2.69	1.94
RELAXED **	4.90	2.20	6.16	1.63
Neutral				
SURPRISED	5.17	1.91	4.91	2.15
Negative				
DISSATISFIED **	4.10	2.90	3.06	2.30
REGRETFUL	2.50	2.08	2.44	2.09
FRUSTRATED *	2.97	2.58	2.25	2.24
DISPLEASED **	3.07	2.46	2.25	2.11
CONCERNED *	2.70	1.78	2.00	1.68
SHAME **	2.40	2.09	1.53	1.22
DEPRESSED **	1.70	1.47	1.31	1.00
SORRY	2.40	1.89	2.19	1.92
DISCONTENTED **	2.87	2.30	2.09	1.99
UNHAPPY **	1.97	1.52	1.37	0.94
INCOMPETENT *	3.07	2.32	2.44	1.97
ANGRY **	2.07	1.70	1.41	1.10
GUILT	2.23	1.77	1.88	1.64
DISAPPOINTED **	3.33	2.68	2.47	2.18
UPSET **	2.03	1.69	1.47	1.39
SAD	1.63	1.19	1.62	1.48

Notes: 1. maximum rating = 9; minimum = 1.
2. group differences * $p<0.05$; ** $p<0.01$.

A 2x2x2 (gender x outcome x high/low importance) ANOVA on performance satisfaction scores showed a significant main effect for both outcome [$F(1,62)=182.8$, $p<0.0005$] and importance [$F(1,62)=4.51$, $p<0.04$]. As expected, winners ($M=7.79$) were more satisfied than losers ($M=3.23$), but unexpectedly low importance subjects were more satisfied than high importance subjects. However, a significant 2-way interaction between importance and outcome [$F(1,62)=4.57$, $p<0.04$] showed that this was due to less satisfaction being felt by losers who thought it was important to win.

Relationships between attributions and emotions: hypotheses 3a and 3b

The correlation analyses between attributions and emotions were computed in the same way as for the previous studies (see Appendix L). That is, initial relationships were determined by zero-order Pearson correlations, and the mediating effect of outcome importance was determined through the use of partial correlations. Outcome importance in this instance refers to the original scores given on the 9-point scale.

Winners

Table 5.4 shows the correlation coefficients for winners. This shows that attributions to luck were negatively correlated with positive emotion, usually independent of outcome importance. Opponent attributions, however, were positively correlated with negative emotion

TABLE 5.4 Zero-order and partial correlations for winners

EMOTION / ATTRIBUTION	PLEASED	DISSATISFIED	REGRET	CHEERFUL	FRUSTRATED	DISPLEASED	SATISFIED	CONCERNED	SHAME	HAPPY	CONTENTED	(3) DEPRESSED	SORRY	COMPETENT	GOOD
Luck	-242 -026	-006 059	-044 -012	-208 -173	-096 -048	008 -047	-188 -072	-095 -007	150 257	-482 -345	-312 -106		257 322	-558 -481	-268 -086
Mood	221 204	-277 -273	-141 -122	122 101	-202 -263	-048 -012	253 187	162 125	142 097	291 352	262 094		097 132	262 259	196 200
Previous Experience	289 307	297 295	-240 -247	210 173	401 386	-017 -023	-014 -014	-273 -339	-180 -228	281 274	280 280		026 015	-157 -189	134 110
Effort	248 211	-077 -073	-329 -320	020 013	124 112	101 141	076 -009	200 187	-178 -228	167 155	200 204		-102 -093	168 123	258 254
Ability	147 106	-154 -171	072 068	279 362	-048 032	-023 102	175 119	136 181	045 062	280 316	095 071		-107 -102	419 411	363 386
Motivation	390 117	023 -019	099 126	200 053	210 118	041 160	230 009	392 274	191 -001	391 145	370 159		124 148	334 152	435 237
Form	234 323	-168 -148	-238 -022	370 454	-239 -223	-174 -169	215 224	-244 -002	-151 -128	289 432	-129 -067		-039 -019	301 358	234 328
Opponents Form	127 279	154 191	176 199	134 225	100 156	310 314	053 120	220 323	144 228	045 207	-079 052		293 324	-020 060	084 222
Personality	186 -004	119 113	079 089	120 020	053 209	020 075	211 086	258 166	-091 -244	167 -010	300 188		-071 -287	132 -005	272 133
Opponents Ability	104 168	187 221	-018 -010	156 292	070 135	187 228	-015 -056	-061 028	-254 -224	070 196	-014 089		-170 -155	104 129	097 184
Opponents Effort	107 017	332 311	-205 -236	-204 -292	483 474	551 585	-283 -353	-015 -078	246 213	-059 -213	105 -019		-084 -110	-025 -103	-059 -181
Opponents Personality	-028 -246	147 130	-145 -165	131 055	268 224	020 054	037 -089	-224 -367	-073 -190	247 101	305 186		-227 -254	147 026	191 047
Outcome Importance	479	103	049	255	182	-085	266	293	273	512	491		056	347	450

NOTES:

1. Zero-order correlations above, partials (controlling for importance) below.
2. Critical values: zero-order $p<0.05$ $r = .290$; $p<0.01$ $r = .401$
   partials $p<0.05$ $r = .307$; $p<0.01$ $r = .424$
3. No correlations computed for depression as all winners rated this emotion 1 on the 9-point scale.

TABLE 5·4 CONT'D

DISCONTENTED	UNHAPPY	CONFIDENT	SURPRISE	INCOMPETENT	PRIDE	ANGRY	GRATITUDE	GUILTY	DISAPPOINTED	RELAXED	UPSET	SAD	OUTCOME IMPORTANCE
-087	005	-250	502	430	-250	219	259	424	198	094	380	219	-423
-089	-228	430	046	000	170	-080	147	112	-094	-032	-101	047	089
-076	-173	115	-143	-280	012	-190	-074	048	-192	-102	-173	330	098
-174	099	025	-152	-246	000	-134	-145	-114	-156	-016	-099	134	084
-033	006	276	-247	017	156	072	-183	-092	-113	225	148	-195	003
-249	-054	089	-252	-083	082	-029	089	043	-031	104	-054	049	500
229	-145	420	177	080	254	088	331	-012	-082	071	-146	037	-135
139	063	272	312	148	-031	151	114	325	131	-250	083	177	-207
-048	080	-159	091	089	-095	098	-255	-116	-009	-047	-106	083	359
197	-044	154	-168	076	710	253	193	-023	-155	-013	-084	149	-173
089	130	-013	-381	230	-166	258	-006	192	-041	-125	341	059	222
045	-059	-075	-376	-274	-162	-233	089	-219	-191	102	-059	053	330
207	277	320	-163	160	438	204	016	111	244	-142	277	-394	/

TABLE 5.5 Zero-order and partial correlations for losers

EMOTION / ATTRIBUTION	PLEASED	DISSATISFIED	REGRET	CHEERFUL	FRUSTRATED	DISPLEASED	SATISFIED	CONCERNED	SHAME	HAPPY	CONTENTED	DEPRESSED	SORRY	COMPETENT	GOOD
Luck	.458 .279	-.168 .222	.210 .393	.165 .056	-.164 .012	-.019 .207	.276 .042	-.310 .123	.130 .301	.103* .032	.095 .000	.209 .373	.029 .128	.145 .089	.227 .199
Mood	-.169 -.051	.199 .055	-.224 -.301	-.078 .053	.155 -.020	.272 .204	-.140 -.110	.349 .342	.210 .119	.075 .080	-.122 .010	.325 .247	.543 .493	.074 .110	-.056 -.107
Previous Experience	-.020 .093	.627 .629	.075 .022	-.263 -.233	.500 .444	.500 .471	-.312 -.260	.155 .051	.429 .378	-.360 -.374	-.330 -.374	.259 .175	.480 .445	-.255 -.271	-.331 -.318
Effort	.179 .263	.108 .131	.233 .230	.210 .251	-.149 -.271	.015 -.074	.010 .033	-.319 -.351	-.013 -.078	-.015 -.007	-.146 -.127	-.162 -.299	.031 -.031	.113 .144	.155 .112
Ability	-.136 -.246	.357 .125	.130 -.002	-.123 -.459	.237 .100	.432 .310	-.252 -.102	.116 -.075	.292 .187	-.183 -.179	-.327 -.312	.247 .139	.202 .107	-.133 -.123	-.332 -.275
Motivation	.204 .245	-.125 .073	.144 .192	.127 .189	-.257 -.328	-.105 -.109	.002 -.058	-.412 -.390	-.213 -.233	-.079 -.085	-.182 -.168	-.184 -.211	.021 .012	.208 .241	.252 .177
Form	-.150 -.022	.391 .272	.128 .025	-.355 -.021	.240 .066	.521 .440	-.142 -.038	.429 .406	.346 .239	-.009 .016	-.189 -.142	.352 .234	.516 .450	-.012 .029	-.045 -.052
Concerns Form	-.217 -.110	.313 .319	.018 -.021	-.136 -.047	.427 .366	.268 .213	-.124 -.084	.225 .271	.109 -.044	-.183 -.167	-.249 -.215	-.005 -.105	.103 .028	.033 .086	.127 .076
Personality	.302 .292	.135 .157	.129 -.059	.032 -.020	.108 .103	-.091 -.204	.091 .107	-.032 -.111	.122 .053	-.057 -.109	.019 .007	.161 .089	.242 .194	-.134 -.162	.021 .034
Concerns Ability	-.281 -.053	.409 .139	.322 .177	-.494 -.519	.251 -.058	.430 .180	-.337 -.174	-.103 -.335	.307 .112	-.214 -.203	-.201 -.118	.193 -.058	.353 .199	-.184 -.103	-.136 -.194
Concerns Effort	-.070 -.061	.058 .036	.195 .124	-.202 -.256	-.099 -.151	.086 .033	-.279 -.269	-.397 -.472	.081 .032	-.177 -.161	-.124 -.094	-.092 -.182	-.078 .039	-.099 -.081	-.251 -.061
Concerns Personality	.037 .129	.259 .211	.424 .321	.052 -.005	.097 .000	.064 -.175	-.185 -.086	-.169 -.302	-.044 -.216	-.134 -.108	-.118 -.056	-.020 -.221	.136 .034	-.178 -.162	.029 .055
Outcome Importance	-.250	.537	.203	-.086	.318	.369	-.402	.347	.254	-.083	-.119	.253	.174	-.039	-.254

NOTES: 1. Zero-order correlations above, partials (controlling for importance) below.
2. Critical values: zero-order $p<0.05$ $r = .309$; $p<0.01$ $r = .424$
partials $p<0.05$ $r = .335$; $p<0.01$ $r = .461$

TABLE 5-5 CONT.

DISCONFIRMED	UNHAPPY	CONFIDENT	SURPRISE	INCOMPETENT	PRIDE	ANGRY	GRATITUDE	GUILTY	DISAPPOINTED	RELAXED	UPSET	SAD	OUTCOME IMPORTANCE
077 / 411	-089 / 272	427 / 677	-249 / [illegible]	085 / [illegible]	456 / 774	182 / [illegible]	455 / 475	107 / [illegible]	-128 / [illegible]	203 / [illegible]	206 / 457	036 / 248	-480
[illegible] / 162	274 / 032	-112 / -025	046 / -190	230 / 115	125 / 253	300 / 306	[illegible] / 106	[illegible] / 353	271 / 162	-280 / -407	[illegible] / 305	[illegible] / 480	109
[illegible] / 656	237 / 179	[illegible] / -270	[illegible] / 478	[illegible] / 643	-135 / -037	150 / 230	[illegible] / -237	[illegible] / 312	[illegible] / 326	[illegible] / -163	[illegible] / 163	[illegible] / 140	227
[illegible] / 023	[illegible] / -254	[illegible] / 111	043 / -074	[illegible] / 105	[illegible] / 080	[illegible] / -080	[illegible] / -087	[illegible] / 165	[illegible] / -110	[illegible] / 342	[illegible] / -422	[illegible] / -276	-000
323 / 184	[illegible] / -001	[illegible] / -032	[illegible] / 113	[illegible] / 133	[illegible] / -147	[illegible] / 122	[illegible] / -184	[illegible] / -095	[illegible] / 202	[illegible] / -232	[illegible] / 101	[illegible] / -103	374
[illegible] / 005	[illegible] / -219	107 / 175	-114 / -107	-240 / -280	[illegible] / 003	[illegible] / -023	[illegible] / -087	[illegible] / -307	[illegible] / -039	135 / 221	[illegible] / -284	[illegible] / -174	-166
250 / 130	[illegible] / -011	[illegible] / 017	[illegible] / -056	[illegible] / 160	[illegible] / 462	[illegible] / 436	[illegible] / 256	[illegible] / 490	[illegible] / 252	[illegible] / -411	[illegible] / 280	[illegible] / 507	245
129 / 003	[illegible] / 049	-254 / -133	114 / 224	121 / 014	[illegible] / -005	[illegible] / -005	[illegible] / 176	[illegible] / 034	[illegible] / 403	[illegible] / -103	[illegible] / 030	[illegible] / 187	085
273 / 321	004 / 079	-019 / -229	[illegible] / 018	[illegible] / 273	217 / 244	230 / 180	[illegible] / -106	[illegible] / 144	[illegible] / -086	[illegible] / -080	[illegible] / 131	[illegible] / -049	-042
404 / 165	231 / -101	[illegible] / -054	[illegible] / 087	[illegible] / 164	[illegible] / -178	[illegible] / -079	[illegible] / -210	[illegible] / -120	[illegible] / 135	[illegible] / 008	[illegible] / 085	[illegible] / -023	394
[illegible] / 205	-090 / -097	[illegible] / -120	[illegible] / -001	[illegible] / 165	[illegible] / -333	[illegible] / -131	[illegible] / -255	[illegible] / -201	[illegible] / 092	[illegible] / 280	[illegible] / -112	[illegible] / -153	075
215 / 167	-043 / -090	[illegible] / -232	222 / 081	[illegible] / 172	[illegible] / 086	[illegible] / 028	[illegible] / -241	[illegible] / -020	[illegible] / 024	[illegible] / 286	[illegible] / -189	[illegible] / -245	216
348	394	-195	635	184	-497	300	-230	130	985	-522	310	277	/

independently of outcome importance. Generally, all other links showed that stronger internal attributions were associated with higher ratings of positive emotions. Although the links with emotions were not wholly restricted to internal factors, the trend was such that hypothesis 3a was generally supported for winners.

Winners' attributions given to the cause of motivation were shown to link with emotions only when it was important to win. Most other attribution-emotion relationships were seen to be independent of the importance attached to winning the contest.

Losers

The attributions showing the greatest links with emotions for losers were primarily internal, thus supporting hypothesis 3a for losers (see Table 5.5). Attributing the loss to mood correlated with reports of higher negative emotion independent of outcome importance, whereas attributions to poor form, although also showing the same relationship with emotion, were influenced by the importance of winning. In particular, attributions to poor form correlated with higher scores on dissatisfaction, shame, depression, disappointment and feeling upset only when it was important to win. Attributions to a lack of previous experience were seen to be positively correlated with 10 negative emotions, and 4 positive emotions. Most of these were independent of outcome importance. Ability attributions for losing negatively correlated with

positive emotions. These occurred primarily when it was important to win. Losers, in fact, were much more likely to make lack of ability attributions if they felt it important to win ($p<0.05$).

Luck was also found to covary with a number of emotions. Some occurred independently of outcome importance, some only occurred when it was important to win, and others were suppressed by the negative correlation between luck and importance ($r=-0.460$, $p<0.01$). The attribution to opponent's form was shown to be positively correlated with negative emotion.

The large number of correlations computed is inelegant and increases the chances of making type I errors. Therefore, in an effort to reduce the data and to attempt to locate clearer trends, the emotion data were factor analysed using a varimax orthogonal rotation. This allowed for a testing of hypothesis 3b: that the emotions correlating with attributions when it is important to win will be primarily esteem-related.

Factor analysis

The results of the factor analysis are shown in Table 5.6. Although most of the positive emotions load on Factor 1, the high loadings of competence, confidence and pride suggest that this is a 'positive self-esteem' factor. Factor 2 is probably best seen as a 'depression-frustration' factor, with high loadings on depression,

Table 5.6: Factor structure of emotion ratings.

