

PART I

**Motivation, Emotion,
and Psychophysiology**

COPYRIGHTED MATERIAL

CHAPTER 1

Understanding the Dynamics of Motivation in Sport and Physical Activity

An Achievement Goal Interpretation

GLYN C. ROBERTS, DARREN C. TREASURE, and DAVID E. CONROY

Understanding and enhancing motivation is one of the most popular areas of research in psychology, as well as sport and exercise psychology. In psychology and sport psychology, this research has primarily addressed the role of motivation in individual lives, especially when addressing motivation in achievement contexts. Motivation has usually taken the form of managing the motivation of others, which is often the concern of the parent, the teacher, or the coach, or of managing one's own motivation.

It has been argued (e.g., Roberts, 2001) that the term *motivation* is overused and vague. There are at least 32 theories of motivation that have their own definition of the construct (Ford, 1992), and there are almost as many definitions as there are theorists (Pinder, 1984). It is defined so broadly by some as to incorporate the whole field of psychology, and so narrowly by others as to be almost useless as an organizing construct. The solution for most has been to abandon the term and use descriptions of cognitive processes, such as self-regulation and self-systems, processes such as personal goals and goal setting, or emotional processes. However, most contemporary theorists agree on the important assumption that motivation is not an entity, but a process (e.g., Maehr & Braskamp, 1986). To understand motivation, we must make an attempt to understand the process of motivation and the constructs that drive the process.

UNDERSTANDING MOTIVATION AND ACHIEVEMENT BEHAVIOR

Motivational processes can be defined by the psychological constructs that *energize, direct, and regulate* achievement behavior. Motivation theories may be viewed as

being on a continuum ranging from deterministic to mechanistic to organismic to cognitive (for a more extensive treatment of motivation theories, see Ford, 1992; Weiner, 1972). Deterministic and mechanistic theories view humans as passive and driven by psychological needs or drives. Organismic theories acknowledge innate needs but also recognize that a dialectic occurs between the organism and the social context. Cognitive theories view humans as active and initiating action through subjective interpretation of the achievement context. Contemporary theories tend to be organismic or social-cognitive and are based on more dynamic and sophisticated conceptions that assume the human is an active participant in decision making and in planning achievement behavior (e.g., Bandura, 1986; Deci & Ryan, 1985; Dweck & Leggett, 1988; Kuhl, 1986; Maehr & Nicholls, 1980; Nicholls, 1989). Although organismic approaches are experiencing a resurgence in the literature (Hagger & Chatzisarantis, in press), the majority of motivation research in physical activity contexts over the past 30 years has adopted a social-cognitive approach (e.g., Duda, 1992, 2001; Duda & Hall, 2001; Duda & Whitehead, 1998; Roberts, 1984, 1992, 2001; Roberts, Treasure, & Kavussanu, 1997). Specifically, the motivation theory that has emerged as the most popular in sport and physical activity contexts is achievement goal theory. In 1998, Duda and Whitehead identified 135 research studies reported in the 1990s, yet just 2 years later Brunel (2000) identified 160 studies. As we go to press, the number stands at over 200!

Accordingly, in this chapter we take a generally social-cognitive perspective, where achievement may be defined as *the attainment of a personally or socially valued achievement goal that has meaning for the person in a physical*

4 Motivation, Emotion, and Psychophysiology

activity context (e.g., losing weight, improving a skill, defeating an opponent). Achievement is subjectively defined, and success or failure in obtaining the goal is a subjective state based on the participant's assessment of the outcome of the achievement behavior (e.g., Maehr & Nicholls, 1980; Spink & Roberts, 1981).

ACHIEVEMENT GOAL THEORY IN SPORT AND PHYSICAL ACTIVITY

The history of achievement goal theory (in general and in sport) has been reviewed in several other publications (e.g., Duda, 2005; Duda & Hall, 2001; Roberts, 2001; Roberts et al., 1997), so the present chapter focuses on identifying key constructs, tenets, and limitations of the theory, reviewing empirical support, and presenting recent proposals for expanding or restructuring the approach.

Achievement goal theory assumes that the individual is an intentional, goal-directed organism who operates in a rational manner, and that achievement goals govern achievement beliefs and guide subsequent decision making and behavior in achievement contexts. It is argued that to understand the motivation of individuals, the function and meaning of the achievement behavior to the individual must be taken into account and the goal of action understood. Individuals give meaning to their achievement behavior through the goals they adopt. It is these goals that reflect the purposes of achievement striving. Once adopted, the achievement goal determines the integrated pattern of beliefs that undergird approach and avoidance strategies, the differing engagement levels, and the differing responses to achievement outcomes. By so recognizing the importance of the meaning of behavior, it becomes clear that there may be multiple goals of action, not one (Maehr & Braskamp, 1986). Thus, variation of achievement behavior may not be the manifestation of high or low motivation per se, or the satisfaction of needs, but the expression of different perceptions of appropriate goals with their attendant constellation of cognitions. An individual's investment of personal resources, such as effort, talent, and time, in an activity is dependent on the achievement goal of the individual.

The overall goal of action in achievement goal theory, thereby becoming the conceptual energizing force, is assumed to be the desire to develop and demonstrate competence and to avoid demonstrating incompetence. The demonstration and development of competence is the energizing construct of the motivational processes of achievement goal theory. But competence has more than one

meaning. One of Nicholls's (1984) conceptual contributions was to argue that more than one conception of ability exists, and that achievement goals and behavior may differ depending on the conception of ability held by the person. Nicholls argued that two conceptions of ability (at least) are manifest in achievement contexts, namely, an *undifferentiated concept of ability*, where ability and effort are not differentiated by the individual, either because he or she is not capable of differentiating, as is the case with young children, or because the individual chooses not to differentiate; and a *differentiated concept of ability*, where ability and effort are differentiated (Nicholls, 1984, 1989).

Nicholls (1976, 1978, 1980) argued that children originally possess an undifferentiated conception of ability in which they are not able to differentiate the concepts of luck, task difficulty, and effort from ability. From this undifferentiated perspective, children associate ability with learning through effort, so that the more effort one puts forth, the more learning (and ability) one achieves. Following a series of experiments, Nicholls (1978; Nicholls & Miller, 1983, 1984a, 1984b) determined that by the age of 12 children are able to differentiate luck, task difficulty, and effort from ability, enabling a differentiated perspective. When utilizing this differentiated perspective, children begin to see ability as capacity and that the demonstration of competence involves outperforming others. In terms of effort, high ability is inferred when outperforming others while expending equal or less effort or performing equal to others while expending less effort.

Individuals will approach a task or activity with certain goals of action reflecting their personal perceptions and beliefs about the particular achievement activity in which they are engaged and the form of ability they wish to demonstrate (Dennett, 1978; Nicholls, 1984, 1989). The conception of ability they employ and the ways they interpret their performance can be understood in terms of these perceptions and beliefs. These perceptions and beliefs form a *personal theory of achievement* at the activity (Nicholls, 1989; Roberts, 2001; Roberts et al., 1997), which reflects the individual's perception of how things work in achievement situations. The adopted personal theory of achievement affects one's beliefs about how to achieve success and avoid failure at the activity. Therefore, people will differ in which of the conceptions of ability and criteria of success and failure they use, and in how they use them, based on their personal theory of achievement.

The two conceptions of ability thereby become the source of the criteria by which individuals assess success and failure. The goals of action are to meet the criteria by

which success and failure are assessed. Nicholls (1989) identifies achievement behavior utilizing the undifferentiated conception of ability as *task involvement* and achievement behavior utilizing the differentiated conception of ability as *ego involvement*. When the individual is task-involved, the goal of action is to develop mastery, improvement, or learning, and the demonstration of ability is self-referenced. Success is realized when mastery or improvement has been attained. The goal of action for an ego-involved individual, on the other hand, is to demonstrate ability relative to others or to outperform others, making ability other-referenced. Success is realized when the performance of others is exceeded, especially when expending less effort than others (Nicholls, 1984, 1989).

In this chapter, when we refer to the motivated state of involvement of the individual, we use the terms *ego involvement* and *task involvement* to be consistent with Nicholls's use of the terms. In addition, when we refer to individual differences (e.g., self-schemas, personal theories of achievement, dispositions), we use the terms *task orientation* and *ego orientation*. Other motivation theorists (e.g., Dweck, 1986; Dweck & Legget, 1988; Elliot, 1997; Maehr & Braskamp, 1986) have used different terms to describe the same phenomena. When we refer to the situational determinants of motivation, the achievement cues inherent in the context, and the schemas emerging from achievement situations, we are consistent with Ames (1984a, 1992a, 1992b, 1992c) and refer to the task-involving aspect of the context as *mastery* criteria and the ego-involving aspect of the context as *performance* criteria. Finally, when we refer to the competence goals defined by Elliot (e.g., 1997) and colleagues, we use the terms *mastery* and *performance* goals.