EMOTIONS	F1	F2	F3	F4
GOOD	878	-167	-019	-116
CONFIDENT	856	-187	-065	092
HAPPY	841	-215	-097	-213
COMPETENT	832	-124	-103	-007
PLEASED	812	-263	013	-275
PROUD	804	-110	070	-083
SATISFIED	788	-259	-056	-410
CONTENTED	783	-300	-066	-264
DISSATISFIED	-610	476	068	541
CHEERFUL	554	-348	-067	-003
DISAPPOINTED	-535	579	082	436
INCOMPETENT	-507	434	357	240
DISPLEASED	-490	605	216	413
DISCONTENTED	-470	640	215	389
FRUSTRATED	-443	680	158	234
DEPRESSED	-165	884	187	078
UPSET	-175	874	201	116
UNHAPPY	-240	844	123	054
ANGRY	-218	773	236	226
SAD	-068	552	533	037
RELAXED	145	-530	-045	-030
SHAME	-276	419	491	094
GUILTY	-047	102	873	-050
SORRY	-004	187	795	254
CONCERNED	-033	348	403	258
REGRET	-213	196	194	580
% variance	67.0	18.2	7.1	3.9

Factors: F1: 'Positive self-esteem'
F2: 'Depression-frustration'
F3: 'Intropunative'
F4: 'Dissatisfaction'

upset and unhappy, as well as anger and frustration. The loadings of guilt and sorrow on Factor 3 suggest an 'intropunative' factor, while Factor 4 may best be described as 'dissatisfaction'.

Winners

For winners, it was the attribution of motivation that produced the strongest evidence of outcome importance being a consistent moderator. All 7 of the relationships between emotions and the motivation attribution occured when it was especially important to win. Six of these emotions were strongly associated with the positive self-esteem factor. This conclusion is supported by a significant correlation between the motivation attribution scores and Factor 1 scores ($r=0.432$, $p<0.01$), and this was found only when it was important to win since the partial correlation fell to only 0.193 ($p>0.05$). Similarly, other attribution-emotion relationships for winners which were seen to occur only when it was important to win (eg. luck with contented and confident; ability with confident) supported hypothesis 3b for winners. Thus it seems that it is primarily the esteem-related emotions that relate to attributions when it is important to win.

Losers

A similar analysis for losers does not show such a clear pattern. Of the 5 emotions which covary with the attribution of previous experience (when it is important

to win), 3 are positive self-esteem emotions. Five of the 8 correlations for ability are also with positive self-esteem emotions, although none are the top five loading emotions for Factor 1. Thus despite some trends the evidence is not strong enough to support Hypothesis 3b for losers.

Three of the emotions which only correlated with losers' attributions of poor form when it was important to win, all load on the depression-frustration factor, as do two of the emotions for mood attributions for losers. Both form and mood are internal, unstable and somewhat uncontrollable factors, suggesting that such attributions, when it is important to win, are associated with depression/frustration. However, the correlation between depression/frustration factor scores and the attribution of mood ($r=0.336$, $p<0.05$) was found to be unaffected by outcome importance (partial $r=0.321$, $p<0.05$).

Psychomotor speed and decision time: hypothesis 4

The behavioural tests of depression/dysphoria were each analysed separately with 2x2x2 (gender x outcome x high/low importance) ANOVAs, with residualised change scores as the dependent variable in each case. Residual change scores were calculated by regressing the post-contest score on the pre-contest score for all subjects. Descriptive statistics are shown in Table 5.7. For psychomotor speed there were no main effects or

Table 5.7 Descriptive statistics for pre- and post-tests of psychomotor speed and decision time

	PRE-TEST				POST-TEST			
	Males		Females		Males		Females	
	M	SD	M	SD	M	SD	M	SD
PSYCHO-MOTOR SPEED (secs)	109.17	29.40	99.46	35.73	96.20	32.88	87.50	28.75
DECISION TIME (secs)	55.46	19.06	53.93	35.13	48.46	16.75	37.96	27.41

interactions. For decision time there was a significant main effect for gender only, with women increasing their speed pre- to post-test more than men ($p<0.05$). These results suggest that any mood distortion evident in the self-report data was not manifested in the measures of psychomotor speed or decision time. Hypothesis 4 is therefore rejected.

DISCUSSION

The results from Studies 1 and 2 were supported with winners making predominently internal attributions and losers a mix of internal and external attributions. This is consistent with the findings of Miller & Ross (1975). The strong attributions to lack of previous experience, made by losers, could be a defensive attribution denying blame, and is perhaps more likely on a novel task such as the one used in this study. The difference in attributions between winners and losers, which was also found in Study 1, but only evident as a trend in Study 2, was probably due to the fairly high importance attached to winning by both winners ($M=5.45$ on 9-point scale) and losers ($M=5.17$) and, as argued previously, the self-serving bias is more likely under such conditions.

The correlational data from Studies 1 and 2 suggested that only negative emotions were related to outcome importance. This was strongly supported when subjects were split into high and low importance groups in the present

study. The results here suggest that previous research which has failed to account for prior motivational states has neglected an important factor. Positive emotion appears likely to be felt after a victory regardless of how important it is to win. The self-report of emotion after losing, however, has been found to be strongly related to importance. Weiner's (1985b, 1986) proposition (see Figure 5.1) that general positive and negative emotion is experienced after success and failure, regardless of the attributions made thus seems to need amending.

Relationships between attributions and emotions

The previous studies only allowed for the assessment of positive emotions for winners and negative emotions for losers. The fencing study, however, assessed both positive and negative emotions for both groups. The results question a simple relationship between locus of causality and emotion proposed by Weiner et al. (1971) which suggested that internal attributions will intensify emotion and external factors will reduce the intensity of emotion. However, the results here show that internal attributions are positively correlated with positive emotions for winners and negative emotions for losers, but that external attributions are also positively correlated with negative emotions for winners. This amendment to Weiner et al.'s (1971) proposition may be due to their

Figure 5.1 The cognition-emotion process, as proposed by Weiner (1985b, 1986)

restricted view of emotion. They limited their proposals to a pride/shame dimension. Subsequent research (Weiner, 1985b, 1986) suggests that external attributions may be influential in other types of emotions, such as anger.

The mediating influence of outcome importance was most in evidence for attributions made to motivation by winners and attributions made to lack of ability by losers. The motivation attribution was positively correlated with importance ($r=0.603$, $p<0.01$) and all seven of the emotions correlating with this attribution also correlated with importance (all $p<0.05$). Winners who thought it was important to win the contest, therefore, tended to make attributions to motivation and to feel happy, contented, competent, good, proud and pleased - all emotions associated with the positive self-esteem factor. Outcome importance, therefore, is a significant variable in these relationships. However, the motivation attribution also correlated with performance satisfaction ($r=0.360$, $p<0.05$), suggesting that these subjects may have been making attributions for both outcome and performance.

For losers, the ability attribution seemed most affected by outcome importance in its relationship with emotions. As with the motivation attribution for winners, attributing losing to a lack of ability was found to be correlated with both performance satisfaction ($r=-0.434$, $p<0.01$) and outcome importance ($r=0.374$, $p<0.05$).

Similarly, most of the emotions in question were related to importance. Losers, therefore, were more likely to attribute their loss to lack of ability the more important they thought it was to win. This pattern was then associated with reduced performance satisfaction and a negative emotional reaction. But these emotions were not related to ability if outcome importance was low. This is probably due to the fact that losers are most likely to question their ability when they lose a contest they are motivated to win. Since they are motivated to win one can assume some effort was expended. Losing after trying hard is likely to elicit attributions to lack of ability. This is the 'double-edged sword' of effort alluded to by Covington & Omelich (1979).

An additional finding not previously discussed in the other two studies was that of a relationship between form and mood attributions for losers and feelings of depression/frustration. Some clinical research has suggested that internal, stable and global attributions will prolong and extend the range of depressive deficits whereas the present results suggest that it is attributions which are internal but unstable that relate to depression. Further research is needed on this at the dimensional level of analysis.

It has been argued in Chapters 3 and 4 that subjects may be making attributions to outcome and/or performance. Again, winners were more internal in their attributions,

and losers gave both internal and external attributions. However, attribution-emotion relationships predominantly involved internal attributions. This mirrors the results of Study I in particular. This can be partly explained by referring to the ANOVA performed on the performance satisfaction scores. This showed that losers attaching high importance to winning the contest experienced the greatest dissatisfaction with performance. Again this suggests that outcome attributions may differ from attributions for performance, although both types may be given when only outcome attributions are sought.

Arnold (1970) and Vallerand (1983, 1987) suggest that two types of cognitive appraisal are critical determinants of emotion, as reviewed in Chapter 2. First, the intuitive appraisal takes place, and this is the relatively immediate and automatic formation of emotion. Second, the reflective appraisal takes place, such as attributional thought, and this may modify the intuitive appraisal. Vallerand (1983) argues that performance assessment is a case of intuitive appraisal whereas attributions more closely resemble reflective appraisals. However, an appraisal of performance is also likely to involve attributions. As argued in Chapter 2, the intuitive appraisal may be more closely related to outcome. In the current study it is possible that losers, after their initial intuitive appraisal, reflected on their result and expressed dissatisfaction with performance, particularly

when motivated to win. It is also likely that if prior motivation is high and the outcome is a loss, losers will further seek out a cause, thus reflecting on performance as well as outcome. This is consistent with Weiner's (1985a) review which suggests that attributional search is more likely after an unexpected event or nonattainment of a goal. Winners, however, may not need to go much beyond outcome attributions if they already feel satisfied with their performance.

Psychomotor speed and decision time

No effects for outcome or importance were found for the measures of psychomotor speed and decision time. The main effect for gender on decision time is not readily explainable given the lack of gender differences in this study. Although Goodwin & Williams (1982) concluded that failure feedback can induce mood change, it must be questioned whether a contrived and novel laboratory sports task is sufficiently powerful to produce genuine changes in emotion such that behaviour will be affected. The results suggest it is not possible despite the self-report data. Also, the MIP literature has focused almost exclusively on depression (Goodwin & Williams, 1982; Williams, 1980), thus it is not known to what extent the more prominent emotions reported in this study could be expected to affect behaviour. Research by Hill (1985) also suggests that personality factors, such as neuroticism,

may affect the influence of depressive MIPs.

Further studies in sport need to use a more ego-involving task and possibly a more discriminating test. Strongest results in the test anxiety literature have been found when failure feedback is given on a difficult task (Williams, 1980).

Conclusions from Study III

Most of the hypotheses erected at the beginning of this chapter were supported. Although the task used was novel and laboratory-based, the results provide strong evidence for links between attributions and emotions in a third type of sporting contest. One advantage of the methodology used was that the magnitude of victory/defeat was standardised by the experimenter. With each contest taking over 30 minutes of relatively intense competitive activity, there was every chance that 'real' attributions and emotions were generated.

In conclusion, the results from the laboratory fencing contest study were:

1. winners generally made more internal attributions than losers, although losers made a mix of internal and external attributions;
2. winners experienced greater positive emotion than losers, and losers experienced greater negative emotion than winners;

3. the importance attached to winning the contest only affected the intensity of negative emotions;

4. the importance attached to winning affected the satisfaction subjects felt in respect of their performance. Specifically, low performance satisfaction was felt most intensely by losers attaching high importance to winning;

5. attribution-emotion relationships were found primarily for internal attributions;

6. those emotions found to correlate with attributions only when it was important to win were primarily positive self-esteem emotions;

7. tentative evidence was available that internal, unstable and uncontrollable attributions were related to depression-frustration emotions when it was important to win;

8. two behavioural measures of mood (psychomotor speed and decision time) were found to be unaffected by outcome and importance.

CHAPTER 6

STUDY 4:

LEAGUE

SQUASH

MATCHES

CHAPTER 6

STUDY 4: LEAGUE SQUASH MATCHES

The results from the laboratory fencing contest study reported in Chapter 5, strengthen further the claim that some attributions, predominantly internal, are related to certain emotions, and that the importance attached to winning the contest is (a) a moderator of some correlations involving attributions and emotions, and (b) related to the strength of negative but not positive emotions following a loss. However, in the three studies undertaken, it has been suggested that subjects may be making attributions for both outcome (win/loss) and performance (the way they played), but this has not been directly tested. Indeed, it has been a criticism of sport attribution studies in the past that only outcome attributions have been assessed rather than attributions to outcome and/or attributions to subjectively perceived events, such as the way one played in the game. To remedy this deficiency requires the assessment of the extent to which players are satisfied with their performance and their attributions for having played well or poorly. It seems likely that attributions made to outcome will differ from attributions for performance. As seen in Study 3, the satisfaction reported after winning or losing is related to the importance attached to the outcome. In Study 3 it was found that the greatest dissatisfaction with performance was reported by losers who felt it was

important to win. This suggests that research might usefully investigate ratings of importance, not only for outcome, but also for performance.

Purpose

The purpose of this fourth and final study, therefore, was to assess attributions for both outcome and standard of performance. Relationships between emotions and both types of attributions were investigated, and the role of importance and expectancy was again assessed. In this study, importance and expectancy of both outcome (winning/losing) and performance were studied. Study 4 used a field setting where highly competitive behaviour was likely. Participants in a regional squash league were studied. Specifically, the following aims and hypotheses were identified:

1. to investigate the attributions given by league squash players to winning and losing competitive squash matches. Specifically, it was hypothesised that (a) winners would attribute their result to internal factors, (b) losers would attribute their result to both internal and external factors, (c) winners would report stronger internal attributions than losers.
2. to investigate the attributions given by players for their standard of performance in the match. Based on prior research into perceptions of success and failure (Weiner, 1986), it was hypothesised that (a) players satisfied with

their standard of performance would give internal attributions, (b) players dissatisfied with their standard of performance would give both internal and external attributions, and (c) satisfied players would report stronger internal attributions than dissatisfied players.

3. to investigate the nature and content of self-reported emotion following a squash match. It was hypothesised that both winners compared with losers and satisfied players compared with dissatisfied players would differ in the expected direction on the self-report bi-polar affect scales.

4. to investigate the nature and strength of relationships between attributions and emotions. It was hypothesised that (a) emotions would correlate primarily with internal outcome and performance attributions and (b) there would be more numerous and stronger relationships between performance attributions and emotions than between outcome attributions and emotions.

5. to explore further the role of importance and expectancy of winning in the relationship between attributions and emotions. It was hypothesised that both variables would act in similar ways and that they would be significant moderators in the link between attributions and emotions. In particular it was hypothesised that emotions correlating with outcome attributions only when it is important to win, and emotions correlating with performance attributions only when it is important to play well, would primarily be esteem-related emotions such as

pride, competence and confidence.

METHOD

Subjects

Subjects were squash players participating in the North West Counties League. A total of 74 players provided usable data (54 men and 20 women). The mean age was 29.3 years (range 17-46).

Procedure

Players were approached prior to their match warm-up and were asked if they would participate in the study. No player refused. On agreement, they read and signed an informed consent document (Appendix K2) and explanation of the nature of the study. They then provided personal descriptive data on a pre-game questionnaire. On completion of the match the players were asked to complete three questionnaires. An emotion rating scale was always presented first in an attempt to capture the immediate emotions associated with the game. This was followed by the outcome attribution and performance attribution scales. The attribution scales were presented in alternate orders to successive players. All matches took place between members of the same sex.

Measures taken

1. Pre-game questionnaire: this requested descriptive

data (age and gender) and four questions, each requiring a response on a 5-point scale. The questions asked for ratings to be made on (a) the importance of winning the game, (b) the importance of playing well in the game, (c) expectation of winning the game, and (d) expectation of playing well. Although it was not always possible for players to make an informed judgement about their expectations of winning, league squash matches are organised such that players from one team only play the equivalently ranked player in the opposing team. Coupled with some knowledge of the strength of the other team, a measure of outcome expectancy can be justified.

2. An emotion rating scale

Thirteen bi-polar adjectives were presented to the subjects after the game. These were:

pleased-displeased
satisfied-dissatisfied
happy-unhappy
contented-discontented
competent-incompetent
good-bad
confident-unconfident
pride-shame
relaxed-tense
unconcerned-concerned
elated-depressed
sense of achievement-frustrated
calm-angry.

These adjectives were based on the studies reported in the previous chapters, as well as the work by Weiner et al. (1978, 1979). A bi-polar semantic differential format was adopted since logic dictated that many of the adjectives used in the previous studies could be paired in this way.

This technique also simplifies the procedure for subjects (Kerlinger, 1973).

In addition to these bi-polar adjectives, uni-polar 5-point scales were presented for the words 'surprised', 'disappointed' and 'guilty'. No clear lexical opposites could be found for these. For all 16 items, subjects were asked to "indicate your current feelings, that is how you feel right now having just completed your game". The emotion rating scale is shown in Appendix H.

Players were also asked to rate, on a 6-point scale, their degree of satisfaction with "your standard of performance in the game today, that is the way you played". This scale was then used to dichotomise the sample into high/low performance satisfaction groups. This was achieved by placing those who scored 1,2 or 3 on the 6-point scale into the 'low performance satisfaction' group (dissatisfied players) and those who scored 4,5 or 6 on the scale into the 'high performance satisfaction' group (satisfied players).

3. An attribution scale: (a) outcome

Twelve attributions were presented to the players. The attributions assessed were: luck, ability, effort, mood, physical fitness, previous experience and training, motivation, personality, form, opponent's effort, opponent's ability, and other opponent factors. Each attribution was rated on a 5-point scale from 'not at all' to 'very much so' and players were asked to base their

ratings on attributions made to the outcome of the game (ie. win/loss). The attribution (outcome) scale is shown in Appendix G.

3. An attribution scale: (b) performance

The same 12 attributions were presented again but this time players were asked to make attribution ratings for their performance rather than for the outcome. The attribution (performance) scale is also shown in Appendix G.

Following the completion of the post-game questionnaires, all subjects were debriefed and thanked for their participation.

RESULTS

The descriptive data for age, importance, expectancy and satisfaction are shown in Table 6.1. This shows that winners, prior to the game, felt it was more important to win than losers ($t=3.26$, $p<0.01$) and, as expected, winners were significantly more satisfied with their performance than losers ($p<0.01$). No other differences emerged, but on average the players felt it was important to win and play well, and had high expectations of winning and playing well. In fact, of the 74 players assessed, only 2 reported that it was not important to win (ie. scored 1 or 2 on the 5-point rating scale), and only one reported it was not important to play well. With the average age just under 30

years, the players were older than the three previous groups of subjects examined in earlier chapters.

Attributions for outcome: Hypotheses 1a, 1b and 1c

Hotelling's T^2 was used to test the difference between men and women on their multivariate profile for outcome attributions. No significant difference was found [T^2 =0.15, approx $F(12,58)=0.726$, $p>0.05$] and therefore the two groups were merged for subsequent analyses.

Table 6.2 shows that winners strongly endorsed the attributions of motivation, ability, previous experience, and effort thus showing a strong internal bias and supporting hypothesis 1a. Losers endorsed the attributions of opponent's effort and opponent's ability, with all other attributions being rated on or below the scale midpoint. Hypothesis 1b, therefore, is not supported as losers only reported high ratings of external attributions.

Given the difference between winners and losers on pre-game perceptions of the importance of winning, attribution ratings for winners and losers were analysed using a one-way MANCOVA, with pre-match ratings of outcome importance as the covariate. A highly significant multivariate difference was found [Hotelling's T^2 = 1.77, approx $F(12,57) = 8.40$, $p<0.0005$], with univariate differences (all $p<0.05$ showing on all but three attributions (see Table 6.2). Table 6.2, using means adjusted for the

TABLE 6.1 Descriptive statistics for age, outcome importance and expectancy, performance importance and expectancy, and performance satisfaction.

GROUP	VARIABLE	AGE (YEARS) M	AGE (YEARS) SD	PRE-GAME RATINGS: OUTCOME IMPORTANCE (1) M	OUTCOME IMPORTANCE (1) SD	PERFORMANCE IMPORTANCE (1) M	PERFORMANCE IMPORTANCE (1) SD	OUTCOME EXPECTANCY (1) M	OUTCOME EXPECTANCY (1) SD	PERFORMANCE EXPECTANCY (1) M	PERFORMANCE EXPECTANCY (1) SD	POST-GAME RATINGS: PERFORMANCE SATISFACTION (2) M	PERFORMANCE SATISFACTION (2) SD
ALL SUBJECTS (N=74)		29.30	6.80	4.20	0.74	4.37	0.69	3.50	1.05	3.70	0.92	3.68	1.40
GENDER	MALE (N=54)	28.96	7.15	4.11	0.79	4.37	0.76	3.45	1.14	3.67	0.91	3.74	1.29
GENDER	FEMALE (N=20)	30.15	5.91	4.45	0.51	4.35	0.49	3.63	0.76	3.80	0.95	3.50	1.67
OUTCOME	WINNERS (N=37)	29.30	7.37	4.51[3]	0.56	4.38	0.79	3.77	0.94	3.81	0.91	4.46[3]	1.17
OUTCOME	LOSERS (N=37)	29.27	6.32	3.89[3]	0.77	4.35	0.59	3.23	1.09	3.60	0.93	2.89[3]	1.15
PERFORMANCE	HIGH SATISFACTION (N=40)	29.20	7.04	4.23	0.77	4.45	0.60	3.61	0.97	3.65	0.80		
PERFORMANCE	LOW SATISFACTION (N=34)	29.38	6.66	4.16	0.72	4.27	0.79	3.38	1.13	3.77	1.05		

NOTES: 1. 5 - point scales
2. 6 - point scale
3. Difference $p < .01$

Table 6.2. Means and standard deviations of outcome attributions for winners and losers, adjusted for the covariate 'outcome importance'.

OUTCOME ATTRIBUTION	WINNERS		LOSERS	
	M	SD	M	SD
luck	2.47	1.27	1.86	1.15
ability **	4.11	0.67	2.81	1.18
effort **	4.00	0.98	2.37	1.16
mood **	3.75	1.15	2.60	1.50
fitness *	3.69	1.12	2.86	1.36
previous experience **	4.06	0.69	2.42	1.28
motivation **	4.16	1.18	2.55	1.04
personality **	3.26	1.29	2.01	1.24
form	3.23	1.21	3.02	1.16
opponent's effort **	1.81	0.99	3.43	1.36
opponent's ability **	2.34	1.24	3.50	1.27
opponent factors	3.14	1.33	2.83	1.37

Notes: 1. * $p<0.05$: ** $p<0.01$
2. all ratings on 5-point scales with higher scores indicating stronger attributions.

covariate, shows that winners attributed their outcome more than losers to ability, effort, mood, fitness, previous experience, motivation and personality, whereas losers attributed their outcome more than winners to opponent's effort and opponent's ability. Hypothesis 1c, therefore, is strongly supported.

Attributions for performance: Hypotheses 2a, 2b and 2c

No significant difference was found between men and women for performance attributions using Hotelling's T^2 [T^2=0.285, approx $F(12,55)$=1.31, $p>0.05$]. The data were therefore merged for subsequent analyses. Two groups were then formed on the basis of their satisfaction with performance. The two groups were established by dichotomising the performance satisfaction variable, as explained earlier in the section on 'measures taken'.

Table 6.3 shows the descriptive data for performance attributions. This shows that the high satisfaction group strongly endorsed the internal attributions of motivation, ability and effort, while the low satisfaction group were highest on the external attributions of opponent's effort and opponent's ability. Those satisfied with their performance, therefore, showed a clear internal bias and support for hypothesis 2a. Those dissatisfied with their performance showed primarily external attributions although the internal attribution of poor form was their third highest rated attribution. Some support for

Table 6.3. Means and standard deviations on performance attributions for high and low performance satisfaction groups.

PERFORMANCE ATTRIBUTIONS	HIGH SATISFACTION		LOW SATISFACTION	
	M	SD	M	SD
luck *	2.41	1.04	1.85	1.12
ability **	4.05	0.77	2.67	1.14
effort **	4.05	1.09	2.36	1.25
mood **	3.50	1.29	2.67	1.41
fitness **	3.71	1.16	2.64	1.39
previous experience **	3.79	0.81	2.39	1.32
motivation **	4.16	0.76	2.78	1.41
personality *	3.05	1.31	2.33	1.27
form	3.42	0.95	3.36	1.24
opponent's effort **	1.82	1.04	3.47	1.32
opponent's ability **	2.10	1.25	3.41	1.29
opponent factors	3.08	1.44	3.09	1.40

Notes: 1. * $p<0.05$; ** $p<0.01$
2. all ratings on 5-point scales with higher scores indicating stronger attributions

hypothesis 2b is therefore found.

Since there was no difference between the high and low performance satisfaction groups on the variable of performance importance (see Table 6.1), it was deemed unnecessary to use this variable as a covariate. The difference between the profiles of the high and low satisfaction groups was analysed using Hotelling's T^2. The analysis revealed a highly significant difference on the multivariate profiles [T^2 =2.09, approx F (12,55) = 9.56, $p<0.0005$]. Univariate differences showed that players satisfied with their performance were significantly ($p<0.05$ or better) higher on attributions to ability, effort, mood, fitness, previous experience, motivation, luck, and personality, whereas players dissatisfied with their performance were significantly higher on attributions to opponent's effort and opponent's ability. These results support hypothesis 2c by showing a clear internal/external difference between the two groups (see Table 6.3).

Emotion ratings

Hotelling's T^2 analysis of gender differences did not reveal any difference between men and women on their emotion ratings [T^2 =0.196, approx $F(16,47)=0.576$, $p>0.05$] so again the data from the two groups were merged. Two main analyses were carried out: (i) analysis by outcome (ie. winners and losers) and (ii) analysis by performance

(ie. high and low performance satisfaction groups). It should be recalled, however, that the emotion ratings were made only once and were not elicited specifically in response to outcome or performance separately.

Emotion ratings of winners and losers: Hypothesis 3

Table 6.4 shows that winners reported ratings above 4 on the 5-point scale on the following emotions: pleased, satisfied, happy, contented, sense of achievement, and good, whereas losers showed weaker levels of self-reported emotion. Losers did, however, report elevated levels of displeasure (M=1.89), disappointment (M=3.90) as well as calmness (M=3.18). Since winners (M=4.51) and losers (M=3.89) on average differed in their pre-game perceptions of outcome importance (Table 6.1), a one-way MANCOVA, with ratings of outcome importance as the covariate, was used to test for emotion differences between winners and losers. As expected, there was a highly significant difference between the two groups [Hotelling's T^2 = 2.88, approx $F(16,46)$ = 8.29, $p<0.0005$], with 14 of the 16 emotions showing significant univariate differences, 11 being significant at $p<0.01$. The remainder were significant at $p<0.05$, as shown in Table 6.4. The two exceptions were 'unconcerned' and 'surprise'. These results support hypothesis 3.

Table 6.4. Means and standard deviations for emotion ratings for winners and losers, adjusted for the covariate 'outcome importance'.

EMOTION	WINNERS M	WINNERS SD	LOSERS M	LOSERS SD
pleased (2) **	4.42	0.78	1.89	1.04
satisfied (2) **	4.16	1.19	2.08	1.20
happy (2) **	4.33	0.97	2.17	1.01
contented (2) **	4.24	0.83	2.23	1.12
competent (2) **	3.67	1.04	2.61	0.98
good (2) **	4.23	0.96	2.46	1.16
confident (2) **	3.99	1.00	2.76	0.94
proud (2) **	3.99	0.82	2.82	0.82
relaxed (2) *	3.71	1.41	2.82	1.15
unconcerned (2)	3.05	1.11	2.45	1.04
elated (2) **	3.91	0.82	2.90	0.72
sense of achievement (2) **	4.24	1.17	2.14	0.92
calm (2) *	3.86	1.06	3.18	1.20
surprise (3)	2.30	1.05	2.66	1.14
disappointment (3) **	1.51	0.99	3.90	1.17
guilt (3) *	1.60	1.08	2.25	1.14

Notes:
1. * $p<0.05$; ** $p<0.01$
2. these emotions assessed with 5-point bi-polar adjectival pairs, with positive end scoring higher.
3. ratings on 5-point Likert scales with higher scores indicating stronger emotion ratings.

Table 6.5. Means and standard deviations for emotion ratings for high and low performance satisfaction groups.

EMOTION	HIGH SATISFACTION M	SD	LOW SATISFACTION M	SD
pleased (2)**	3.95	1.20	2.18	1.19
satisfied (2)**	4.15	1.20	2.27	1.13
happy (2)**	3.82	1.34	2.50	1.08
contented (2)**	3.67	0.90	2.56	1.11
good (2)**	4.05	0.96	2.59	1.24
confident (2)**	3.85	0.96	2.77	1.08
proud (2)**	3.93	0.76	2.88	0.84
relaxed (2)	3.48	1.34	3.15	1.33
unconcerned (2)*	3.00	1.00	2.50	1.16
elated (2)**	3.78	0.86	2.94	0.74
sense of achievement (2)**	3.85	1.17	2.35	1.01
calm (2)	3.74	1.04	3.35	1.23
surprise (3)	2.37	1.13	2.50	1.11
disappointment (3)**	1.87	1.22	3.62	1.28
guilt (3)**	1.51	0.85	2.41	1.26

Notes:
1. * $p<0.05$; ** $p<0.01$
2. these emotions assessed with 5-point bi-polar adjectival pairs, with positive end scoring higher.
3. ratings on 5-point Likert scales, with higher scores indicating stronger emotion ratings.

Emotion ratings of high and low performance satisfaction groups: Hypothesis 3

Table 6.5 shows that those players satisfied with their performance reported, on average, scores above four on the 5-point scale on the emotions of satisfaction and feeling good, and above 3.5 on pleased, happy, contented, confident, proud, elated, calm, and a sense of achievement. Dissatisfied players were more moderate in their reported emotion although ratings of disappointment were elevated above the scale midpoint.

A highly significant difference was found between the two performance satisfaction groups in terms of their emotion ratings [Hotelling's $T^2 = 1.45$, approx. $F(16,47) = 4.26$, $p<0.0005$]. Univariate differences showed that those satisfied with their performance were significantly more pleased, satisfied, happy, contented, confident, proud and elated (all $p<0.01$), and were significantly higher on competence ($p<0.01$), feeling 'good' ($p<0.01$) and unconcerned ($p<0.05$). They were also significantly lower on frustration, disappointment and guilt (all $p<0.01$; see Table 6.5). Hypothesis 3 was therefore supported.

Relationships between attributions and emotions: Hypotheses 4a, 4b and 5

Analyses of relationships between attributions and emotions were performed in four ways (i) Pearson correlation coefficient analysis between all attributions

and emotions; (ii) partial correlation analysis, partialling out the effects of importance and expectancy (see Appendix L); (iii). Pearson correlations between attributions and emotion factors derived from a factor analysis; (iv). multiple regression analyses regressing the emotion factors derived from the factor analysis on attributions, performance satisfaction and the pre-game variables of outcome and performance importance and outcome and performance expectancy.

Zero-order and partial correlations involving outcome attributions

Winners

For winners clear relationships were found between internal attributions and emotions (see Table 6.6). The attributions of effort, motivation, mood, fitness, personality and form all positively covaried with positive emotions. When partial correlations (controlling for outcome importance and expectancy separately) were calculated, it was found that all these zero-order relationships occurred independently of pre-game perceptions of importance and expectancy. There was also a negative relationship for winners between attributions to opponent factors and positive emotions. For sake of clarity, Tables 6.6-6.9 only show the partial correlation analysis when importance was partialled out. However, the results obtained when expectancy was partialled out of the zero-order correlations were essentially the same.

TABLE 6.6 Selected zero-order and partial correlation coefficients between outcome attributions and emotions for winners.