Whether one is engaged in a state of ego or task involvement is dependent on one's dispositional orientation, as well as the perception of achievement cues in the context (Nicholls, 1989). Let us consider first two levels of individual differences: the state of goal involvement and the goal orientation.

States of Goal Involvement

Each of the theories of achievement goal motivation proffered by the major theorists (e.g., Ames, 1984a, 1984b, 1992a, 1992b, 1992c; Dweck, 1986; Dweck & Leggett, 1988; Elliot, 1997; Maehr & Braskamp, 1986; Maehr & Nicholls, 1980; Nicholls, 1984, 1989) hold that important relationships exist between the states of goal involvement and achievement striving. According to Nicholls, if the person is *task-involved*, the conception of ability is undifferentiated and perceived ability becomes less relevant, as the

individual is trying to demonstrate or develop mastery at the task rather than demonstrate normative ability. As the individual is trying to demonstrate mastery or improvement, the achievement behaviors will be adaptive in that the individual is more likely to persist in the face of failure, to exert effort, to select challenging tasks, and to be interested in the task (Dweck, 1986; Nicholls, 1984, 1989; Roberts, 1984, 1992; Roberts et al., 1997). On the other hand, if the individual is *ego-involved*, the conception of ability is differentiated and perceived ability is relevant, as the individual is trying to demonstrate normative ability, or avoid demonstrating inability, and how his or her ability fares with comparative others becomes important.

If the individual is ego-involved and perceives himself or herself as high in ability, that person is likely to approach the task and engage in adaptive achievement behaviors. These are the people who seek competitive contests and want to demonstrate superiority. When perceived ability is high, demonstrating high normative ability is likely; therefore the individual is motivated to persist and demonstrate that competence to pertinent others. If one can demonstrate ability with little effort, however, this is evidence of even higher ability. Thus, the ego-involved person is inclined to use the least amount of effort to realize the goal of action (Nicholls, 1984, 1992; Roberts, 1984; Roberts et al., 1997).

On the other hand, if the perception of ability is low, the individual will realize that ability is not likely to be demonstrated, and he or she is likely to manifest maladaptive achievement behaviors (Nicholls, 1989). Maladaptive behaviors are avoiding the task, avoiding challenge, reducing persistence in the face of difficulty, exerting little effort, and, in sport, dropping out if achievement of desired goals appears difficult. These are the people who avoid competitive contests, as their lack of high normative ability is likely to be exposed. Although the participant may view these avoidance behaviors as adaptive because they disguise a lack of ability, they are considered maladaptive in terms of achievement behavior.

It has been argued (e.g., Duda & Hall, 2001; Roberts, 2001; Treasure et al., 2001) that the states of involvement are mutually exclusive (i.e., one is either ego- or task-involved), even though this notion has been questioned in light of parallel processing models of information processing (Harwood & Hardy, 2001). Goal states are very dynamic and can change from moment to moment as information is processed (Gernigon, d'Arripe-Longueville, Delignières, & Ninot, 2004). An athlete may begin a task with strong task-involved motivation, but contextual events

6 Motivation, Emotion, and Psychophysiology

may make the athlete wish to demonstrate superiority to others, and so the athlete becomes ego-involved in the task. Thus, goal states are dynamic and ebb and flow depending on the perception of the athlete.

The measurement of goal states is a particularly challenging task. It has been done in three ways. One has been to take an existing goal orientation measure and reword the stem to obtain a state measure (e.g., Hall & Kerr, 1997; Williams, 1998). A second has been to use single-item measures asking participants to indicate whether they focus on achieving a personal standard of performance (self-referenced) or beating others in an upcoming contest (other-referenced; e.g., Harwood & Swain, 1998). The third way is to ask participants to view video replays of the event and retrospectively reflect on their goal involvement at any one point in the contest (e.g., J. Smith & Harwood, 2001). Although the first two procedures may be more predictive of the initial state of involvement than the orientation measures per se (Duda, 2001), Duda has argued that these procedures may not capture the essence of task and ego involvement. In addition, it may be argued that because the states are so dynamic, even if you are able to reflect the state of involvement at the outset of the competition, as the state of involvement ebbs and flows as task and competitive information is processed, we have no indication of the changes that may occur (Roberts, 2001). It is naive and conceptually inconsistent to assume that the state of involvement will remain stable throughout the contest.

The best way of estimating the state of involvement currently available is the procedure used by J. Smith and Harwood (2001). At least we obtain participants' observations of their goal involvement at different times of the contest. This is a superior procedure to determine goal involvement that takes into consideration its dynamic nature. However, this procedure is very labor-intensive; it has to be done with each participant over the course of the contest.

Clearly, the development of an assessment procedure for the state of goal involvement is a major task, especially when one recognizes that achievement goal theory is predicated on one's task or ego involvement in the achievement task. As has been the case with measuring state anxiety, obtaining repeated measures while an athlete is engaged in competition is a practical nightmare. And we have to recognize that repetitive assessments of goal involvement during a competitive encounter may have the effect of changing an athlete's goal involvement state (Duda, 2001)! Certainly, forcing task-involved athletes to consider why they are doing what they are doing may make them more self-aware and ego-involved in the task. To reduce the like-

lihood of this happening, the retrospective recall strategy of J. Smith and Harwood (2001) is clearly the better procedure, despite its disadvantages.

GOAL ORIENTATIONS

It is assumed that individuals are predisposed (e.g., by their personal theory of achievement) to act in an ego- or task-involved manner; these predispositions are called *achievement goal orientations*. Individual differences in the disposition to be ego- or task-involved may be the result of socialization through task- or ego-involving contexts in the home or experiences in significant achievement contexts (e.g., classrooms, physical activities; Nicholls, 1989; Roberts et al., 1997).

Goal orientations are not to be viewed as traits or based on needs. Rather, they are cognitive schemas that are dynamic and subject to change as information pertaining to one's performance on the task is processed. But the orientations do have some stability over time (Duda & Whitehead, 1998; Roberts, Treasure, & Balague, 1998). These self-cognitions are assumed to be relatively enduring. As examples, Dweck (1986) considers that one's theory of intelligence is relatively stable, and Nicholls (1984) considers one's conceptualization of ability to be stable as well. Thus, being task- or ego-oriented refers to the inclination of the individual to be task- or ego-involved.

To measure goal orientations, researchers have typically created questionnaires that are assumed to assess ego and task goal orientations (e.g., Nicholls, Patashnik, & Nolen, 1985). Although Dweck and her colleagues (e.g., Dweck & Leggett, 1988) conceptualize and measure achievement goals as dichotomous, it has been more usual for researchers to assume that the two goals are conceptually orthogonal and to measure them accordingly (Duda & Whitehead, 1998; Nicholls et al., 1985; Roberts et al., 1998).

Nicholls (1989) has argued that to assess personal achievement goals, individuals should be asked about the criteria that make them feel successful in a given situation, rather than noting their definition of competence. In line with this suggestion, Roberts and colleagues (Roberts & Balague, 1989; Roberts et al., 1998; Treasure & Roberts, 1994b) have developed the Perception of Success Questionnaire (POSQ), and Duda and colleagues (Duda & Nicholls, 1992; Duda & Whitehead, 1998) have developed the Task and Ego Orientation in Sport Questionnaire (TEOSQ). Both have demonstrated acceptable reliability and construct validity (Duda & Whitehead, 1998; Marsh, 1994; Roberts et al., 1998). Although other scales exist, the

POSQ and the TEOSQ best meet the conceptual criteria of measuring orthogonal achievement goals in sport (Duda & Whitehead, 1998). When developing scales in the future, the constructs identified must be conceptually coherent with achievement goal theory. This has not always been the case in the past (e.g., Gill & Deeter, 1988; Vealey & Campbell, 1988), and this has created some conceptual confusion (Marsh, 1994).

Motivational Implications of Goal Orientations

The majority of research in goal orientations has focused on the antecedents and consequences of goal orientations. In this section, we briefly review the research on the association between achievement goals and both cognitive and affective variables, and important outcome variables.

Perceptions of Competence

One of the fundamental differences between task- and ego-oriented athletes is the way they define and assess competence. Task-oriented individuals tend to construe competence based on self-referenced criteria and are primarily concerned with mastery of the task, so they are more likely than ego-oriented individuals to develop perceived competence over time (Elliott & Dweck, 1988). In contrast, ego-oriented individuals feel competent when they compare favorably in relation to others, so high perceived relative ability or competence is less likely to be maintained in ego orientation, especially for those participants who already question their ability (see Dweck, 1986). This prediction of achievement goal theory has been supported in numerous studies with a variety of conceptualizations of competence perceptions (Chi, 1994; Cury, Biddle, Sarrazin, & Famose, 1997; Kavussanu & Roberts, 1996; Nicholls & Miller, 1983, 1984a; Vlachopoulos & Biddle, 1996, 1997).

Thus, several lines of research suggest that using the task-involving conception of achievement to judge demonstrated competence enhances resiliency of perceived competence. The implications of these findings are particularly important in learning contexts. For example, for individuals who are beginning to learn a new physical skill, holding a task orientation may be instrumental in facilitating perceptions of competence, effort, and persistence, and consequently success in the activity. It is not surprising that Van Yperen and Duda (1999), in their study with Dutch male soccer players, found that athletes high in task orientation were judged by their coaches to possess greater soccer skills from pre- to postseason. A task orientation fosters perceptions of competence and success for individuals who

are either high or low in perceived competence and encourages the exertion of effort. An ego orientation, on the other hand, may lower perceptions of success, perceived competence, and thus effort, especially for those individuals who already are unsure of their ability.

Beliefs about the Causes of Success

Nicholls (1989, 1992) suggests that one's goal in conjunction with one's beliefs about the causes of success in a situation constitute one's personal theory of how things work in achievement situations. For individuals with low perceived ability, a belief that ability causes success will most likely result in frustration, a lack of confidence and may even lead to dropping out, as these individuals feel they do not possess the ability required to be successful. In the physical activity domain, where practice and hard work are so essential for improvement, especially at the early stages of learning, the belief that effort leads to success is the most adaptive belief for sustaining persistence.

Research on young athletes (e.g., Hom, Duda, & Miller, 1993; Newton & Duda, 1993), high school students (Duda & Nicholls, 1992; Lochbaum & Roberts, 1993), British youth (Duda, Fox, Biddle, & Armstrong, 1992; Treasure & Roberts, 1994a), young disabled athletes participating in wheelchair basketball (White & Duda, 1993), and elite adult athletes (Duda & White, 1992; Guivernau & Duda, 1995; Roberts & Ommundsen, 1996) has consistently demonstrated that a task goal orientation is associated with the belief that hard work and cooperation lead to success in sport. In general, ego orientation has been associated with the view that success is achieved through having high ability and using deception strategies such as cheating and trying to impress the coach. A similar pattern of results has emerged in the physical education context (Walling & Duda, 1995), as well as in research with college students participating in a variety of physical activity classes (e.g., Kavussanu & Roberts, 1996; Roberts, Treasure, & Kavussanu, 1996).

Purposes of Sport

In classroom-based research, ego orientation has been associated with the belief that the purpose of education is to provide one with wealth and social status, which is evidence of superior ability. Task orientation, on the other hand, has been linked to the view that an important purpose of school education is to enhance learning and understanding of the world and to foster commitment to society (Nicholls et al., 1985; Thorkildsen, 1988). Similar findings have been reported in the athletic arena (e.g., Duda, 1989; Duda &

Nicholls, 1992; Roberts, Hall, Jackson, Kimiecik, & Tonymon, 1995; Roberts & Ommundsen, 1996; Roberts et al., 1996, 1997; Treasure & Roberts, 1994a; White, Duda, & Keller, 1998), indicating that worldviews cut across educational and sport contexts.

Task orientation has been associated with the belief that the purpose of sport is to enhance self-esteem, advance good citizenship, foster mastery and cooperation (Duda, 1989), encourage a physically active lifestyle (White et al., 1998), and foster lifetime skills and pro-social values such as social responsibility, cooperation, and willingness to follow rules (Roberts & Ommundsen, 1996; Roberts et al., 1996). Likewise, task orientation is associated with the view that the purpose of physical education is to provide students with opportunities for improvement, hard work, and collaboration with peers (Papaioannou & McDonald, 1993; Walling & Duda, 1995). In contrast, ego orientation has been linked to the view that sport should provide one with social status (Roberts & Ommundsen, 1996; Roberts et al., 1996), enhance one's popularity (Duda, 1989; Roberts & Ommundsen, 1996) and career mobility, build a competitive spirit (Duda, 1989), and teach superiority and deceptive tactics (Duda, 1989; Duda & White, 1992). Ego orientation is also associated with the view that the purpose of physical education is to provide students with an easy class and teach them to be more competitive (Papaioannou & McDonald, 1993; Walling & Duda, 1995).

Affect and Intrinsic Interest

One of the most consistent findings in achievement goal research has been the link between task orientation and experienced enjoyment, satisfaction, and interest during participation in physical activity for high school students (Duda, Chi, Newton, Walling, & Catley, 1995; Duda & Nicholls, 1992), athletes competing in international competition (Walling, Duda, & Chi, 1993), and college students enrolled in a variety of physical activity classes (e.g., Duda et al., 1995; Kavussanu & Roberts, 1996). A positive relationship has also been reported between task orientation and flow, an intrinsically enjoyable experience in college athletes (Jackson & Roberts, 1992). In the studies just cited, ego orientation was either inversely related or unrelated to intrinsic interest, satisfaction, or enjoyment.

Participants with a high task orientation, in combination with either a high or low ego orientation, experience greater enjoyment than those participants who are high in ego orientation and low in task orientation (Biddle, Akande, Vlachopoulos, & Fox, 1996; Cury et al., 1996; Goudas, Biddle, & Fox, 1994; Vlachopoulos & Biddle, 1996, 1997). A task

orientation seems to be especially important for continued participation in physical activity as it is associated with enjoyment, and this occurs regardless of one's perceived success (Goudas et al., 1994) or perceived ability (Vlachopoulos & Biddle, 1997) and intrinsic interest (Goudas, Biddle, Fox, & Underwood, 1995).

Another interesting finding of previous research is the different sources of satisfaction associated with goals. Ego-oriented athletes glean satisfaction when they demonstrate success in the normative sense and please their coach and friends, whereas task-oriented individuals feel satisfied when they have mastery experiences and perceive a sense of accomplishment during their sport participation (Roberts & Ommundsen, 1996; Treasure & Roberts, 1994a).

Probably the most significant study to illustrate the association of goals with affect was conducted by Ntoumanis and Biddle (1999). They conducted a meta-analysis with 41 independent samples and found that task orientation and positive affect were positively and moderately to highly correlated. The relationship between ego orientation and both positive and negative affect was small. In essence, being task-involved fosters positive affect in physical activities.

Anxiety

Roberts (1986) was the first to suggest that athletes adopting an ego orientation may experience anxiety as a function of whether or not they believe they can demonstrate sufficient competence in an achievement context. Anxiety should be less likely with a task orientation, because an individual's self-worth is not threatened. Research has generally supported the tenets of goal theory (Roberts, 2001). Task orientation has been negatively associated with precompetitive anxiety (Vealey & Campbell, 1988), cognitive anxiety with young athletes (Ommundsen & Pedersen, 1999), somatic and cognitive anxiety (Hall & Kerr, 1997), task-irrelevant worries and the tendency to think about withdrawing from an activity (Newton & Duda, 1992), and concerns about mistakes and parental criticisms (Hall & Kerr, 1997; Hall, Kerr, & Matthews, 1998). Further, a task orientation has been associated with keeping one's concentration and feeling good about the game (Newton & Duda, 1992) and with effective use of coping strategies in elite competition (Pensgaard & Roberts, 2003). An ego orientation, on the other hand, has been positively related to state and trait anxiety (Boyd, 1990; Newton & Duda, 1992; Vealey & Campbell, 1988; White & Zellner, 1996), cognitive anxiety in the form of worry (White & Zellner, 1996), getting upset in competition, and concentration disruption during competition (Newton & Duda, 1992; White & Zellner, 1996).

Most studies have been conducted with very young athletes (Hall & Kerr, 1997) or with recreational or physical education students (Hall et al., 1998; Ommundsen & Pedersen, 1999; Papaioannou & Kouli, 1999). Ommundsen and Pedersen remind us, however, that it is not sufficient simply to state that being task-involved is beneficial in terms of anxiety. They found that being task-involved did decrease cognitive trait anxiety, but low perceived competence increased both somatic and cognitive anxiety. This suggests that being task-involved is beneficial, but that perceived competence is an important predictor of anxiety, too. Being task-oriented and perceiving one's competence to be high are both important antecedents to reduce anxiety in sport.