EMOTION / OUTCOME ATTRIBUTION	PLEASED	SATISFIED	HAPPY	CONTENTED	COMPETENT	GOOD	CONFIDENT	PROUD	RELAXED	UN-CONCERNED	ELATED	SENSE OF ACHIEVEMENT	CALM	SURPRISE	DISAPPOINTMENT	GUILT	OUTCOME IMPORTANCE
Luck	-100 013	012 030	084 256	054 118	-088 -059	322 384	124 159	044 -052	-224 -112	-026 -050	150 289	044 110	-173 -158	248 186	-044 -101	064 -101	-359
Ability	133 278	031 120	216 158	-040 027	062 193	013 166	176 175	-088 021	-103 -084	033 088	184 252	045 083	042 078	-157 -105	-192 -415	-137 -205	327
Effort	348 403	384 398	560 592	313 287	175 108	280 304	236 236	254 323	-091 -254	-161 -150	473 491	125 141	029 -031	125 240	-189 -238	-581 -611	226
Mood	467 573	332 348	348 306	105 002	022 -034	138 027	133 042	222 042	-051 -102	340 399	196 091	244 179	088 129	329 246	-411 020	012 -	-168
Fitness	095 170	067 119	288 338	286 321	299 294	-016 -044	135 072	166 242	194 116	-247 -207	291 370	291 091	301 222	-034 036	-013 -035	-411 -454	183
Previous experience	068 052	071 126	175 118	105 125	-082 -086	134 108	200 069	097 -082	-095 -094	194 280	-056 -054	103 -011	107 -039	-177 -133	-085 -085	000 -038	-035
Motivation	560 566	371 376	779 750	456 465	403 407	457 474	195 073	440 409	075 019	019 019	562 520	305 200	357 408	000 -027	-505 -559	-245 -208	-024
Personality	442 370	293 324	372 249	-004 014	-025 050	089 128	095 189	195 269	-289 -374	233 192	287 225	263 173	-112 -162	-251 360	-271 -283	-230 -225	016
Form	452 587	591 601	481 588	262 231	174 155	460 451	264 264	408 367	-152 -174	037 077	397 400	103 080	021 -044	207 166	-387 -453	-400 -509	-231
Opponent's effort	-284 -460	-109 -186	-452 -428	-163 -185	-050 -121	-332 -365	-150 -169	-150 -108	-061 -116	-072 -141	-168 -094	-076 -111	-067 -249	-158 -009	142 398	078 186	030
Opponent's ability	-028 -157	-089 -244	-438 -406	-286 -373	-109 -188	-205 -253	-414 -459	-068 -029	047 074	-046 -197	-154 -064	-014 -076	-060 -234	-172 -075	-045 211	-150 -122	-126
Opponent factors	-015 099	019 022	-162 -019	-094 -071	072 146	-094 -096	-169 -045	-369 -383	010 034	037 030	-135 189	020 175	031 -025	038 108	-093 -169	175 169	-002
Outcome importance	-042	-150	072	-064	-025	-140	001	-303	199	-070	-026	-149	052	-318	154	-142	/

NOTES: 1. Critical values: $p<.05$, $r = .270$; $p<.01$, $r = .380$ (zero-order)
$p<.05$, $r = 320$; $p<.01$, $r = 430$ (partial)
2. Partial correlations below diagonal, controlling for outcome importance.

TABLE 6.7 Selected zero-order and partial correlation coefficients between outcome attributions and emotions for losers

EMOTION / OUTCOME ATTRIBUTION	PLEASED	SATISFIED	HAPPY	CONTENTED	COMPETENT	GOOD	CONFIDENT	PROUD	RELAXED	UN-CONCERNED	ELATED	SENSE OF ACHIEVE-MENT	CALM	SURPRISE	DIS-APPOINT-MENT	GUILT	OUTCOME IMPORTANCE
Luck	024 / -038	-136 / -248	-227 / -279	-257 / -317	276 / 327	-054 / -120	-066 / -068	-003 / -004	-190 / -314	116 / 042	-206 / -194	045 / 059	-186 / -108	155 / 140	195 / 248	031 / -040	-038
Ability	-163 / -218	014 / 255	087 / [illegible]	173 / 045	-257 / [illegible]	059 / 095	-094 / 009	-098 / -049	074 / 229	172 / 280	112 / 171	-117 / -114	067 / -065	-405 / -318	-200 / -223	118 / 207	-023
Effort	-201 / -185	-018 / -165	-146 / -031	-086 / -007	-063 / -073	039 / 046	013 / 116	-220 / -305	031 / 074	-334 / -541	-042 / 062	-393 / -355	-133 / 047	066 / 099	172 / 220	289 / 253	184
Mood	-346 / -369	-352 / -376	-009 / -025	-265 / -411	117 / 112	011 / 003	-096 / 009	-444 / -354	-228 / -225	-409 / -413	-203 / -109	-252 / -208	-121 / -143	304 / 391	468 / 454	097 / 143	-051
Fitness	017 / -060	-008 / -079	065 / 038	075 / 018	-248 / -387	-144 / -162	-228 / -261	119 / 078	-023 / 009	168 / 221	074 / 052	-072 / -091	-053 / -107	-014 / 076	-111 / -047	-139 / -087	-014
Previous experience	114 / 033	-138 / -046	-158 / -388	-045 / -105	-335 / -429	-184 / -290	-373 / -495	-054 / 016	093 / 017	119 / 164	044 / 041	-125 / -298	-184 / -228	-089 / -156	016 / 000	164 / 195	-253
Motivation	-062 / -171	-083 / -263	-003 / -106	008 / -094	026 / -033	-184 / -245	-062 / -019	-290 / -450	049 / 021	-224 / -305	-122 / -123	-243 / -366	-151 / -110	009 / 056	106 / 214	231 / 239	-163
Personality	-041 / -089	-152 / -220	155 / 056	-019 / -271	080 / 033	191 / 229	-015 / 133	-351 / -298	101 / 222	-215 / -135	-145 / -105	-107 / -142	140 / 063	-169 / -081	078 / 066	-235 / -203	-219
Form	-273 / -253	-443 / -463	-088 / -070	-348 / -455	-118 / -160	-446 / -489	-256 / -138	-493 / -322	-266 / -209	-058 / -018	-389 / -287	-339 / -211	-263 / -247	232 / 311	424 / -174	-120 / -174	041
Opponent's effort	-161 / -128	007 / -179	-123 / -071	-149 / -239	047 / 084	-121 / -108	172 / 206	028 / -097	225 / 233	145 / 140	-238 / -287	018 / 019	-023 / -096	-059 / -040	-092 / -073	010 / 027	074
Opponent's ability	-108 / -090	091 / 024	-241 / -297	053 / -005	-276 / -294	-295 / -249	034 / 056	119 / 086	-020 / 023	019 / 077	-028 / -072	-044 / -087	-099 / -209	-018 / 010	-036 / -028	186 / 259	006
Opponent factors	-040 / -181	-072 / -250	-010 / -173	029 / -122	-184 / -343	-433 / -532	-157 / -177	055 / -058	-241 / -372	-165 / 200	-091 / -140	110 / 045	-455 / -550	324 / 424	043 / 165	157 / 249	-218
Outcome Importance	-314	-189	-498	-529	-128	-257	034	-010	-256	071	-066	-453	-264	114	182	094	/

NOTES: 1. Critical values: p<.05, r = .275; p<.01, r = .380 (zeroorder)
p<.05, r = .301, p<.01 r = .424 (partial)
2. Partial correlations below diagonal, controlling for outcome importance.

Winners showed consistent positive correlations between the attribution of motivation and numerous positive emotions. High correlations were seen between motivation and feeling happy (r=.779), elated (.562) and pleased (.560). All but one of the significant correlations involving this attribution occured independently of ratings of outcome importance. The exception showed that the relationship between motivation and feeling a sense of achievement only occurred when it was important to win.

Similar findings are seen for the relationships between emotions and effort attributions. Attributing their win to effort produced significant correlations with the emotions pleased, satisfied, happy, contented, good, elated and guilt (negative), all of which were unaffected by outcome importance. This trend was also evident for the attributions of mood, fitness, personality and form.

The emotion of pride correlated only with motivation, effort and form, suggesting that more variable or dynamic attributions are important in the case of pride. This is also true, although to a lesser extent, for the emotion 'elated'. Feelings of happiness were related significantly to both internal and external attributions. Feeling happy was positively correlated with high effort, right mood, good fitness, high motivation, own personality, and good form, and negatively correlated with opponent's ability and opponent's effort. Although these results suggest that happiness is related to a variety of attributions, it

could be that such general feelings are strongly produced by the outcome (ie. winning) as well. Weiner et al. (1978, 1979) proposed that the emotion 'happy' is an outcome-dependent emotion but the results here suggest that it correlated with some attributions. Finally, it was surprising not to find a relationship between ability and the emotions of competence and confidence. These emotions may be more closely related to perceptions of personal performance rather than the game outcome.

Overall, winners seemed to demonstrate that the dominant attribution-emotion relationships occur with internal, and to a certain extent unstable, attributions, although this is not invariably so. Only pride and surprise significantly correlated with the rating of outcome importance, showing that winners who thought it important to win were more likely to report less surprise and less pride after the game. Given that winners had a high expectation of winning (see Table 6.1), this is not unexpected. In general, therefore, winning emotions appeared to be largely unaffected by the importance attached to winning the game.

Losers

Table 6.7 shows that losers also showed clear attribution-emotion relationships, although over a more restricted range of attributions. The main links were with the attributions to mood and form. Attributions to being in

the wrong mood showed a relationship with feelings of (low) pride, pleasure, satisfaction and contentment, and feelings of surprise, concern and disappointment, all independent of ratings of outcome importance. Attributions to poor form showed similar trends with these attributions correlating with feelings of disappointment and surprise and low ratings, on average, of satisfaction, pride, elation, sense of achievement and feeling good. Attributing losing to lack of effort also correlated with feelings of frustration, concern and guilt. This latter emotion may be the result of attributing the loss to a personally controllable factor, whereas mood and form, although internal attributions, are less likely to be perceived as particularly controllable.

Opponent attributions showed correlations with the emotions of anger, surprise, and feeling 'bad'. Partial correlations suggested that losers who felt it was important to win suppressed feelings of tension and incompetence.

In summary, outcome attributions correlating with emotions are primarily, though not exclusively, internal attributions, thus hypothesis 4a is partly supported. Outcome importance and expectancy did play moderating roles, thus supporting hypothesis 5. However, support could not be found for hypothesis 4b since the emotions correlating with attributions only when it was important to win were not restricted to esteem-related emotions.

Four of the 16 emotions were shown to correlate significantly with ratings of outcome importance for losers. These results showed that losers attaching high importance to winning reported greater displeasure, frustration, unhappiness and discontentment, as well as showing trends towards higher scores on tension, anger and feeling bad. This suggests that outcome importance is more related to emotions after losing than winning and confirms the results found in Studies 1,2 and 3 in the previous chapters.

Zero-order and partial correlations involving performance attributions

Satisfied players

For those players who were satisfied with their performance, the performance attributions of form, previous experience, effort, and ability all positively correlated with a range of positive emotions, as shown in Table 6.8. These were independent of performance importance or expectancy. Attributions to form and mood showed relationships with ratings of pleased, satisfied, happy, competent, confident, elated, and lack of disappointed and guilt. The attribution of good form also correlated with contentment and feeling good. The attribution of being in the right mood correlated with feeling proud, a sense of achievement and surprise. However, attributions of performance success to mood only correlated with the following emotions when it was

TABLE 6.8 Selected zero-order and partial correlation coefficients between performance attributions and emotions for players high on performance satisfaction.

EMOTION / PERFORMANCE ATTRIBUTION	PLEASED	SATISFIED	HAPPY	CONTENTED	COMPETENT	GOOD	CONFIDENT	PROUD	RELAXED	UN-CONCERNED	ELATED	SENSE OF ACHIEVEMENT	CALM	SURPRISE	DISAPPOINTMENT	GUILT	PERFORMANCE IMPORTANCE
Luck	054	198	111	059	109	288	260	-056	-244	027	249	-109	-332	-064	-132	186	-145
	177	353	279	203	116	412	242	049	-226	-004	332	-061	-355	-072	-239	-017	
Ability	178	224	475	328	349	180	238	096	-024	-069	417	-095	-099	-242	154	-122	120
	142	206	486	306	361	180	216	093	-042	-029	424	-193	062	-316	-149	-045	
Effort	167	035	510	197	304	227	497	100	-053	176	294	240	069	119	-075	-098	290
	042	078	449	374	299	070	260	120	019	001	274	010	166	-083	-073	006	
Mood	424	406	353	166	276	232	473	273	-077	263	320	290	076	233	329	-398	313
	443	467	199	203	271	225	458	340	-148	182	269	092	069	153	-337	-200	
Fitness	000	071	284	188	515	039	361	104	191	-008	274	017	342	049	-053	-363	317
	-025	-084	234	117	552	-003	207	-027	212	020	336	-074	243	035	004	-244	
Previous experience	422	277	469	327	-027	350	-060	025	-054	327	193	177	-058	-155	309	-035	265
	268	301	375	368	-096	182	-040	084	-169	337	157	036	-064	-357	-336	086	
Motivation	341	093	419	213	229	143	182	246	011	146	258	390	028	096	-154	-326	305
	115	159	222	277	258	-092	107	309	-017	050	161	121	064	-023	-046	-245	
Personality	052	008	181	-196	151	-147	171	-158	-059	477	058	217	-052	225	003	-061	172
	-234	-020	-151	-249	050	-384	-042	-310	-050	404	-151	-098	001	175	133	115	
Form	385	444	583	462	421	363	542	254	154	069	413	239	198	-034	-314	-407	492
	395	432	551	499	459	347	466	165	151	069	448	090	066	-151	-293	-274	
Opponent's effort	088	-016	-223	-151	-145	008	-072	-046	-184	101	-167	141	012	-118	-131	-134	-073
	018	019	-317	-191	-398	-039	-240	060	-372	067	-238	113	-204	-014	-034	-075	
Opponent's ability	018	-235	-229	-302	063	085	-096	-191	-030	067	-001	120	-001	-099	-075	-142	040
	-067	-195	-308	320	-046	031	-250	-207	-093	-019	-011	018	-147	-043	025	-159	
Opponent factors	-177	011	-196	001	114	-144	-022	-175	010	-039	014	-162	-029	-149	-088	278	-046
	021	011	-042	008	212	-046	004	-224	025	074	141	052	-057	-158	-243	284	
Performance Importance	248	154	230	114	049	226	309	245	175	000	003	283	310	043	-255	-374	/

NOTES: 1. Critical values: p<.05, r = .278; p<.01 r = .370 (zero-order)
p<.05, r = .317; p<.01 r = .435 (partial)
2. Partial correlations below diagonal, controlling for outcome importance

TABLE 6.9 Selected zero-order and partial correlation coefficients between performance attributions and emotions for players low on performance satisfaction

EMOTION PERFORMANCE ATTRIBUTION	PLEASED	SATISFIED	HAPPY	CONTENTED	COMPETENT	GOOD	CONFIDENT	PROUD	RELAXED	UN-CONCERNED	ELATED	SENSE OF ACHIEVE-MENT	CALM	SURPRISE	DIS-APPOINT-MENT	GUILT	PERFORMANCE IMPORTANCE
Luck	-033	083	-098	-114	001	-210	-259	051	-289	-091	063	-009	-356	238	139	085	152
	-067	-069	-146	-145	-001	-237	-270	009	-337	-041	053	-042	-324	306	183	111	
Ability	-063	-064	-026	-177	-489	-029	-212	000	-021	263	159	-036	-174	090	-166	088	103
	-079	-138	013	-117	-489	-015	-305	-118	-077	303	129	-099	-114	008	-194	068	
Effort	-354	-048	-341	-072	-029	-168	-150	-444	-270	-469	-177	-492	-054	041	416	-007	399
	-295	-243	-343	-176	-055	-034	116	-335	-128	-357	-036	-452	-058	153	342	188	
Mood	-070	-025	-084	-171	320	-071	-192	-211	-153	-329	010	-203	-031	053	199	-071	222
	-025	146	007	-089	324	102	-161	-119	-033	-203	101	-047	010	075	051	101	
Fitness	-069	-165	-033	-036	-139	-333	-178	-243	-188	029	-173	-089	049	124	-018	-030	-189
	-147	-113	-156	-114	-258	-415	-197	-227	-199	019	-171	-049	039	222	009	-013	
Previous experience	029	-183	-109	-168	-302	-210	-355	-219	-321	043	120	-124	-096	091	062	-071	-193
	-045	-163	-257	-261	-417	-287	-423	-241	-039	012	142	-125	-111	160	131	-082	
Motivation	029	-169	-069	-173	356	094	239	-244	339	111	-239	-278	130	-228	111	-134	-093
	-046	-207	-179	-192	326	076	249	-331	328	102	-284	-311	241	-250	179	-158	
Personality	120	-086	302	170	303	402	144	-293	377	258	-110	032	380	-279	-260	-019	-370
	038	-137	177	-057	248	373	254	-277	456	222	-083	043	380	-158	-204	-078	
Form	-225	006	-388	-124	-052	-364	-265	-325	-117	-076	-546	-245	028	-071	337	-128	399
	031	-052	-228	-076	005	-201	-099	-146	028	071	-463	-042	113	-099	127	-027	
Opponent's effort	-405	-004	-477	-217	-397	-479	-108	-298	-218	-269	-381	-033	-035	455	283	235	555
	-152	074	-216	-034	-332	-313	049	-213	-144	-229	-320	294	070	457	006	428	
Opponent's ability	-193	171	-327	-172	-469	-216	-189	141	-276	-077	115	028	-047	445	175	035	241
	-069	172	-211	-126	-414	-144	-154	214	-247	-048	190	080	-064	428	080	057	
Opponent factors	165	261	-029	-010	-160	-109	-296	087	-124	032	125	262	-090	288	-123	-073	144
	226	218	-034	-062	-202	-091	-243	174	-074	150	185	353	-083	359	-192	-018	
Performance Importance	-340	134	-408	-216	-140	-333	-210	-133	-240	-380	-129	-196	-099	121	373	-235	/

NOTES: 1. Critical values: p<.05, r = .290; p<.01, r = .399 (zero-order)
p<.05, r = .320; p<.01, r = .430 (Partials)
2. Partial correlations below diagonal, controlling for outcome importance

important to perform well: happy, elated, sense of achievement, and guilt. For pleased, satisfied, confident, pride and dissappointment (negative), performance importance was not influential. The same pattern was also found for performance expectancy.

A similarly mixed pattern was found for relationships between fitness attributions and emotions. These attributions correlated with the emotions of competence, confident, calm, happy and elated, as well as lack of guilt. The attribution to motivation positively covaried with emotions only when it was important to perform well. These emotions were pleased, happy, sense of achievement and lack of guilt.

As suggested above, the attribution of ability is more likely to be related to feelings of competence when performance rather than outcome is considered. This appears to be the case as players satisfied with their performance, and attributing this performance to ability, reported higher perceptions of competence independent of the importance of performing well.

Attributions to effort showed relationships with happy, competent, confident and elated, all independent of performance importance. Similarly, attributions to previous experience were seen to correlate with feeling pleased, satisfied, happy, contented, unconcerned, and a lack of disappointment, all independent of performance

importance. However, these attributions only correlated with feeling good when it was important to perform well. Overall, 4 emotions correlated significantly with ratings of performance importance. These were confidence, sense of achievement, calm and guilt (negative). Similar trends were found for pleased, happy, good, pride, and disappointment (negative). This suggests that whereas winners' emotions were largely unrelated to outcome importance, some of the emotions of players satisfied with their performance are related to the importance of playing well.

Dissatisfied players

Finally, for dissatisfied players, the main links with emotions were found for the attributions of effort, personality, form and opponent's effort, as shown in Table 6.9. All of these attributions also significantly correlated with performance importance. The attribution of performance to low effort was generally associated with negative emotions regardless of importance or expectancy, whereas attributing performance to poor form was associated with negative emotions only if it was important to perform well or if one expected to perform well. Low effort attributions correlated with ratings of feeling displeased, unhappy, shameful, concerned, disappointed and frustrated. The relationships between form and emotions involved the ratings of happy, good, pride, elated and disappointed.

The attribution of personality positively correlated with the ratings of feeling good, happy, competent, and calm. The relationships involving feelings of happiness and competence only occurred when it was important to perform well. Presumably, therefore, it is possible to suggest, although only from correlational data, that these players, already dissatisfied with their performance, felt less negative about the situation if they attributed their poor performance to their own personality. This could be a mechanism for denying blame if they see personality as a stable factor beyond their control. However, there was a weak relationship between personality and shame.

Attributions to opponent's effort correlated with a variety of emotions, some of which were dependent on importance and expectancy. This attribution showed relationships with feeling unhappy, bad, surprised, displeased, incompetent, shame, and depressed. Feeling unhappy, displeased and shame occured only when it was important to perform well.

Overall, the correlations involved primarily, although not exclusively, internal attributions for performance. This gives some support to hypothesis 4a. Similarly, the pre-match ratings of importance and expectancy often played the role of intervening variables, supporting hypothesis 5. However, the intervention primarily on self-esteem

emotions, as hypothesised, was not supported. Support can be found for hypothesis 4b, however, with correlations between emotions and attributions for performance being stronger and more numerous than relationships between emotions and attributions for outcome. Ratings of performance importance were shown to significantly correlate with 5 of the 16 emotions showing that the players dissatisfied with their performance but who felt it was important to play well, reported higher levels of displeasure, unhappiness, disappointment, concern, and feeling bad. A trend was also observed for a higher level of reported tension. This suggests that performance importance does relate to emotions for players dissatisfied with their performance. However, as far as the intervening role of performance importance is concerned, it is not surprising to find that the distribution of scores on this variable is heavily skewed with most players reporting that it was important to play well.

Attribution-emotion factor correlations

So far a fairly detailed picture of the associations between attributions and emotions has been achieved. However, the 16 emotion rating scales could be reduced through factor analytic techniques. The advantage of this is that any commonality in the emotion rating scales will allow for a simpler form of data analysis using a few emotion factors rather than all of the rating scales.

Table 6.10. Factor structure of emotion ratings

	FACTORS AND FACTOR LOADINGS		
	1 'POSITIVE EMOTION'	2 'COMPETENCE'	3 'RELAXATION'
EMOTIONS			
satisfied	.861	.298	.100
pleased	.790	.317	.334
sense of achievement	.766	.158	.287
disappointment	-.762	-.219	-.442
pride	.738	.302	.035
contented	.725	.163	.378
happy	.689	.327	.392
elated	.623	.402	.077
good	.579	.505	.310
competent	.296	.662	.170
confident	.421	.497	.084
guilt	-.237	-.521	.024
relaxation	.105	.148	.708
calm	.169	.103	.618
unconcerned	.247	.039	.336
% variance	46.9	5.8	4.0

This is also likely to reduce the chance of making Type I errors when drawing conclusions from a large correlation matrix such as those in Tables 6.6-6.9.

Factor analysis with varimax rotation was carried out on emotion ratings for all participants. This revealed a relatively clear three factor solution accounting for 56.7% of the variance. Table 6.10 shows the factor loadings and the three factors. Factor 1 is probably best described as "positive emotion" as the emotions of satisfied, pleased, sense of achievement, pride, and contentment all load strongly. Factor 2 could be described as "competence" as the emotions of competence, confidence and lack of guilt load on this factor. Finally, Factor 3 is labelled "relaxation" with the main emotions of relaxation, calmness and unconcern loading on this factor.

Table 6.11 shows the correlations between attributions and the emotion factors for winners and losers. The Table shows that the 'positive emotion' factor is significantly and positively correlated only with internal attributions for winners, and significantly negatively correlated only with internal attributions for losers. A similar pattern (with the exception of opponent factors) emerges for the competence factor. The relaxation factor is unrelated to attributions for either winners or losers. These correlations were shown to be unaffected by outcome importance, using partial correlations. This could be

partly be the result of the skewed distribution of outcome importance scores, as indicated earlier.

Table 6.12 shows the correlation matrix for high and low performance satisfaction groups for relationships between attributions and the emotion factors. Again, internal attributions provide most of the significant relationships. For players satisfied with their performance, positive emotion was associated with attributions to mood, previous experience and form, suggesting that instability as well as internality is important. This is also the case for players dissatisfied with their performance since attributions to poor motivation and effort negatively correlated with positive emotion. For competence, however, correlations are found for both groups with fitness and ability, the latter being a more stable attribution. It is possible that some players perceive fitness to be a relatively stable attribution. This would be the case if they felt that they were 'naturally' fit/unfit or that fitness training was always easy/difficult for them. It is not possible, however, to know if this is true for these players. Certainly it makes sense to suggest that feelings of competence are more likely to occur when success is perceived as relatively repeatable and where the task is not too easy. Again, partial correlation analyses showed that these correlations were unaffected by performance importance, although it should be restated that the scores

TABLE 6.11 Correlation coefficients between outcome attributions and emotion factors for winners and losers.

	EMOTION FACTORS		
OUTCOME ATTRIBUTIONS	FACTOR 1 'Positive Emotion'	FACTOR 2 'Competence'	FACTOR 3 'Relaxation'
Luck	150 -157	017 145	-110 -238
Ability	-020 -105	182 -153	070 209
Effort	347* -215	374* 026	-164 -099
Mood	417** -405*	-048 127	067 -175
Opponent's Effort	-133 -218	-257 030	-220 140
Fitness	011 006	308* -259	089 024
Previous experience	078 077	-048 -363*	-006 034
Motivation	363* -249	399* -084	208 010
Personality	385* -393*	006 245	-290 243
Opponent's ability	-089 103	-225 -297	-085 -136
Form	548** -401*	366** -115	-153 -188
Opponent factors	008 119	-114 -479**	028 -295

NOTES: 1. * p<.05 ** p<.01

2. Decimal points omitted.

3. Winners above diagonal, losers below.

TABLE 6.12 Correlation coefficients between performance attributions and emotion factors for high and low performance satisfaction groups.

PERFORMANCE ATTRIBUTIONS	EMOTION FACTORS FACTOR 1 'Positive Emotion'	FACTOR 2 'Competence'	FACTOR 3 'Relaxation'
Luck	242 135	-219 -138	-277 -378*
Ability	152 093	401* -322*	048 005
Effort	156 -372*	285 045	-032 -282
Mood	428** -166	299 146	-153 -192
Opponent's effort	105 -056	-276 -442**	-344* -299
Fitness	-030 -080	466** -314*	171 035
Previous experience	353* -081	-070 -286	094 -032
Motivation	188 -469**	121 391*	007 249
Personality	-085 -258	-048 290	-152 639**
Opponent's ability	-165 216	063 -336*	-142 -413*
Form	361* -300*	454** -078	116 -148
Opponent factors	-004 330*	020 -272	118 -156

NOTES: 1. * p<.05 ** p<.01

2. decimal points omitted.

3. High satisfaction group above diagonal, low satisfaction group below.

on this variable were strongly skewed.

If the results of Tables 6.11 and 6.12 are compared, some interesting observations can be made. The positive emotion factor scores were correlated with attributions to form for all four groups (ie. winners, losers, satisfied and dissatisfied players). The mood attribution also correlated with this factor for all groups except dissatisfied players, with the personality attribution being correlated with positive emotion for winners and losers only. Effort and motivation attributions showed similar results as they correlated with positive emotion only for winners and dissatisfied players.

For the competence factor scores, winners and losers had quite different attributions involved in the significant correlations, as did losers and dissatisfied players. Winners and satisfied players showed some similarities, with fitness and ability attributions being common to both groups. In short, these results suggest that performance and outcome attributions do act in different ways in terms of associations with emotion.

Multiple regression analyses

To ascertain the best predictors of each emotion factor, multiple regression analyses were undertaken separately with outcome and performance attributions and the associated variables of outcome importance and expectancy,

Table 6.13. Multiple regression of Factor 1 (positive emotion) scores on outcome attributions, performance satisfaction, and pre-game variables

VARIABLE	MULTIPLE R	R^2	Beta	F	F. sig
performance satisfaction	.655	.430	.655	42.17	.000
motivation attribution	.749	.561	.372	35.18	.000

Table 6.14. Multiple regression of Factor 2 (competence scores) on outcome attributions, performance satisfaction, and pre-game variables

VARIABLE	MULTIPLE R	R^2	Beta	F	F. sig
performance satisfaction	.490	.240	.490	17.65	.000
outcome expectancy	.564	.318	.281	12.85	.000

Table 6.15. Multiple regression of Factor 3 (relaxation) scores on outcome attributions, performance satisfaction, and pre-game variables

VARIABLE	MULTIPLE R	R^2	Beta	F	F. sig
ability attribution	.267	.071	.267	4.31	.043

and performance importance and expectancy. A stepwise method with SPSSX default significance values for entry and removal from the regression equation were used. These were 0.05 for entry and 0.1 for exit (see SPSS, 1983).

The results shown in Table 6.13 indicate that for outcome attributions and associated variables, Factor 1 (positive emotion) was best predicted by performance satisfaction and the attribution to motivation, accounting for 56% of the variance. Table 6.14 shows that Factor 2 (competence) is best predicted by performance satisfaction and outcome expectancy, with no attributions entering the equation. Factor 3 (Relaxation) was only weakly related to ability attributions, accounting for only 7.1% of the variance (see Table 6.15). No other variables predicted Factor 3.

Tables 6.13, 6.14 and 6.15 show that attributions for outcome are only weakly predictive of the emotion factors, with other variables being more predictive, particularly performance satisfaction. When the performance attributions were used in the multiple regression analyses instead of the outcome attributions, the results showed slightly stronger links between attributions and the emotion factors. Table 6.16 shows the results for Factor 1 (positive emotion) where 54.5% of the variance is explained by the variables of performance satisfaction and the performance attributions of mood and fitness. The

Table 6.16. Multiple regression of Factor 1 (positive emotion) scores on performance attributions, performance satisfaction, and pre-game variables

VARIABLE	MULTIPLE R	R^2	Beta	F	F. sig
performance satisfaction	.674	.454	.674	43.21	.000
mood attribution	.713	.509	.244	26.39	.000
fitness attribution	.738	.545	-.211	19.99	.000

Table 6.17. Multiple regression of Factor 2 (competence) scores on performance attributions, performance satisfaction, and pre-game variables

VARIABLE	MULTIPLE R	R^2	Beta	F	F. sig
opponent's effort attribution	.588	.346	-.588	27.49	.000
outcome expectancy	.658	.433	.297	19.50	.000

Table 6.18. Multiple regression of Factor 3 (relaxation) scores on performance attributions, performance satisfaction, and pre-game variables

VARIABLE	MULTIPLE R	R^2	Beta	F	F. sig
personality attribution	.330	.109	.330	6.35	.015
luck attribution	.442	.195	-.294	6.18	.004

competence factor is best predicted by attributions to opponent's effort and outcome expectancy (see Table 6.17). The Relaxation factor has 19.5% of the variance explained by attributions to personality and luck (see Table 6.18).

These results suggest that performance satisfaction is the main predictor of emotion following the contest, and attributions are weaker predictors. However, the attributions for performance seem to be more prominent in the multiple regression results than attributions made for outcome. Of those attributions that did enter the regression equations, most are related to motivational and competence factors, such as mood, fitness, motivation and ability. However, this is not always the case as attributions to luck and opponent's effort are also evident.

DISCUSSION

Attributions - outcome

Hypothesis 1c was strongly supported in so far as clear differences emerged between winners and losers on outcome attributions. The differences appear to be mainly along the internal-external continuum, with winners more internal than losers, and this supports previous research (Weiner, 1986). It should also be noted that the differences between the groups appear 'real' in the sense that the groups fall either side of the scale mid-point for each of the attributions where a significant

univariate difference has been found.

Attributions - performance

In addition to noting differences between winners and losers, similar differences were found between high and low performance satisfaction groups on performance attributions. Although previous sport psychology studies have alluded to the importance of assessing subjective perceptions of success, rather than just objective outcome (McAuley, 1985; Spink & Roberts, 1980), most persist in measuring attributions for outcome. The results presented in Table 6.3 show a strong internal-external difference similar to that between winners and losers on outcome attributions. However, while winners and losers and satisfied players reported mainly internal attributions, dissatisfied players reported both internal and external attributions. Although this difference is only small, it might suggest that the support found in the previous studies for the self-serving bias (ie. winners being internal but losers internal and external), is more representative of performance attributions than those for outcome. This lends further support to the need to separate these two types of attributions.