The most interesting aspect of the recent work with achievement goal theory has been the attention paid to achievement strategies and outcome variables, especially performance, exerted effort, overtraining and dropping out, and cheating in sport. Achievement goal theory and research in educational and sport settings suggest that personal theories of achievement comprise different beliefs about what leads to success (Nicholls, 1989).

Achievement Strategies

Lochbaum and Roberts (1993) were the first to report that emphasis on problem-solving and adaptive learning strategies was tied to a task orientation in a sport setting. Research (Lochbaum & Roberts, 1993; Ommundsen & Roberts, 1999; Roberts et al., 1995; Roberts & Ommundsen, 1996) has demonstrated that task orientation is associated with adaptive achievement strategies, such as being committed to practice, being less likely to avoid practice, learning, and effort. Typically, in these investigations, ego orientation corresponds to a tendency to avoid practice and to a focus on winning during competition. Goals also differentiate athletes in terms of the perceived benefits of practice. Thus, ego-oriented athletes consider practice as a means to demonstrate competence relative to other athletes, whereas their task-oriented counterparts view practice as a means to foster team cohesion and skill development (Lochbaum & Roberts, 1993; Roberts & Ommundsen, 1996).

When choosing post-climbing task feedback strategies, high ego-oriented climbers who were low in perceived ability were more likely to reject task-related and objective performance feedback than were task-oriented climbers (Cury, Sarrazin, & Famose, 1997). In addition, Cury and Sarrazin (1998) found that high-ego and high-ability athletes selected normative feedback and rejected task-relevant information. High-ego-oriented athletes with low ability requested no feedback and discarded objective

information. Research has also given evidence that an ego orientation is related to other unacceptable achievement strategies, such as the use of aggression (Rasclé, Coulomb, & Pfister, 1998).

These studies demonstrate that the achievement strategies endorsed by physical activity participants are meaningfully related to their goal perspective. Across studies, task orientation was coupled with adaptive learning strategies, the value of practice to learn new skills and improve, and seeking task-relevant information. In contrast, ego-oriented athletes endorsed avoiding practice as an achievement strategy and avoided task-relevant information, preferring normative feedback (but only when high in perceived ability).

Exerted Effort and Performance

There is little research to date investigating exerted effort and performance. One of the first studies to provide evidence of a performance boost from being task-involved was Vealey and Campbell's (1989). Van Yperen and Duda (1999) found that when football players were task-oriented, an increase in skilled performance (as perceived by the coach) resulted. In addition, the task-oriented players believed that soccer success depended on hard work. Similarly, Theeboom, De Knop, and Weiss (1995) investigated the effect of a mastery program on the development of motor skills of children and found that the task-involved group reported higher levels of enjoyment and reliably exhibited better motor skills than those who were ego-involved.

However, the best evidence thus far that task-oriented athletes perform better than ego-oriented athletes has been presented by Sarrazin, Roberts, Cury, Biddle, and Famose (2002), who investigated exerted effort and performance of adolescents involved in a climbing task. The results demonstrated that task-involved boys exerted more effort than ego-involved boys and performed better (a success rate of 60% versus 42%), and the degree of exerted effort was determined by an interaction of achievement goal, perceived ability, and task difficulty. Ego-involved boys with high perceived ability and task-involved boys with low perceived ability exerted the most effort on the moderate and difficult courses; ego-involved boys with low perceived ability exerted the least effort on the moderate and very difficult courses. Finally, task-involved boys with high perceived ability exerted more effort when the task was perceived as more difficult.

In general, the research has shown that (a) task-involved people exhibit (or report) greater effort than others (Cury et al., 1996; Duda, 1988; Duda & Nicholls, 1992; Durand, Cury, Sarrazin, & Famose, 1996; Goudas

et al., 1994; Sarrazin et al., 2002; Solmon, 1996; Tammen, Treasure, & Power, 1992), and (b) ego-involved people with low perceived ability exhibit reduced exerted effort as opposed to people with high perceived ability (Cury, Biddle, et al., 1997). And there is developing evidence that being task-involved leads to better performance. To enhance effort, one should focus on being as task-involved as possible: Task-involved people try harder! And task-involved people perform better!

Moral Functioning and Cheating

Achievement goals have also been linked to moral cognitions and moral behavior in sport. A number of recent studies have identified fairly consistent relationships between task and ego orientations and sportspersonship, moral functioning, moral atmosphere, and endorsement of aggressive tactics among both youth and adult competitive athletes. In general, studies have shown that being high in ego orientation leads to lower sportspersonship, more self-reported cheating, lower moral functioning (i.e., moral judgment, intention, and self-reported cheating behavior), and endorsement of aggression when compared to high task-oriented athletes (Kavussanu & Ntoumanis, 2003; Kavussanu & Roberts, 2001; Lemyre, Roberts, & Ommundsen, 2002; Lemyre, Roberts, Ommundsen, & Miller, 2001; Ryska, 2003).

In recent research, Lemyre and colleagues (2001, 2002) and Ryska (2003) have found that low ego/high task-oriented young male soccer players consistently endorsed values of respect and concern for social conventions, rules and officials, and opponents. Similar to sportspersonship, moral functioning and aggression, as well as gender differences among these variables, have been highlighted in recent sport psychology research. Kavussanu (Kavussanu & Roberts, 2001; Kavussanu, Roberts, & Ntoumanis, 2002) has consistently found ego orientation to positively predict lower moral functioning and males to be generally higher in ego orientation, lower in task orientation, and significantly lower in moral functioning as well as endorsing more aggression than female players.

Recent research has indicated that the coach-created motivational climate may also serve as a precursor to cheating among competitive youth sport participants. Findings by Miller and colleagues (Miller & Roberts, 2003; Miller, Roberts, & Ommundsen, 2004, 2005) show that a high ego-involving motivational climate was associated with low sportspersonship, low moral functioning and reasoning, low moral atmosphere, and endorsement of aggression. Boys cheated more than girls, but within gender, ego-involved boys and girls cheated more than task-involved boys and

girls. For boys in particular, being ego-involved meant that they were more likely to engage in cheating behavior, to engage in injurious acts, to be low in moral reasoning, and to perceive the moral atmosphere in the team to be supportive of cheating.

Competitive sport often places individuals in conflicting situations that emphasize winning over sportspersonship and fair play. It would be wrong, however, to attribute this to the competitive nature of sport. The results just cited suggest that it is *not* the competitive context in itself that is the issue. Rather, it may be the salience of ego involvement in the athletic environment that induces differential concern for moral behavior and cheating, rules, respect for officials, and fair play conventions among young players. If athletes are to develop good sportspersonship behaviors and sound moral reasoning, coaches should reinforce the importance of task-involving achievement criteria in the competitive environment.

Burnout

Another outcome variable that is becoming popular in sport research is burnout (see Eklund & Cresswell, Chapter 28). Why is it that some athletes burn out, and what are the precursors of burning out? Some recent research from a motivational perspective has given us some interesting findings. Freudenberger (1980) has explained burnout as a syndrome that includes both physical and emotional exhaustion. These symptoms occur concurrently with patterns of behavior that are strongly achievement oriented (Hall & Kerr, 1997). Individuals experiencing burnout tend to show a strong commitment to the pursuit of goals and set high standards for themselves. Despite personal investment and great persistence, they often experience depression, depersonalization, disillusionment, and dissatisfaction as their goals are continually unmet. Hall et al. (1998) reported a strong relationship among elite athletes' perfectionism, achievement goals, and aptitudes to perform. It is when athletes continually perceived their ability and their effort levels to be inadequate to meet their achievement goals that the maladaptive nature of their motivational orientation became apparent. The athlete may drop out to maintain any real sense of self-worth.

Cohn (1990) has found that athletes at risk of burning out were likely to either participate in too much training and competition, lacked enjoyment while practicing their sport, or experienced too much self- or other-induced pressure. Investigating young elite tennis players, Gould and colleagues (Gould, 1996; Gould, Tuffey, Udry, & Loehr, 1996; Gould, Udry, Tuffey, & Loehr, 1996) found that

burned-out athletes believed they had less input into their own training, were higher in amotivation, and were more withdrawn. The burned-out players did not differ from their non-burned-out counterparts in terms of the number of hours they trained; consequently Gould and colleagues posited that the crucial factors leading to burnout were psychological (motivational) rather than physical in nature. This was confirmed by Lemyre, Treasure, and Roberts (2006), who found that variation in motivation contributed to the onset of burnout.