McAuley (1985) investigated attributions for perceived success/failure (ie. 'performance') and found that the objective score of the competition (in gymnastics) was less predictive of attributions than perceptions of

personal success. This would suggest that performance attributions are important measures in the sports context, although only small differences between outcome and performance attributions were found in this study. This is probably due to the players having difficulty is clearly separating the two types of appraisals, even though the investigator tried to explain the different types of questionnaires at the time.

Attribution-emotion relationships

Consistent with the three previous studies, the main relationships between attributions and individual emotion ratings occurred for internal attributions. This was true for winners and losers, as well as high and low performance satisfaction groups, despite the initial internal-external dichotomy in attributional style already reported. However, the results in Table 6.11 using the emotion factor scores do not support this argument in such a clear way. The argument is supported for the positive emotion factor correlations, but not for those concerning competence. The correlations with the competence factor scores involved external attributions for losers and dissatisfied players.

For winners, the dominant attributions, in terms of associations with emotions, were motivation, form, effort, mood and fitness - all internal factors with some measure

of personal control. These attributions showed positive relationships with positive emotion, and this is consistent with previous research (McAuley, Russell & Gross, 1983). For winners, these relationships occurred independent of pre-game perceptions of importance or expectancy, although the small range of scores of these two variables should be noted. Thus winners are likely to feel positive about the outcome regardless of how they viewed the game prior to starting. Sports participants usually feel positively about winning, and this is consistent with Studies 1-3. However, one could hypothesise that losers will be more affected by pre-game perceptions. But this received only marginal support as losers who attributed their result to their opponent showed signs of suppressing tension and incompetence perceptions only if they thought it was important to win. Losers generally showed a more restrictive range of attributions that linked to emotions compared to winners. The internal and unstable attributions were dominant (form and mood).

When the data for performance attributions were studied, a greater number of relationships occurred when correlations were computed between attributions and individual emotion ratings. This may be the result of players being more concerned with the way they played than simply the result of the match. Similarly, the correlation results for performance attributions give much greater support to the

idea that importance and expectancy are significant moderator variables in attribution-emotion relationships. This again suggests that in the three previous studies it is possible that subjects were making some performance attributions, in addition to, or instead of, outcome attributions. For players dissatisfied with their performance, the only attributions showing consistent relationships with emotions (ie. effort, personality, form and opponent's effort), were all significantly correlated with the importance of performing well, whereas none of the other attributions were. This suggests that dissatisfied players who felt it was important to play well were more likely to attribute their poor performance to these four factors, which in turn may have generated strong emotional feeling. Although this seems likely, further research is required to establish causality.

Tables 6.19-6.22 summarise the significant correlations between attributions and the emotion factors of positive emotion and competence. Since no relationships were found for winners or losers with the relaxation factor scores, no summary tables were drawn up for that set of data.

For correlations with positive emotion, Table 6.19 shows that only attributions to form and mood are common to both winners and satisfied players. This shows that the two types of attributions differ in their relationship with positive emotion. Winners appear to have a greater link between positive emotion and motivational attributions

Table 6.19. A comparison of relationships between attributions and positive emotion factor scores for winners and satisfied players

Attribution	Groups Winners	High satisfaction
FORM	+	+
EFFORT	+	
MOOD	+	+
MOTIVATION	+	
PERSONALITY	+	
PREVIOUS EXPERIENCE		+

Note: + indicates significant positive relationship

Table 6.20. A comparison of relationships between attributions and positive emotion factor scores for losers and dissatisfied players

Attribution	Groups Losers	Low satisfaction
FORM	-	-
MOOD	-	
PERSONALITY	-	
EFFORT		-
MOTIVATION		-
OPPONENT FACTORS		+

Note: - indicates significant negative relationship
+ indicates significant positive relationship

(effort and motivation) than do satisfied players, whose results suggest stronger relationships between positive emotion and performance-related factors that are less controllable on the day (ie. form, previous experience and mood). A tentative conclusion from this comparison could be that the positive emotion of winners is related to playing well on the day (form, mood) plus personal factors on the day (ie. motivation, effort, personality). The positive emotion experienced by satisfied players, on the other hand, was related to playing well on the day (form, mood) plus a quality established prior to the day of competition (ie. previous experience).

Table 6.20 shows the summarised results for the positive emotion factor for losers and dissatisfied players. An even greater difference can be seen here with only the attribution to form being common to both groups. These results show that the negative emotion of losers is correlated with attributions for not playing well on the day (mood, form) and their own personality, whereas negative emotion for dissatisfied players is associated with not playing well on the day (form) and motivational factors (effort, motivation). In addition, they showed a relationship between positive emotion and opponent factors. These results appear to suggest that losers and dissatisfied players differ and that dissatisfaction with performance is more associated with a lack of

Table 6.21. A comparison of relationships between attributions and competence factor scores for winners and satisfied players

Attribution	Groups Winners	High satisfaction
EFFORT	+	
FITNESS	+	+
MOTIVATION	+	
FORM	+	+
ABILITY		+

Note: + indicates significant positive relationship

Table 6.22. A comparison of relationships between attributions and competence factor scores for losers and dissatisfied players

Attribution	Groups Losers	Low satisfaction
PREVIOUS EXPERIENCE	-	
OPPONENT FACTORS	-	
FITNESS		-
MOTIVATION		-
ABILITY		-
OPPONENT'S EFFORT		-
OPPONENT'S ABILITY		-

Note: - indicates significant negative relationship

effort/motivation on the day. This concurs with Weiner (1985b, 1986).

Table 6.21 shows the summarised results for the competence factor scores for winners and satisfied players. Winners' perceptions of competence were clearly related to relatively transient personal factors whereas satisfied players showed a stronger tendency to associate competence with ability-related factors. The previous studies which have alluded to ability-competence relationships are therefore supported but it could be suggested that the previous studies were actually showing relationships between competence and performance attributions rather than attributions to outcome.

Table 6.22 shows that for the competence factor, losers and dissatisfied players differ completely although a mix of internal and external attributions are evident in both cases. Competence seems to be related to ability and effort perceptions for dissatisfied players, whereas feelings of incompetence for losers are associated with their lack of experience and their opponent.

Tables 6.19-6.22, therefore, show that the assessment of attributions for both outcome and performance is necessary. The comparisons, while far from clear, nevertheless show interesting differences between winners and satisfied players, and between losers and dissatisfied players.

These conclusions receive further support from the multiple regression analyses (Tables 6.13 - 6.18). Outcome attributions were not particularly prominent in predicting the emotion factors, although the motivation attribution (for outcome) did contribute to the positive emotion factor. However, for performance attributions, greater prediction of emotion was found, with performance attributions contributing to each emotion factor. These results again suggest that emotion, from an attributional perspective, is more likely to be linked to performance, rather than outcome, attributions. Nevertheless, in comparison to performance satisfaction, attributions for performance were still relatively weak predictors of emotion. The satisfaction with performance reported by the players was the most important predictor of emotion, again suggesting that performance rather than outcome needs assessing in studies of attributions and emotions.

The conclusions drawn from this study support the suggestion made in previous chapters that separate performance and outcome attributions should be assessed when studying links between attributions and emotions. The results reported here are consistent with Vallerand (1987) who, in testing an 'intuitive-reflective appraisal model' of emotion, found that perceptions of success/failure had a stronger impact on emotion than objective outcome. While Vallerand's study did not involve exactly the same analysis as that carried out in this study, it does

suggest that performance assessment, in preference to outcome assessment, is more important in emotion in sport.

Conclusions from Study 4

In conclusion, the results from the study involving league squash players suggest:

1. winners made more internal attributions for the outcome than losers, with winners making internal attributions and losers external attributions;
2. players satisfied with their performance made more internal attributions for their performance than dissatisfied players. However, players satisfied with their performance made internal attributions, while dissatisfied players made both internal and external attributions;
3. relationships between attributions and individual emotions were found primarily for internal attributions, although when emotion factors were analysed, the competence factor was correlated with internal and external attributions for losers and dissatisfied players and the positive emotion factor was correlated with one external attribution for dissatisfied players;
4. outcome importance correlated more strongly with emotions for losers compared with winners. However, performance importance was found to be correlated equally strongly with emotions for both high and low performance satisfaction groups;

5. the importance and expectation of winning were not particularly strong moderating variables in relationships between attributions for outcome and emotion. However, they did play a more prominant role in relationships between performance attributions and emotion. The scores on importance and expectancy were generally restricted to the high end of the scales;

6. the dominant predictor of emotion factors was found to be performance satisfaction. Attributions were weak predictors, although slightly stronger effects were shown for performance attributions compared with outcome attributions;

7. A comparison of winners with satisfied players and losers with dissatisfied players on relationships between attributions and emotion factors showed that different relationships were evident for performance and outcome attributions;

8. The results involving performance attributions showed a greater similarity to those from Studies 1-3 than did attributions for outcome. This supports a previous suggestion that subjects in the other studies may have been confusing the two types of attributions or, in being asked for attributions for the outcome, actually gave attributions for performance.

CHAPTER 7

DISCUSSION AND CONCLUSIONS

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The purpose of this research was to investigate the nature and extent of relationships between attributions and emotions in sporting contests. Considerable research has been conducted into attributions for achievement in educational contexts, but to a lesser extent into relationships between attributions and emotions. Sports psychology, however, has yet to explore systematically the relationships between attributions and emotions, although the study of sport-related achievement attributions *per se* has been going on since the middle 1970s.

The research that has been conducted on attribution-emotion relationships has often used problematic methodologies. For example, differences in results have been observed between studies using hypothetical scenarios and those using real events. Similarly, little attention has been paid to the role of potential moderators of attribution-emotion relationships, such as the importance of winning contests or expectancy. The purpose of this research, therefore, was to investigate attribution-emotion relationships in 'real' sporting contests while assessing the role of potential moderator variables, in particular the importance of the task. A variety of one versus one contests in field and laboratory settings were used in order to investigate the generalisability of the

results.

Summary of the main findings

The first two studies in the present research, reported in chapters 3 (laboratory bicycle race) and 4 (badminton contests), examined attributions made for the outcome of a sporting contest, with winners being requested to rate a list of positive emotions and losers a list of negative emotions. The results suggested that while winners tended to make stronger internal attributions than losers, relationships between attributions and emotions involved primarily internal attributions. It was also found that the importance attached to winning affected some of these relationships. The influence of outcome importance was evident in several ways: (i) some emotions were only associated with attributions when it was important to win, and these were primarily self-esteem emotions; (ii) for losers, high outcome importance sometimes suppressed correlations between attributions and emotions, and this was interpreted as indicating that losers used defences against some emotions following certain attributions; (iii) outcome importance was related to negative emotions more than positive emotions.

Study 3 sought to develop the first two studies in three ways. First, an examination of positive and negative emotions for both winners and losers was made. Second, the magnitude of winning and losing was controlled through a

deception procedure, and, third, the effects of winning and losing on two behavioural measures of depressed mood were assessed. The results confirmed (i) that winners made stronger internal attributions than losers, (ii) when emotions correlated with attributions they were primarily related to internal attributions, and (iii) outcome importance was related to negative rather than positive emotions. Confirmation was also found for the proposition that when emotions correlate with attributions when it is important to win the contest, these emotions are esteem-related. The mood measures were unaffected by the manipulated outcome of the contest.

Finally, Study 4 sought to investigate attributions for both outcome and performance. Again, winners made stronger internal attributions than losers, and this was also the case for subjects satisfied with their performance when compared with those who were dissatisfied. For both outcome and performance attributions, correlations with emotions involved primarily internal attributions. Outcome importance was not a strong moderator of relationships between outcome attributions and emotions, although nearly all subjects felt it was important to win. The importance of playing well was found to be a more prominent moderator of relationships between performance attributions and emotions, although again most players felt it was important to play well. In predicting scores on emotion factors, which were derived from a factor analysis, it was

found that attributions for performance were slightly more prominent predictors of emotion than attributions for outcome. However, both types of attributions were relatively weak predictors compared with assessments of performance satisfaction.

DISCUSSION AND PROPOSED MODEL

Much of the research that has investigated relationships between attributions and emotions in educational psychology has been based on the work of Weiner (1985b, 1986). Figure 2.6 outlines Weiner's model of achievement motivation, attribution and emotion. A simplified and modified diagram of Weiner's proposed links between outcome, attributions and emotions is shown in Figure 5.1. This model suggests that general emotions (eg. happy, pleased) are related to the outcome itself (eg. winning or losing) regardless of the attributions made. Although such a link may exist, the present research did not specifically try to identify whether specific emotions were consistently 'outcome dependent' although emotions such as pleased and happy did show such tendencies. Weiner's model also suggests that both attribution elements and dimensions can be related to distinct emotions. As argued in Chapter 2, with the possible exception of locus of causality, a number of problems remain concerning the conceptual clarity and measurement of attribution dimensions. However, in terms of individual

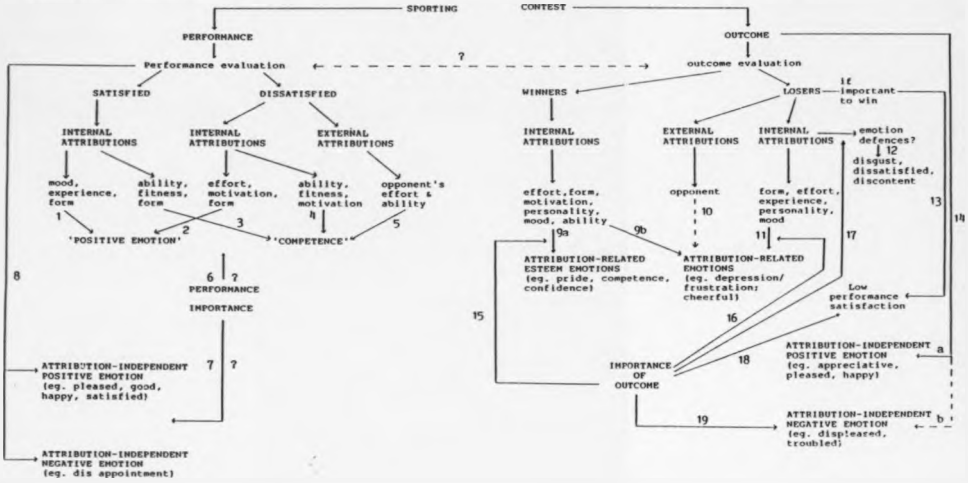
attributions (elements), Weiner's proposition is supported, albeit with modifications.

Figure 7.1 is a model proposed for the relationship between attributions, emotions and the perceived importance of winning and playing well in sporting contests based on the findings from this research. The suggested links have been derived from correlational analyses and therefore no causal relationships are proposed. Future studies may wish to address the causality of some of these relationships. Also, the evidence for the right hand side of the diagram (outcome) is based on four studies while the results for performance measures are only based on one (Study 4). While the right-hand side of the model may appear to be less clear-cut than the left-hand side, this is because the exact nature of the proposed relationships is not absolutely consistent across studies. The apparently clearer picture for the performance (left) side of the model may therefore be an over-simplified summary. It should also be recalled that in Study 4 the variable of performance importance was heavily skewed, thus not allowing for an easy appraisal of its mediating role, if any.

The model

Discussion of the model will take place under two main headings: (i) attributions and emotions, and (ii) the role of outcome and performance importance.

FIGURE 7.1 Proposed model of attribution-emotion relationships in sporting contests based on Studies 1-4.



(i) Attributions and emotions

Although the proposed links between outcome attributions and emotions (links 9-12) appear to be relatively clear and reproducable, the first three studies did not assess attributions for performance. It has been suggested in earlier discussions that it is likely that some subjects, in particular losers, appraised both the outcome and the way they played (ie. performance) when asked to respond to the post-contest assessments. This was more likely with losers because, in general, they reported dissatisfaction with their performance. According to Spink & Roberts (1980) performance dissatisfaction is likely to produce internal attributions whereas losers actually reported a mixture of both internal and external attributions, although they were significantly more external compared with winners. The attributions which showed relationships with emotions tended to be internal, even for losers. This seems to suggest that losers were reporting attributions for both outcome and performance (internal attributions for performance and external attributions for outcome). Winners had no such conflict as they were satisfied with their performance thus making it unlikely that they sought reasons for their performance.