In a series of studies investigating the psychological determinants of burnout, Lemyre and colleagues examined the relationship between motivational disposition variables at the start of the season and signs of burnout at season's end. Lemyre (2005) found that elite winter sport athletes who were ego-involved, focused on normative comparisons, and preoccupied with achieving unrealistic goals, who doubted their own ability, and who had a coach and parents who emphasized performance outcomes were more at risk of developing symptoms of burnout than the more task-involved athletes. Lemyre, Roberts, Treasure, Stray-Gundersen, and Matt (2004) investigated the relationship between psychological variables and hormonal variation to burnout in elite athletes. Results indicated that variation in basal cortisol accounted for 15% of the variance in athlete burnout, and the psychological variables of perfectionism (20%), perceived task involvement (12%), and subjective performance satisfaction (18%) explained 50% of the total variance (67%) in athlete burnout at the end of the season. These findings are meaningful as they underline the importance of personal dispositions (perfectionism and achievement goals) on burnout vulnerability in elite athletes.

The literature just reviewed addressed achievement goals from an individual difference perspective in the traditional achievement goal framework. It supports meaningful relationships between personal goals of achievement and cognitive and affective beliefs about involvement in physical activity. In addition, we have shown that outcomes such as exerted effort, performance, moral behavior and cheating, and burnout are affected by whether one is task- or ego-involved. But whether one is in a state of task or ego involvement is not only dependent on one's personal goal of achievement. The context also has an important influence on one's state of involvement. We address that literature next.

THE MOTIVATIONAL CLIMATE

A fundamental tenet of achievement goal theory is the central role the situation plays in the motivation process

(Nicholls, 1984, 1989). Consistent with other motivation research that has emphasized the situational determinants of behavior (e.g., deCharms, 1976, 1984; Deci & Ryan, 1985, 2002), research from an achievement goal perspective has examined how the structure of the environment can make it more or less likely that achievement behaviors, thoughts, and feelings associated with a particular achievement goal are adopted. The premise of this line of research is that the nature of an individual's experience influences the degree to which task and ego criteria are perceived as salient in the context. This is then assumed to affect the achievement behaviors, cognition, and affective responses through individuals' perception of the behaviors necessary to achieve success (Roberts et al., 1997).

Adopting the term *motivational climate* (Ames, 1992b) to describe the goal structure emphasized in the achievement context, researchers have examined two dimensions of the motivational climate, mastery and performance, in sport and physical activity. Mastery (or task-involving) climates refer to structures that support effort, cooperation, and an emphasis on learning and task mastery. Conversely, performance (or ego-involving) climates refer to situations that foster normative comparisons, intrateam competition, and a punitive approach by teachers and coaches to mistakes committed by participants.

A study conducted by Parish and Treasure (2003) is representative of much of the extant literature in the area. In this case, the influence of perceptions of the motivational climate and perceived ability on situational motivation and the physical activity behavior of a large sample of adolescent male and female physical education students was examined. Consistent with achievement goal theory, the results showed that perceptions of a mastery climate were strongly related to more self-determined forms of situational motivation (intrinsic and identified motivation) and, along with gender and perceived ability, most significantly predictive of the actual physical activity behavior of the participants. In contrast, perceptions of a performance climate were found to be strongly related to less self-determined forms of situational motivation (extrinsic and amotivational) and unrelated to physical activity.

Consistent with the findings reported by Parish and Treasure (2003), the extant literature in physical education and sport suggests that the creation of a mastery motivational climate is likely to be important in optimizing positive (i.e., well-being, sportspersonship, persistence, task perseverance, adaptive achievement strategies) and attenuating negative (i.e., overtraining, self-handicapping) responses (e.g., Kuczka & Treasure, 2005; Miller et al.,

2004; Ommundsen & Roberts, 1999; Sarrazin et al., 2002; Standage, Duda, & Ntoumanis, 2003; Standage, Treasure, Hooper, & Kuczka, in press; Treasure & Roberts, 2001). This pattern of findings has been confirmed in a meta-analysis consisting of statistically estimated effect sizes from 14 studies ($N = 4,484$) that examined the impact of different motivation climates in sport and physical education on cognitive and affective responses (Ntoumanis & Biddle, 1999). The evidence, therefore, supports the position that perceptions of a mastery motivational climate are associated with more adaptive motivational and affective response patterns than perceptions of a performance climate in the context of sport and physical education.

AN INTERACTIONIST APPROACH

Achievement goal research has shown that individual variables and situational variables separately influence achievement behavior, cognition, and affect. Although these two lines of research have been conducted in relative isolation, an interactionist approach that looks to combine both types of variable is expected to provide a far more complete understanding of the motivation process. To this end, Dweck and Leggett (1988) suggested that dispositional goal orientations should be seen as an individual variable that will determine the probability of adopting a certain goal or action, that is, task or ego state of goal involvement, and a particular behavior pattern in achievement contexts. Situational variables, such as perceptions of the motivational climate, were proposed as potential moderators of the influence of the individual variables. As Roberts and colleagues (1997) argue, when the situational criteria are vague or weak, an individual dispositional goal orientation should hold sway. In contexts where the situational criteria are particularly salient, it is possible that perceptions of the climate may override an individual's dispositional goal orientation and be a stronger predictor of behavioral, cognitive, and affective outcomes. It is also proposed that children and young adolescents, who have yet to firm up their personal theories of achievement, may be more susceptible to the influence of situational variables than older adolescents and adults (Roberts & Treasure, 1992).

The result of the limited research that has examined both individual and situational variables has shown that taking into account both of these variables enhances our understanding of the sport context (e.g., Kavussanu & Roberts, 1996; Seifriz, Duda, & Chi, 1992). The limited evidence to date also provides support for Dweck and Leggett's (1988) contention that situational variables may

moderate the influence of goal orientations (e.g., Swain & Harwood, 1996; Treasure & Roberts, 1998). When significant interaction effects emerged, they did so in a manner consistent with a moderation model. Although it is often difficult to statistically find significant interaction effects (Aguinis & Stone-Romero, 1997), the findings of the limited studies that have been conducted are consistent with the fundamental tenets of achievement goal theory and speak to the veracity of investigating the interaction in addition to the main effect of individual and situational variables.

ENHANCING MOTIVATION

Research from an achievement goal perspective in sport and physical education has demonstrated that goal orientations and perceptions of the motivational climate are relevant to the ongoing stream of achievement behavior, cognition, and affect. Given the body of empirical work that has documented the adaptive motivation and well-being responses of students who perceive mastery or task-involving climates, physical education teacher and sport coach education programs would benefit from integrating educational information pertaining to the creation of mastery climates into their curricula. Specifically, researchers interested in the sport and physical education experience need to develop strategies and guidelines and explore ways in which coaches, parents, and other significant social agents can engage in the creation of a mastery or task-involving motivational climate.

A paucity of intervention research has been conducted to assess the viability of the teacher and coach education programs designed to enhance motivation from an achievement goal perspective (i.e., Lloyd & Fox, 1992; Solmon, 1996; Treasure & Roberts, 2001). Comparing two different approaches to teaching an aerobics/fitness class to adolescent females, Lloyd and Fox found that participants in the mastery condition reported higher motivation to continue participating in aerobics and more enjoyment than those who participated in the performance condition. Consistent with the findings of Lloyd and Fox, Solmon found that seventh- and eighth-grade students who participated in the mastery condition demonstrated more willingness to persist in a difficult juggling task than those in the performance condition. In addition, students in the performance condition were more likely to attribute success during the intervention to normative ability than those in the mastery condition. This finding is consistent with Nicholls's (1989) contention that achievement goals and beliefs about success are conceptually linked.

Similar to the intervention designed by Solmon (1996), Treasure and Roberts (2001) drew on strategies suggested by Ames (1992a, 1992b, 1992c) to promote either a mastery or a performance climate. The strategies were then organized into the interdependent structures that Epstein (1988, 1989) has argued define the achievement context: task, authority, recognition, grouping, evaluation, and time structures, better known by the acronym TARGET. Responses of female and male young adolescent physical education students suggest that a teacher can influence the salience of a mastery or performance climate and, in so doing, affect a child's motivation in physical education. Although the results of the studies conducted by Solmon and Treasure and Roberts indicate that adopting and adapting classroom-based intervention programs in the context of physical education may be effective, it is important to recognize that there may be significant differences between achievement contexts. This point is even more important when one considers the achievement context of youth sport. In assessing and implementing interventions to enhance the quality of motivation in youth sport, therefore, researchers need to be sensitive to differences between the achievement contexts (Nicholls, 1992).

The few intervention studies that have been conducted clearly show that a mastery climate has positive behavioral, cognitive, and affective outcomes. All of the studies conducted to date, however, have been short term and limited in what they assess. Randomized, controlled studies over time are needed to truly assess the causal role of motivational climates on motivational outcomes.

THE HIERARCHICAL APPROACH TO ACHIEVEMENT GOALS

One of the most provocative attempts at revising and extending achievement goal theory in the past decade has emerged from work on the hierarchical model of achievement motivation (Elliot, 1999). This model is based on the premise that approach and avoidance motivation represent fundamentally different strivings. The approach-avoidance distinction has a long intellectual history (Elliot & Covington, 2001) and was considered in early writing on achievement goals (e.g., Nicholls, 1984, p. 328) but, until recently, was largely neglected in subsequent empirical work.

Briefly, the hierarchical model of achievement motivation asserts that dynamic states of achievement goal involvement are influenced by (a) stable individual differences (e.g., motives, self-perceptions, relationally based variables, neurophysiologic predispositions; Elliot, 1999)

and (b) situational variables (e.g., motivational climate; Ames, 1992c; Ames & Archer, 1988). In turn, these dynamic states of goal involvement are posited as direct predictors of achievement processes and outcomes. A complete presentation of the hierarchical model of achievement motivation is beyond the scope of this chapter (see Elliot, 1999). Instead, we focus on a major implication of the premise that approach and avoidance motivation are fundamentally different—specifically, the implication that approach-valenced achievement goals may be distinguished (both conceptually and empirically) from avoidance-valenced achievement goals.

An Expanded Model of Achievement Goals

As described earlier in this chapter, the prevailing models of achievement goals in the educational, industrial-organizational, social, and sport literatures have been dichotomous in nature. Goals are distinguished largely (but not always exclusively) on how competence is defined. From this perspective, competence could be defined in task-referential terms (e.g., How well did I perform this task in relation to how well it could possibly be performed?), in self-referential terms (e.g., How well did I perform this task in relation to my previous performances?), or in normative terms (e.g., How well did I perform this task in relation to others?). Due to their conceptual and empirical similarities, the vast majority of research combined task- and self-referential definitions of competence into a single task, or *mastery*, goal. Normative definitions of competence have typically been designated as ego, or *performance*, goals. We use the terms mastery and performance to refer to the goals in the hierarchical model.

In the mid-1990s, several scholars working in parallel (e.g., Elliot, 1997; Elliot & Harackiewicz, 1996; Middleton & Midgley, 1997; Skaalvik, 1997; Skaalvik & Valas, 1994) returned to the possibility that individuals may sometimes focus on striving not to be incompetent as much as or more than they are striving to be competent. In achievement situations, competence and incompetence are outcomes that individuals typically find appetitive and aversive, respectively. Thus, it is possible to differentiate goals based on their *valence*, or the degree to which the focal outcome is pleasant or unpleasant.

In reviewing the achievement goal literature, Elliot (1994) observed that performance goals that focused on the pleasant possibility of competence (approach goals) led to different outcomes from performance goals focused on the unpleasant possibility of incompetence (avoidance goals). A meta-analysis of the motivation literature revealed that goal

valence moderated the effects of performance goals on participants' intrinsic motivation (Rawsthorne & Elliot, 1999). Performance-avoidance goals reduced both free-choice behavior and self-reported interest in a task, whereas performance-approach goals did not have any consistent effect on either intrinsic motivation index. This finding led to the introduction of a tripartite model of achievement goals comprising mastery, performance-approach goals, and performance-avoidance goals (Elliot & Harackiewicz, 1996). In the first empirical test of this tripartite model, the valence of performance goals moderated relations between the goals and relevant antecedents (e.g., achievement motives, competence expectations, sex) and consequences (e.g., intrinsic motivation). A subsequent series of studies extended understanding of how the valence of performance goals can moderate relations between goals and achievement processes and outcomes (e.g., Cury, Da Fonseca, Rufo, Peres, & Sarrazin, 2003; Cury, Da Fonseca, Rufo, & Sarrazin, 2002; Cury, Elliot, Sarrazin, Da Fonseca, & Rufo, 2002; Elliot & Church, 1997; Elliot & McGregor, 1999).

Thus, the argument was proffered that achievement goals should consider both the *definition of competence* and the *valence of the striving*, and the model was expanded to include a fourth possible achievement goal: mastery-avoidance goals (Elliot, 1999; Elliot & Conroy, 2005). As seen in Figure 1.1, the two definitions of competence (i.e., mastery/task versus

performance/ego) and two valences of strivings (i.e., approaching competence versus avoiding incompetence) yield a 2 × 2 model of achievement goals comprising mastery-approach, mastery-avoidance, performance-approach, and performance-avoidance goals. These goals can be assessed with the 2 × 2 Achievement Goal Questionnaire for Sport (Conroy, Elliot, & Hofer, 2003).

Mastery-approach (MAp) goals focus on performing a task as well as possible or surpassing a previous performance on a task (i.e., learning, improving). They are equivalent to existing conceptions of mastery or task goals in the dichotomous model of achievement goals. They are expected to be the optimal achievement goal because they combine the more desirable definition of competence with the more desirable valence. In sport settings, these goals are extremely common because they are directly implicated in individuals' striving for personal records and peak performances as well as skill acquisition processes.

Performance-approach (PAp) goals focus on outperforming others. They are equivalent to existing conceptions of performance or ego goals in the dichotomous model of achievement goals. These goals may be adaptive when, as noted earlier, they are accompanied by a high perception of competence. However, in the 2 × 2 model, PAp goals are expected to be suboptimal because of their performance definition of competence, but not entirely dysfunctional because they are valenced toward competence. PAp goals are probably especially salient because of the social comparison processes inherent in sport and other competitive activities.

Performance-avoidance (PAv) goals focus on not being outperformed by others. As described previously, PAv goals provided the impetus to consider how the valence of goals might enhance the predictive power of the goal construct. They are expected to be the most dysfunctional of all achievement goals because they combine the less desirable definition of competence with the less desirable valence. These goals may be expressed when individuals are concerned about losing a contest or appearing incompetent in comparison with others.

Mastery-avoidance (MAv) goals focus on not making mistakes or not doing worse than a previous performance. As the latest addition to the achievement goal family, relatively little is known about these goals. They combine a desirable definition of competence with an undesirable focus on avoiding incompetence, so they are expected to exhibit a mixed set of consequences. Elliot (1999; Elliot & Conroy, 2005; Elliot & McGregor, 2001) has theorized that these goals may be particularly relevant for perfectionists

		Definition of Competence	
		Mastery (absolute or intrapersonal)	Performance (normative)
Valence of Strivings	Approach (striving for competence)	Mastery- Approach Goals	Performance- Approach Goals
	Avoidance (striving away from incompetence)	Mastery- Avoidance Goals	Performance- Avoidance Goals

Figure 1.1 The 2 × 2 achievement goal framework. Adapted from “A 2 × 2 Achievement Goal Framework,” by A. J. Elliot and H. A. McGregor, 2001, *Journal of Personality and Social Psychology*, 80, p. 502. Copyright 2001 by the American Psychological Association. Adapted with permission.

striving for flawlessness, for athletes focused on maintaining their skill level as they near the end of their careers, and for older adults fighting off the natural functional declines associated with aging.

Antecedents and Consequences of 2×2 Goal Adoption

Considering that the vast majority of the recent achievement motivation literature in sport has implicitly focused on approach goals (i.e., MAp, PAp), relatively little is known about the correlates and consequences of avoidance-valenced achievement goals in sport. This section reviews documented links between the four goals in the 2×2 framework and theoretically relevant antecedents and consequences (e.g., achievement processes and outcomes). The vast majority of the research on goals in the 2×2 framework resides outside of the sport and exercise psychology literature. Rather than relying exclusively on the nascent sport psychology literature on 2×2 goals, we include selected findings from broader social and educational psychology literatures in this review. There is also some conceptual confusion about whether some variables (e.g., competence valuation) belong as antecedents or consequences of different states of goal involvement; they are listed according to how they were conceptualized in their respective studies.

Antecedents of 2×2 Achievement Goals

Empirically-tested antecedents of the four achievement goals are summarized in Table 1.1 based on whether the antecedents have demonstrated positive, negative, or null relations with each goal. These links are based on bivariate relations between each antecedent and the goal; relatively few relations change when third variables (e.g., ability) have been controlled.

Common antecedents of MAp goal involvement appear to include appetitive motivational dispositions (e.g., motives, temperament), positive self-perceptions (e.g., competence- and attachment-related perceptions), and perceived situational importance (e.g., competence valuation, class engagement). On the other hand, aversive motivational dispositions and negative cognitive representations of self and others do not appear to be associated with MAp goal involvement.