This argument is speculative however, although the results are relatively consistent throughout the first three studies. The final study, which assessed attributions for

performance as well as outcome, provided some support for the argument that the two types of attributions are different, at least from the point of view of relationships with emotions. The multiple regression analyses in Study 4 showed that of the two types of attributions, performance attributions were slightly more prominent predictors of emotions. However, performance satisfaction, not surprisingly, was the best predictor of emotion overall. This in itself suggests that the satisfaction with one's playing performance, rather than attributions, is an important correlate of emotion in sporting contests. This being the case, it could be argued that players are more likely to consider why they played well or poorly, rather than why they won or lost. This is supported by Weiner (1985a) who has argued that attributional thinking is more likely after an unexpected outcome or the failure to meet a goal. This is more likely in sport when players are dissatisfied with their performance or when they lose an important contest, as shown in Study 3. Certainly it can be suggested that all players in sport will want to play 'well' (ie. up to their own 'usual' standards) whereas not all players will expect to win in every situation.

Further support for the differential role of performance and outcome attributions is summarised in Tables 6.19-6.22. When the correlations between the positive emotion factor scores and attributions are compared for winners

and satisfied players, differences emerge. This is also true for the competence factor as well as for the comparisons between losers and dissatisfied players on both the positive emotion and competence dimensions. This is shown on the left side of the model in Figure 7.1 (links 1-5). However, further work is required to clarify the nature of the emotion factors since two main problems arise from the factor analysis in Study 4. First, the positive emotion factor lacks clarity in differentiating types of positive emotion. Given the factor analysis in Study 3 (Chapter 5), and the proposals concerning self-esteem emotions and attributions, it would be tempting to label the positive emotion factor in Study 4 as 'positive self-esteem'. However, the emotions loading on this factor are not restricted to self-esteem and thus a clear differentiation of types of positive emotion is not forthcoming. Second, it could be argued that competence is a description of self-perception rather than emotion.

The assessment of attributions for performance is similar to the 'reflective appraisal' outlined by Arnold (1970) and Vallerand (1983, 1984, 1987). If the 'intuitive-reflective appraisal' model of Vallerand (1987) is correct, then the attributions made will be primarily for performance, and some of these may then relate to the attribution-dependent emotions proposed by Weiner et al. (1978, 1979) (links 1-5). The immediate or intuitive assessment on the other hand is similar to the link

between outcome and positive/negative emotions shown on the far right of Figure 7.1 (link 14). The link between performance evaluation and positive/negative emotions on the left of Figure 7.1 (link 8) suggests that emotion is also related to performance satisfaction independently of attributions. The multiple regression analyses in Study 4 gave clear support to this argument, as did Study 3 where the greatest dissatisfaction with performance was reported by losers who felt that it was important to win (link 13).

One of the problems in clearly differentiating the results for outcome attributions from those of performance attributions is that it remains unclear the extent to which subjects themselves actually differentiated the two types of assessment in Study 4. However, what can be said is that the results involving performance attributions in Study 4 showed a greater similarity than the outcome attributions to the results obtained in the first three studies (where it was thought that some performance attributions were being made).

Weiner's original proposals concerning the relationship between attributions and emotions (Weiner et al., 1971) stated that internal attributions intensify emotions and external attributions reduce emotional feeling. Although the causal nature of such assumptions needs further testing, the basic premise from the point of view of relationships has been supported in previous literature (Weiner, 1980, 1985b, 1986). However, the present findings

suggest that such a view is too simple. Certainly this research supports the view that internal attributions are related to self-reported emotions in some circumstances (links 1,2,3,4,9,11), but it has also been found that relationships can occur between external attributions and emotions (links 5 and 10), although these are much less frequent and generally weaker. The work of Weiner et al. (1971), and other achievement motivation researchers at the time, was restricted to a pride/shame dimension of emotion. It has been suggested in this research that pride is an esteem-related emotion which generally correlates with internal attributions when it is important to win (link 9a). Other emotions (eg. gratitude) have been found to relate to external attributions independently of outcome importance, although not consistently enough to warrant a link to be shown in Figure 7.1. Since Weiner's original research assessed attributions for examination results made by American college students, it is likely that an incomplete picture was observed. First, the students are likely to have been highly motivated to pass the examination, and, second, research shows that the internal attributions of ability and effort are used more frequently in educational contexts compared with sport (Frieze, 1976; Roberts & Pascuzzi, 1979). The interaction between opponents may also lead to the greater use of external attributions in sport compared with academic achievement situations.

(ii) The role of outcome and performance importance

It has been argued in previous chapters that studies of attribution-emotion relationships which fail to account for prior motivational states are incomplete. The model in Figure 7.1 supports this statement in several ways. First, it has been found consistently that the importance attached to winning the contest is correlated with the strength of self-reported negative emotion (link 19). This was not found, however, for positive emotion. Similarly in Study 4, where bi-polar adjectival rating scales were used, outcome importance correlated more strongly with emotions for losers compared with winners. These results suggest that it is primarily negative or losing emotions that are related to importance (link 19). This being the case, it provides a strong argument for studies on attributions and emotions to assess the strength of perceived importance of task outcome. The results from this research show that the mean scores of negative emotions are relatively low, suggesting that only little or moderate emotion was reported after the contests. However, the link with outcome importance shows that while this may be true on average, those players who lose or perform poorly and feel that it is important to win and play well, will likely experience elevated states of negative emotion (links 11,12,13), although again the causal inference is not possible given correlational data. High outcome importance for losers is likely to lead to a

greater search for why the contest was lost because, as Weiner (1985a) has demonstrated, goal non-attainment is likely to lead to greater attributional search. It is logical to suggest that losers who felt it important to win would perceive the situation as 'goal non-attainment'.

Secondly, there was evidence that defences were used by losers against some emotions when it was important to win (link 12). However, this phenomenon was not observed consistently across emotions or attributions and requires further investigation.

Thirdly, some attribution-emotion relationships were found to exist only when it was important to win (link 9a). The emotions involved in such relationships can be labelled esteem-related emotions although further work is required to clarify their exact nature. However, the emotions of pride, confidence and competence were observed to fall into this esteem-related category. This appears to be a fruitful area for further research given the current interest in sports psychology in competence-based models of sport involvement (Duda, 1987; Duncan & McAuley, 1987; Vealey, 1986).

As far as performance importance is concerned, Study 4 was relatively uninformative (links 6 and 7). This was due to the lack of variability in performance importance scores, with most players being highly motivated to perform well. Future studies should attempt to investigate subjects who

show varying degrees of motivation towards performing well, if this is possible. Indeed, the clearest results as far as the task importance variable was concerned, were in Studies 1 and 3 where the distribution of scores on this variable were less skewed than in Study 4 and, to a lesser extent, in Study 2.

IMPLICATIONS FOR FUTURE RESEARCH

Although the research reported here has shown consistently that attributions, when related to emotions, tend to be internal, and that the importance attached to winning is a significant moderator variable in some cases, it is clear that attributions are not invariably related to emotions, and indeed may not even be a primary source of sports emotion. Nevertheless, a relationship has been demonstrated. However, there are several issues resulting from this research that have implications for future investigations in this area.

The nature of the event being studied

The exclusive study of outcome attributions may mask the more subjective perceptions of success and failure experienced after sporting contests. However, given the salience of sports outcomes to many competitors, research should investigate both outcome and performance attributions, although methods will have to be sought whereby subjects can clearly distinguish between the two

types. On its own, outcome may prove to be a simplistic assessment of 'the result', particularly as it is only a dichotomous variable in most experimental situations.

In addition to measuring both types of attributions outlined, prior research suggests that a distinction must be made between real and hypothetical outcomes in the study of attributions and emotions. It is not possible from the current research to suggest comparisons between these methods as only 'real' sporting contests were studied. Nevertheless, research reviewed in Chapter 2 does show that different results may be obtained between the two types of methodology.

Measurement of attributions and emotions

The present research assessed attributions and emotions using self-report rating scales. However, it remains problematic in measuring attributions whether the items written by the experimenter and presented to the subject actually correspond to the types of attributions that would be made in more spontaneous situations. A wide range of attributions were assessed here to reduce this problem, as well as using open-ended assessment in Study 2. However, the basic problem remains and future studies need to address the issue of attribution measurement. Although the principle behind Russell's (1982) Causal Dimension Scale is a good one, it has already been argued that conceptual problems with the scale remain. Research may

fruitfully employ more naturalistic methods of eliciting attributions in the future.

The same problem can arise in the self-report of emotion. In addition, research needs to address the extent to which subjects can accurately differentiate between several types of emotions. Using validated inventories (eg. BDI, MAACL, POMS) reduces the range of emotion that can be assessed. Capturing 'real' emotions in sporting environments through self-report is likely to be difficult. 'On-site' measures in sport could involve either post-hoc recall of emotion through self-report (although the problems of such a method have been alluded to in Chapter 2), behavioural assessment, or psychophysiological indexes. Recent advances have been made in the latter (Hatfield & Landers, 1987) and may prove to a be a useful adjunct to other techniques. Certainly a more expansive view of methodologies is needed.

Attribution-emotion links: establishing causality

Future research investigating links between attributions and emotion needs to be able to study the extent of causality. The present research has not been able to suggest causality since correlational analyses were used. Nevetheless, the consistency of some of the findings suggests that researchers should pursue this issue through techniques such as path analysis.

Mediating variables

The current research has clearly demonstrated that the importance attached to winning the sporting contest, and the expectation of winning, are significant moderators of attribution-emotion relationships. With few exceptions, such variables have generally been ignored in other research. This appears to be a major weakness and it is therefore suggested that future research in attributions and emotions should assess perceptions of task importance and expectancy.

Although the results of this research suggest that it is esteem-related emotions which correlate with attributions only when it is important to win, further work is required in clarifying the exact nature of these emotions. 'Esteem-related' is a broad category label which best fits the emotions involved, although this needs to be confirmed with further research.

Attributions, emotions and behaviour

In addition to proposing relationships between attributions and emotions, Weiner (1986) has also suggested that specific behaviours can be predicted from attributions. For example, he has reported that when failure is attributed to a lack of effort it is likely to lead to feelings of anger on the part of others because of the potential controllability of effort. This then leads

to other people neglecting to help the individual who has failed ('why should I help when they haven't bothered to try?'). On the hand, Weiner suggests that failure attributed to lack of ability, because it is likely to be seen as less personally controllable, will lead to other people feeling a sense of pity and they will therefore be more likely to offer help. Such sequences have some logic to them. However, it has yet to be convincingly demonstrated whether any other factors are causing these behaviours. Nevetheless, similar extensions to attribution-emotion research in sport would be useful. Ultimately, the study of relationships between attributions and emotions must be extended to include the study of behaviour itself. As shown in Study 3 though, manipulations in the laboratory are likely to be variable in effecting marked changes in behavioural analogues of mood. More naturalistic settings, however, may prove to be more powerful since everyday observation of sport provides numerous examples of real and powerful 'emotional behaviour'.

In conclusion, this research has investigated the relationships between a wide range of attributions and emotions following sporting contests. It has looked at 'real' achievement events and potential moderating variables in the attribution-emotion link. The research undertaken here has attempted to address some of the issues raised in the literature review and has provided

evidence to support the continuing investigation of attribution-emotion relationships in sporting contests. Although the links in the model illustrated in Figure 7.1 are far from robust, and the evidence lacks the clarity for precise interventions to be prescribed in sport at this stage, it is hoped that further research along these lines will ultimately have a practical impact on helping more people enjoy positive experiences in sport.

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APPENDICES

APPENDIX A

Attribution
questionnaire

(study 1)

Appendix A. Attribution questionnaire : Study 1

Instructions: Please circle the one number that best describes your response to each question.

1. To what degree do you feel that your win was due to good luck?

2. To what degree do you feel that your win was due to you being in the right mood?

3. To what degree do you feel that your win was due to your previous experience of this kind of contest?

4. To what degree do you feel that your win was due to your personal effort expenditure?

5. To what degree do you feel your win was due to your own ability at this task?

6. To what degree do you feel that your win was due to your own motivation and interest in this contest?

7. To what degree do you feel that your win was due to you being in good form in the contest today?

8. To what degree do you feel that your win was due to your opponent being in poor form in the contest today?

9. To what degree do you feel that your win was due to your own personality?

10. To what degree do you feel that your win was due to your opponent's lack of ability at this task?

11. To what degree do you feel that your win was due to your opponent's lack of effort?

12. To what degree do you feel that your win was due to your opponent's personality?

13. To what degree are you satisfied with your overall performance in this contest?

Notes: 1. losers were presented with appropriately amended statements to reflect their result.

2. The rating scales have been omitted to save space. Each question was followed by a 9-point rating scale as follows:

1	2	3	4	5	6	7	8	9
not at all								very much so

The beginning of the scale (ie. left-hand side) was alternated to avoid biasing effects.

APPENDIX B1

Emotion
questionnaire

for winners

(study 1)

Appendix B1. Emotion questionnaire for winners: Study 1

Instructions: Please circle one number for each of the words that follow. Please rate each word in terms of the extent to which it matches your feelings having won the bicycle contest.

1. SATISFIED

2. PLEASED

3. CHEERFUL

4. HAPPY

5. GOOD

6. CONTENTED

7. COMPETENT

8. DELIGHTED

9. CONFIDENT

10. PROUD

11. APPRECIATIVE

12. SECURE

13. THANKFUL

Notes: 1. to save space, the rating scales have been omitted. After each word a 9-point scale was presented as follows:

1	2	3	4	5	6	7	8	9
not at all								very much so

2. The beginning of the scale (ie. left-hand side) was alternated to avoid biasing effects.

APPENDIX B2

Emotion
questionnaire

for losers

(study 1)

Appendix B2: Emotion questionnaire for losers: Study 1

Instructions: Please circle one number for each of the words that follow. Please rate each word in terms of the extent to which it matches your feelings having lost the bicycle contest.

1. DISPLEASED

2. DISSATISFIED

3. FRUSTRATED

4. REGRETFUL

5. DISCONTENTED

6. DISGUSTED

7. IRRITATED

8. CONCERNED

9. TROUBLED

10. UPSET

11. LOUSY

12. DISTURBED

13. SAD

14. BITTER

15. UNHAPPY

16. DEPRESSED

Notes: 1. to save space, the rating scales have been omitted. After each word a 9-point scale was presented as follows:

1	2	3	4	5	6	7	8	9
not at all								very much so

2. The beginning of the scale (ie. left-hand side) was alternated to avoid biasing effects.

APPENDIX C

Attribution
questionnaire

(study 2)

Appendix C. Attribution questionnaire : Study 2

Instructions: Please circle the one number that best describes your response to each question.

1. To what degree do you feel that your win was due to good luck?

2. To what degree do you feel that your win was due to you being in the right mood?

3. To what degree do you feel that your win was due to your previous experience of playing this game?

4. To what degree do you feel that your win was due to your personal effort expenditure?

5. To what degree do you feel your win was due to your own ability at this game?

6. To what degree do you feel that your win was due to your own motivation and interest in this game?

7. To what degree do you feel that your win was due to you being in good form in the game today?

8. To what degree do you feel that your win was due to your opponent being in poor form in the game today?

9. To what degree do you feel that your win was due to your own personality?

10. To what degree do you feel that your win was due to your opponent's lack of ability at this game?

11. To what degree do you feel that your win was due to your opponent's lack of effort?

12. To what degree do you feel that your win was due to your opponent's personality?

13. To what degree do you feel that your win was due to your own fitness?

14. To what degree do you feel that your win was due to your opponent's fitness?

15. To what degree are you satisfied with your overall performance in this contest?

Notes: 1. losers were presented with appropriately amended statements to reflect their result.

2. The rating scales have been omitted to save space. Each question was followed by a 9-point rating scale as follows:

1	2	3	4	5	6	7	8	9
not at all								very much so

The beginning of the scale (ie. left-hand side) was alternated to avoid biasing effects.

APPENDIX D1

Emotion
questionnaire

for winners

(study 2)

Appendix D1. Emotion questionnaire for winners: Study 2

Instructions: Please circle one number for each of the words that follow. Please rate each word in terms of the extent to which it matches your feelings having won the badminton game.