Mastery-avoidance goal involvement appears to be linked to antecedents such as negative perceptions of self and others (e.g., anxious attachment, fear of failure), entity rather than incremental theories of intelligence, reduced self-determination, and perceived situational importance.

Appetitive motive dispositions do not appear to be MAV goal antecedents.

Common antecedents of PAp goal involvement include both appetitive and aversive motivational dispositions, competence perceptions, and entity rather than incremental theories of ability. Attachment security and self-determination do not appear to be PAp goal antecedents.

Finally, PAv goal involvement appears to be linked to antecedents such as avoidance motivational dispositions, reduced competence expectations, more entity and fewer incremental beliefs about ability, and less self-determination. Appetitive motivational dispositions and attachment security do not appear to be PAv goal antecedents.

Overall, socialization processes (e.g., perceived parenting practices) were not consistently associated with the achievement goals adopted by participants. This finding should be expected because socialization processes are more likely to have direct effects on more stable individual differences (e.g., motives) than on dynamic constructs such as goals.

Consequences of 2×2 Achievement Goals

Table 1.2 summarizes consequences of 2×2 achievement goals from previous research. Given that empirical tests of the 2×2 model are in their early stages, conclusions drawn here should be interpreted with appropriate caution. Special attention should be given to the studies that experimentally manipulated participants' goals (e.g., Cury, Da Fonseca, et al., 2002; Cury, Elliot, et al., 2002; Elliot & Harackiewicz, 1996) because such manipulations provide a much stronger demonstration of the causal role theorized for these goals than do passive observation designs (particularly when data are collected at a single occasion from a single source).

Mastery-approach goals appear to be associated with the optimal set of consequences (e.g., enhanced intrinsic motivation and information processing, reduced anxiety, fewer health center visits). Strikingly, MAp goals have not been linked to superior performance on cognitive tasks. Mastery-avoidance goals were linked with a generally undesirable set of achievement processes (e.g., anxiety, disorganization, surface processing) but did not seem to be associated with undesirable outcomes (e.g., performance, health center visits). Performance-approach goals were the only goals to be positively associated with superior performance. These goals also were linked with a partial set of desirable (e.g., more absorption, competence valuation, and intrinsic motivation; less anxiety) achievement

16 Motivation, Emotion, and Psychophysiology

Table 1.1 Summary of Empirically Tested Antecedents of 2 × 2 Achievement Goals

Goal	Positive Relations	Negative Relations	Null Relations
MAp	Approach temperament (Elliot & Thrash, 2002)	Avoidance attachment dimension (link mediated by challenge construals; Elliot & Reis, 2003) <i>Self-handicapping</i> (Elliot & Church, 2003; Ommundsen, 2004*)	Anxious/ambivalent attachment (Elliot & Reis, 2003)
	Behavioral activation system (Elliot & Thrash, 2002)		Anxious attachment dimension (Elliot & Reis, 2003)
	Competence expectancy (Elliot & Church, 1997)		Avoidant attachment (Elliot & Reis, 2003)
	Competence valuation (Elliot & McGregor, 2001)		Avoidance temperament (Elliot & Thrash, 2002)
	Extraversion (Elliot & Thrash, 2002)		Behavioral inhibition system (Elliot & Thrash, 2002)
	<i>Incremental beliefs about ability</i> (Cury, Da Fonséca, et al., 2002*)		Competitiveness (Elliot & McGregor, 2001)
	Need for achievement (Elliot & McGregor, 2001; Elliot & Church, 1997; Thrash & Elliot, 2002)		Defensive pessimism (Elliot & Church, 2003)
	Perceived class engagement (Elliot & McGregor, 2001)		Entity theory of intelligence (Elliot & McGregor, 2001)
	<i>Perceived competence</i> (Cury, Da Fonséca, et al., 2002*; Ommundsen, 2004*)		<i>Fear of failure</i> (Conroy, 2004*; Conroy & Elliot, 2004*; Conroy, Elliot, & Hofer, 2003*; Elliot & Church, 1997; Elliot & McGregor, 2001; Thrash & Elliot, 2002)
	Positive emotionality (Elliot & Thrash, 2002)		Incremental theory of intelligence (Elliot & McGregor, 2001)
	Secure attachment (Elliot & Reis, 2003)		Negative emotionality (Elliot & Thrash, 2002)
	Secure versus avoidant attachment (Elliot & Reis, 2003)		Neuroticism (Elliot & Thrash, 2002)
	Self-determination (Elliot & McGregor, 2001)		Parental behavior-focused positive or negative feedback (Elliot & McGregor, 2001)
	Work mastery (Elliot & McGregor, 2001)		Parental conditional approval (Elliot & McGregor, 2001)
	MAv		Anxious attachment dimension (link mediated by threat construals and competence valuation; Elliot & Reis, 2003) Competence valuation (Elliot & McGregor, 2001) Entity theory of intelligence (Elliot & McGregor, 2001) <i>Fear of failure</i> (Conroy, 2004*; Conroy & Elliot, 2004*; Conroy et al., 2003*; Elliot & McGregor, 2001) Parental person-focused negative feedback (Elliot & McGregor, 2001) Parental worry (Elliot & McGregor, 2001) Perceived class engagement (Elliot & McGregor, 2001)
Self-determination (Elliot & McGregor, 2001)		Competitiveness (Elliot & McGregor, 2001)	
		Conditional parental approval (Elliot & McGregor, 2001)	
		Maternal person-focused positive feedback (Elliot & McGregor, 2001)	
		Need for achievement (Elliot & McGregor, 2001)	
		Parental behavior-focused positive or negative feedback (Elliot & McGregor, 2001)	
		Parental identification (Elliot & McGregor, 2001)	
		Work mastery (Elliot & McGregor, 2001)	

Table 1.1 (Continued)

Goal	Positive Relations	Negative Relations	Null Relations
PAp	Approach temperament (Elliot & Thrash, 2002)	<i>Incremental beliefs about ability</i> (Cury, Da Fonséca, et al., 2002*)	Anxious/ambivalent attachment (Elliot & Reis, 2003)
	Avoidance temperament (Elliot & Thrash, 2002)	Parental behavior-focused negative feedback (when identification is low; Elliot & McGregor, 2001)	Avoidant attachment (Elliot & Reis, 2003)
	Behavioral activation system (Elliot & Thrash, 2002)	<i>Self-handicapping</i> (Ommundsen, 2004*)	Avoidance attachment dimension (Elliot & Reis, 2003)
	Behavioral inhibition system (Elliot & Thrash, 2002)		Anxious attachment dimension (Elliot & Reis, 2003)
	Competence expectancies (Elliot & Church, 1997)		Entity theory of intelligence (Elliot & McGregor, 2001)
	Competence valuation (Elliot & McGregor, 2001)		Incremental theory of intelligence (Elliot & McGregor, 2001)
	Competitiveness (Elliot & McGregor, 2001)		Maternal person-focused positive feedback (Elliot & McGregor, 2001)
	Defensive pessimism (Elliot & Church, 2003)		Parental behavior-focused positive feedback (Elliot & McGregor, 2001)
	<i>Entity beliefs about ability</i> (Cury, Da Fonséca, et al., 2002*)		Paternal worry (Elliot & McGregor, 2001)
	Extraversion (Elliot & Thrash, 2002)		Perceived class engagement (Elliot & McGregor, 2001)
	<i>Fear of failure</i> (Conroy, 2004*; Conroy & Elliot, 2004*; Conroy et al., 2003*; Elliot & Church, 1997; Elliot & McGregor, 1999, 2001; Thrash & Elliot, 2002)		Secure attachment (Elliot & Reis, 2003)
	Maternal worry (Elliot & McGregor, 2001)		Secure versus anxious/ambivalent attachment (Elliot & Reis, 2003)
	Need for achievement (Elliot & McGregor, 2001; Elliot & Church, 1997; Thrash & Elliot, 2002)		Secure versus avoidant attachment (Elliot & Reis, 2003)
	Negative emotionality (Elliot & Thrash, 2002)		Self-determination (Elliot & McGregor, 2001)
	Neuroticism (Elliot & Thrash, 2002)		Work mastery (Elliot & McGregor, 2001)
	Parental behavior-focused negative feedback (when identification is high; Elliot & McGregor, 2001)		
	Parental conditional approval (Elliot & McGregor, 2001)		
	Paternal person-focused positive feedback (Elliot & McGregor, 2001)		
	<i>Perceived competence</i> (Cury, Da Fonséca, et al., 2002*; Ommundsen, 2004*)		
	Positive emotionality (Elliot & Thrash, 2002)		
Self-handicapping (Elliot & Church, 2003)			
PAv	Anxious/ambivalent attachment (link mediated by threat construal and competence valuation; Elliot & Reis, 2003)	Competence expectancies (Elliot & Church, 1997)	Approach temperament (Elliot & Thrash, 2002)
	Anxious attachment dimension (Elliot & Reis, 2003)	<i>Incremental beliefs about ability</i> (Cury, Da Fonséca, et al., 2002*)	Avoidant attachment (Elliot & Reis, 2003)
	Avoidance temperament (Elliot & Thrash, 2002)	<i>Perceived competence</i> (Cury, Da Fonséca, et al., 2002*; Ommundsen, 2004*)	Avoidance attachment dimension (Elliot & Reis, 2003)
	Behavioral inhibition system (Elliot & Thrash, 2002)	Self-determination (Elliot & McGregor, 2001)	Behavioral activation system (Elliot & Thrash, 2002)
	Competence valuation (Elliot & McGregor, 2001)	Secure versus anxious/ambivalent attachment (Elliot & Reis, 2003)	Competitiveness (Elliot & McGregor, 2001)
	Defensive pessimism (Elliot & Church, 2003)		Extraversion (Elliot & Thrash, 2002)
	<i>Entity beliefs about ability</i> (Cury, Da Fonséca, et al., 2002*; Ommundsen, 2004*)		Incremental theory of intelligence (Elliot & McGregor, 2001)
			Maternal conditional approval (Elliot & McGregor, 2001)