1. SATISFIED

2. PLEASED

3. CHEERFUL

4. HAPPY

5. GOOD

6. CONTENTED

7. COMPETENT

8. DELIGHTED

9. CONFIDENT

10. PROUD

11. APPRECIATIVE

12. SECURE

13. THANKFUL

Notes: 1. to save space, the rating scales have been omitted. After each word a 9-point scale was presented as follows:

1	2	3	4	5	6	7	8	9
not at all								very much so

2. The beginning of the scale (ie. left-hand side) was alternated to avoid biasing effects.

APPENDIX D2

Emotion
questionnaire

for losers

(study 2)

Appendix D2: Emotion questionnaire for losers: Study 2

Instructions: Please circle one number for each of the words that follow. Please rate each word in terms of the extent to which it matches your feelings having lost the badminton game.

1. DISPLEASED

2. DISSATISFIED

3. FRUSTRATED

4. REGRETFUL

5. DISCONTENTED

6. DISGUSTED

7. IRRITATED

8. CONCERNED

9. TROUBLED

10. UPSET

11. LOUSY

12. DISTURBED

13. SAD

14. BITTER

15. UNHAPPY

16. DEPRESSED

17. SHAME

Notes: 1. to save space, the rating scales have been omitted. After each word a 9-point scale was presented as follows:

1	2	3	4	5	6	7	8	9
not at all								very much so

2. The beginning of the scale (ie. left-hand side) was alternated to avoid biasing effects.

APPENDIX E

Attribution
questionnaire

(study 3)

Appendix E. Attribution questionnaire : Study 3

Instructions: Please circle the one number that best describes your response to each question.

1. To what degree do you feel that your win was due to good luck?

2. To what degree do you feel that your win was due to you being in the right mood today?

3. To what degree do you feel that your win was due to your previous experience of this type of task?

4. To what degree do you feel that your win was due to your personal effort expenditure?

5. To what degree do you feel your win was due to your own ability/skill at this task?

6. To what degree do you feel that your win was due to your own motivation and interest in this task?

7. To what degree do you feel that your win was due to you being in good form on this task today?

8. To what degree do you feel that your win was due to your opponent being in poor form on this task today?

9. To what degree do you feel that your win was due to your own personality?

10. To what degree do you feel that your win was due to your opponent's lack of ability/skill at this task?

11. To what degree do you feel that your win was due to your opponent's lack of effort?

12. To what degree do you feel that your win was due to your opponent's personality?

13. To what degree are you satisfied with your overall performance on this task?

Notes: 1. losers were presented with appropriately amended statements to reflect their result.

2. The rating scales have been omitted to save space. Each question was followed by a 9-point rating scale as follows:

1 2 3 4 5 6 7 8 9
not at all very much so

The beginning of the scale (ie. left-hand side) was alternated to avoid biasing effects.

APPENDIX F

Emotion
questionnaire

(study 3)

Appendix F: Emotion questionnaire: Study 3

Instructions: The following words could be used to describe your feelings about winning/losing the fencing competition. Please circle one number for each word to the extent that the word describes your feelings about this win/loss.

1. PLEASED
2. DISSATISFIED
3. REGRETFUL
4. CHEERFUL
5. FRUSTRATED
6. DISPLEASED
7. SATISFIED
8. CONCERNED
9. SHAMEFUL
10. HAPPY
11. CONTENTED
12. DEPRESSED
13. SORRY
14. COMPETENT
15. GOOD
16. DISCONTENTED
17. UNHAPPY
18. CONFIDENT
19. SURPRISED
20. INCOMPETENT
21. PROUD
22. ANGRY
23. GRATITUTE
24. GUILTY
25. DISAPPOINTED
26. RELAXED
27. UPSET
28. SAD

Notes: 1. to save space, the rating scales have been omitted. After each word a 9-point scale was presented as follows:

1	2	3	4	5	6	7	8	9
not at all								very much so

2. The beginning of the scale (ie. left-hand side) was alternated to avoid biasing effects.

APPENDIX G1

Outcome attribution

questionnaire

for winners

(study 4)

Appendix G1. Outcome attribution questionnaire for winners: Study 4

Directions: Having just won your game, could you please indicate the extent to which each of the following factors was a cause or reason for this win.

1. your own good luck

2. your own ability

3. your own effort

4. your mood

5. your opponent's lack of effort

6. your own physical fitness

7. your own previous experience and training

8. your own motivation

9. your personality

10. your opponent's lack of ability

11. your good form

12. other factors to do with your opponent, such as fitness and personality.

Note: The rating scales have been omitted to save space. After each statement, the following scale was given:

1	2	3	4	5
not at all				very much so

The beginning of the scale (ie. left-hand side) was alternated to avoid biasing effects.

APPENDIX G2

Outcome attribution
questionnaire
for losers

(study 4)

Appendix G2. Outcome attribution questionnaire for losers: Study 4

Directions: Having just lost your game, could you please indicate the extent to which each of the following factors was a cause or reason for this defeat.

1. your own bad luck

2. your own lack of ability

3. your own lack of effort

4. your mood

5. your opponent's effort

6. your own lack of physical fitness

7. your own lack of previous experience and training

8. your own lack of motivation

9. your personality

10. your opponent's ability

11. your poor form

12. other factors to do with your opponent, such as fitness and personality.

Note: The rating scales have been omitted to save space. After each statement, the following scale was given:

1	2	3	4	5
not at all				very much so

The beginning of the scale (ie. left-hand side) was alternated to avoid biasing effects.

APPENDIX G3

Performance attribution

questionnaire

for satisfied players

(study 4)

Appendix G3. Performance attribution questionnaire for players satisfied with their performance: Study 4

Directions: Please indicate the extent to which each of the following factors was a cause or reason for your STANDARD OF PERFORMANCE - that is THE WAY YOU PLAYED.

1. your own good luck

2. your own ability

3. your own effort

4. your mood

5. your opponent's lack of effort

6. your own physical fitness

7. your own previous experience and training

8. your own motivation

9. your personality

10. your opponent's lack of ability

11. your good form

12. other factors to do with your opponent, such as fitness and personality.

Note: The rating scales have been omitted to save space. After each statement, the following scale was given:

1	2	3	4	5
not at all				very much so

The beginning of the scale (ie. left-hand side) was alternated to avoid biasing effects.

APPENDIX G4

Performance attribution

questionnaire

for dissatisfied players

(study 4)

Appendix G4. Performance attribution questionnaire for players dissatisfied with their performance: Study 4

Directions: Please indicate the extent to which each of the following factors was a cause or reason for your STANDARD OF PERFORMANCE - that is THE WAY YOU PLAYED.

1. your own bad luck

2. your own lack of ability

3. your own lack of effort

4. your mood

5. your opponent's effort

6. your own lack of physical fitness

7. your own lack of previous experience and training

8. your own lack of motivation

9. your personality

10. your opponent's ability

11. your poor form

12. other factors to do with your opponent, such as fitness and personality.

Note: The rating scales have been omitted to save space. After each statement, the following scale was given:

1	2	3	4	5
not at all				very much so

The beginning of the scale (ie. left-hand side) was alternated to avoid biasing effects.

APPENDIX H

Emotion
questionnaire

(study 4)

Appendix H. Emotion questionnaire: Study 4

Directions: Having just completed your game, please could you indicate your current feelings, that is now you feel right now, by ticking the appropriate point on each of the following scales. For example, if you feel somewhat disturbed, as opposed to neutral or strongly disturbed, tick the line second from the left as shown.

EXAMPLE:

DISTURBED UNDISTURBED

strongly somewhat neutral somewhat strongly

Please start:

1. PLEASED	—	—	—	—	—	DISPLEASED
2. DISSATISFIED	—	—	—	—	—	SATISFIED
3. HAPPY	—	—	—	—	—	UNHAPPY
4. DISCONTENTED	—	—	—	—	—	CONTENTED
5. COMPETENT	—	—	—	—	—	INCOMPETENT
6. BAD	—	—	—	—	—	GOOD
7. CONFIDENT	—	—	—	—	—	UNCONFIDENT
8. SHAME	—	—	—	—	—	PRIDE
9. RELAXED	—	—	—	—	—	TENSE
10. UNCONCERNED	—	—	—	—	—	CONCERNED
11. DEPRESSED	—	—	—	—	—	ELATED
12. FRUSTRATED	—	—	—	—	—	SENSE OF ACHIEVEMENT
13. CALM	—	—	—	—	—	ANGRY

Now could you please indicate your current feelings on each of the following scales:

14. SURPRISED

1	2	3	4	5
not at all				very much so

15. DISAPPOINTED

5	4	3	2	1
very much so				not at all

16. GUILTY

1	2	3	4	5
not at all				very much so

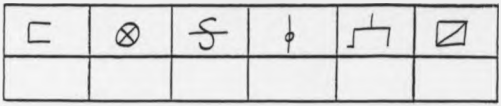
APPENDIX I

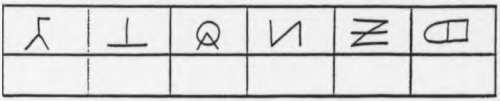
Symbol copying task

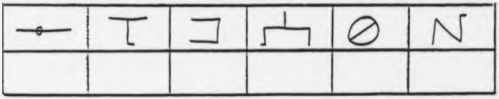
(study 3)

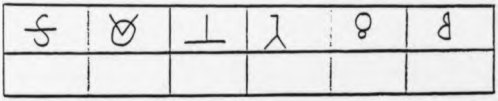
APPENDIX I

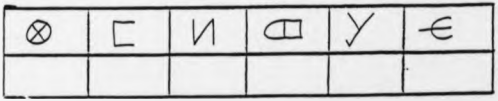
Symbol copying task
(study 3)











APPENDIX J1

Free – response
attributions
for winners

(study 2)

Appendix J1: Free-response attributions given by winners: Study 2.

Attribution	Major attribution frequency	%	Other attributions frequency	%
ABILITY/SKILL	7	25	10	27.7
PREVIOUS EXPERIENCE	7	25	4	11.1
MOTIVATION	3	10.5	2	5.5
EFFORT	2	7	3	8.3
OPPONENT'S MOOD	3	10.5	0	0
OPPONENT'S ABILITY/SKILL	3	10.5	0	0
LUCK	0	0	5	13.9
OPPONENT'S FITNESS	0	0	2	5.5
OTHERS	4	14.3	10	27.7

Note: % figures refer to % of responses given in that column.

APPENDIX J2

Free – response
attributions
for losers

(study 2)

Appendix J2: Free-response attributions given by losers: Study 2.

Attribution	Major attribution frequency	%	Other attributions frequency	%
ABILITY	6	23	1	2.7
LACK OF PRACTICE/ EXPERIENCE	4	15.4	5	13.5
CONCENTRATION	3	11.5	3	8.1
FORM	3	11.5	3	8.1
OPPONENT'S ABILITY	2	7.7	5	13.5
FATIGUE	2	7.7	1	2.7
LUCK	1	3.8	4	10.8
WEATHER (1)	1	3.8	3	8.1
OPPONENT'S FORM	0	0	2	5.4
MOOD	0	0	2	5.4
MOTIVATION	1	3.8	2	5.4
FITNESS	0	0	2	5.4
OTHERS	3	11.5	2	5.4

Note: (1) although the competition took place indoors, the attribution to 'weather' probably reflects the generally cold and inhospitable climate in the large sports hall.

APPENDIX J3

Free – response

emotions

for winners

(study 2)

Appendix J3: Free-response emotion data for winners: Study 2.

Emotion	Frequency	%
PLEASED	9	21.9
HAPPY	7	17.1
NO PARTICULAR FEELING	5	12.2
CONTENTED	3	7.3
RELIEVED	3	7.3
DELIGHTED	2	4.9
RELAXED	2	4.9
PROUD	2	4.9
OTHERS (1)	8	19.5

Note: (1). frequency <1.

APPENDIX J4

Free – response

emotions

for losers

(study 2)

Appendix J4: Free-response emotion data for losers: Study 2.

Emotion	Frequency	%
NO PARTICULAR FEELING	13	54.0
ANNOYED	3	12.5
DISAPPOINTED	2	8.3
OTHERS (1)	6	25.0

Note: (1) frequency <1.

APPENDIX K1

Informed consent

documents

(studies 1,2 & 3)

Appendix K1. Informed consent document: Studies 1-3

NORTH STAFFORDSHIRE POLYTECHNIC

INFORMED CONSENT

I hereby volunteer to act as a subject in a scientific investigation which is supported by the North Staffordshire Polytechnic. I have read the summarised procedures on the attached sheet. These procedures have been discussed with me and all my questions have been answered to my satisfaction.

I understand that a complete explanation of the study will be given at the conclusion of the investigation. I also understand that I am free to deny my answers to specific items or questions in interview or questionnaires, and that all data and information will remain strictly confidential.

I certify that to the best of my knowledge and belief I have no physical or mental illness or weakness that would increase the risk of harm to me during my participation in this investigation. I understand that, in the event of injury resulting from this investigation, no responsibility can be taken by North Staffordshire Polytechnic, nor by the investigators. I further understand that I am free to withdraw my consent and terminate my participation at any time during the experiment.

Date ..... Volunteer's signature .....

As the investigator in this research study, I have defined and explained fully what the subject's participation will involve.

Date ..... Investigator's signature .....

APPENDIX K2

Informed consent

document

(study 4)

Appendix K2: Informed consent document used in Study 4

NORTH STAFFORDSHIRE POLYTECHNIC

INFORMED CONSENT

1. I am volunteering to participate in a sport science study conducted by Stuart Biddle of North Staffordshire Polytechnic

2. I am free to withdraw at any time without explanation

3. I have read the explanation provided

4. I am free to deny answers to questions in interviews and questionnaires

5. I wish all data to be kept confidential

6. In the event of injury resulting from participation in this study, no responsibility can be taken by Stuart Biddle or North Staffordshire Polytechnic.

signed ..... (subject)

signed .....(Stuart Biddle, investigator)

APPENDIX L

Interpretation of partial correlations

Appendix L. Interpretation of partial correlations

Partial correlation is a statistical technique which provides a measure of association between two variables while controlling, or adjusting, for the influence of one or more other variables. This technique can be used for locating mediating variables, identifying possible spurious correlations, or identifying the masking, or suppression, effect of a third variable (see Nie et al., 1975).

Locating mediating variables and identifying spurious correlations

When three variables are intercorrelated, a partial correlation analysis can help in the identification of the extent of influence of the third variable.

Example: correlation coefficients between an attribution (effort), emotion (happy), and the importance of winning [for winners]:

	1	2	3
1. effort	-	.45	.55
2. happy		-	.50
3. importance			-

The partial correlation [effort correlated with happy controlling for importance] is 0.24. This shows that the correlation between effort and happy (.45) is reduced (.24) when importance is controlled for. This can be interpreted in two ways.

First, winners report the emotion of happiness after

giving strong effort attributions, particularly when it is important to win. Second, the effort-happy correlation is a spurious one contaminated by the third variable (importance). However, the psychological interpretation of the data suggests that the former interpretation is more likely since it shows that when it is important to win the effort attribution is more strongly made and happiness is more felt more intensely. Thus outcome importance appears to be largely responsible for the zero-order correlation between the attribution and the emotion.

Suppressing/masking effects

If the partial correlation is significant, but the zero-order correlation is not, this could suggest that the third variable is suppressing the zero-order correlation.

Example: correlation coefficients between an attribution (effort), emotion (discontent) and the importance of winning [for losers]:

	1	2	3
1. effort	-	.32	-.15
2. discontent		-	.74
3. importance			-

The more important it was to win, the more discontented losers felt with the outcome, although there was no apparently significant relationship between the amount of effort and their discontent. One might have supposed that the more they felt their loss was due to the amount of effort they had expended, the more discontented they would

have felt.

The partial correlation between effort and discontent does reveal the expected relationship ($r = .47$) when importance is controlled for. Thus, a significant partial correlation, in the absence of a significant zero-order correlation between the attribution and the emotion might be interpreted as indicating that feeling it was important to win invoked defences in losers against making the attribution or feeling the emotion.