(continued)

Table 1.1 (Continued)

Goal	Positive Relations	Negative Relations	Null Relations
PAv	Entity theory of intelligence (Elliot & McGregor, 2001) <i>Fear of failure</i> (Conroy, 2004*; Conroy & Elliot, 2004*; Conroy et al., 2003*; Elliot & Church, 1997; Elliot & McGregor, 1999, 2001; Thrash & Elliot, 2002) Parental person-focused negative feedback (Elliot & McGregor, 2001) Maternal worry (Elliot & McGregor, 2001) Negative emotionality (Elliot & Thrash, 2002) Neuroticism (Elliot & Thrash, 2002) <i>Self-handicapping</i> (Elliot & Church, 2003; Ommundsen, 2004*)		Need for achievement (Elliot & McGregor, 2001; Elliot & Church, 1997; Thrash & Elliot, 2002) Parental behavior-focused positive or negative feedback (Elliot & McGregor, 2001) Paternal conditional approval (Elliot & McGregor, 2001) Parental identification (Elliot & McGregor, 2001) Parental person-focused positive feedback (Elliot & McGregor, 2001) Paternal worry (Elliot & McGregor, 2001) Perceived class engagement (Elliot & McGregor, 2001) Positive emotionality (Elliot & Thrash, 2002) Secure attachment (Elliot & Reis, 2003) Secure versus avoidant attachment (Elliot & Reis, 2003) Work mastery (Elliot & McGregor, 2001)

Note: Antecedent variables are listed in alphabetical order. *Italicized* variables have been documented in sport contexts by the studies marked with an asterisk.

processes and were not associated with any undesirable achievement processes. Finally, PAv goals were consistently linked with the most undesirable achievement processes and outcomes of all four goals. Based on these results, MAp goals appear to be optimal, PAv goals appear to be dysfunctional, and both PAp and MAv goals are neither entirely optimal nor entirely dysfunctional (with the former appearing to be more optimal than the latter).

Critical Issues Regarding 2 × 2

Achievement Goals

Elliot and colleagues (e.g., Elliot, 1997, 1999; Elliot & Conroy, 2005; Elliot & Thrash, 2001, 2002) argue that on both theoretical and empirical grounds, the 2 × 2 model of achievement goals has demonstrated promise for enhancing understanding of achievement motivation. Nevertheless, research on this model in sport contexts has been limited, and further research is required to demonstrate its veracity and potential. Research linking goals, particularly avoidance goals, to hypothesized patterns of antecedents and consequences in sport would be a useful first step in this process. Following are some other issues that will need to be addressed in future research.

Controversy still exists over whether the approach-avoidance distinction merely represents differences in per-

ceptions of competence, especially for the performance dimension. That is, do perceptions of competence moderate relations between goals and various consequences, and if so, would it not be simpler to omit the valence dimension from the goals model? From a conceptual standpoint, the hierarchical model of achievement motivation frames perceptions of competence as antecedents of achievement goals because high perceptions of competence orient individuals toward the possibility of success and low perceptions of competence orient individuals toward the possibility of failure (Elliot, 2005). From an empirical perspective, Elliot and Harackiewicz (1996) have found that perceived competence failed to moderate the effects of any of their tripartite goal manipulation contrasts (i.e., mastery, PAp, PAv) on intrinsic motivation, and all of their main effects for the goal manipulations remained significant with the moderator terms in the model. Based on such evidence, it is argued by Elliot and colleagues that the valence dimension of achievement goals does not appear to be a proxy for perceived competence on either conceptual or empirical grounds.

This approach does not rule out the possibility that individual differences in goal antecedents (e.g., achievement motives) may moderate the effects of the goals on various consequences. For example, PAp goal involvement has been linked to both appetitive and aversive achievement motives (need for achievement and fear of failure, respectively). It

Table 1.2 Summary of Empirically Tested Consequences of 2 × 2 Achievement Goals

Goal	Positive Relations	Negative Relations	Null Relations
MAp	<p><i>Competence valuation</i> (compared to PAv goal condition: Cury, Elliot, et al., 2002*; compared to PAp & PAv goal condition: Cury et al., 2003*)</p> <p>Deep processing (Elliot & McGregor, 2001)</p> <p>Intrinsic motivation (especially in combination with low PAp goals; Elliot & Harackiewicz, 1996)</p> <p>Long-term retention (Elliot & McGregor, 1999)</p> <p><i>Posttask free-choice behavior</i> (Cury, Elliot, et al., 2002*, 2003*)</p> <p><i>Task absorption</i> (compared to PAv goal condition; Cury, Elliot, et al., 2002*)</p>	<p>Health center visits (Elliot & McGregor, 2001)</p> <p><i>State anxiety</i> (compared to PAv goal condition: Cury, Elliot, et al., 2002*; compared to PAp & PAv goal condition: Cury et al., 2003*)</p>	<p>Disorganization (Elliot & McGregor, 2001)</p> <p>Emotionality (Elliot & McGregor, 2001)</p> <p>Graded performance (Elliot & Church, 1997; Elliot & McGregor, 1999, 2001)</p> <p>State test anxiety (Elliot & McGregor, 1999, 2001)</p> <p>Surface processing (Elliot & McGregor, 2001)</p> <p>Worry (Elliot & McGregor, 2001)</p>
MAv	<p>Disorganization (Elliot & McGregor, 2001)</p> <p>Emotionality (Elliot & McGregor, 2001)</p> <p>State test anxiety (Elliot & McGregor, 2001)</p> <p>Surface processing (Elliot & McGregor, 2001)</p> <p>Worry (Elliot & McGregor, 2001)</p>	None reported to date	<p>Deep processing (Elliot & McGregor, 2001)</p> <p>Exam performance (Elliot & McGregor, 2001)</p> <p>Health center visits (Elliot & McGregor, 2001)</p>
PAP	<p><i>Competence valuation</i> (compared to PAv goal condition; Cury, Elliot, et al., 2002*, 2003*)</p> <p>Graded performance, especially in combination with low MAp goals (Elliot & McGregor, 1999, 2001)</p> <p>Intrinsic motivation (compared to PAv; Elliot & Harackiewicz, 1996)</p> <p><i>Posttask free-choice behavior</i> (compared to PAv goal condition; Cury, Elliot, et al., 2002*, 2003*)</p> <p><i>Task absorption</i> (compared to PAv goal condition; Cury, Elliot, et al., 2002*)</p> <p>Surface processing (Elliot & McGregor, 2001)</p>	<p><i>State anxiety</i> (compared to PAv goal condition; Cury, Elliot, et al., 2002*, 2003*)</p>	<p>Deep processing (Elliot & McGregor, 2001)</p> <p>Disorganization (Elliot & McGregor, 2001)</p> <p>Emotionality (Elliot & McGregor, 1999, 2001)</p> <p>Exam performance (Elliot & McGregor, 2001)</p> <p>Health center visits (Elliot & McGregor, 2001)</p> <p>Intrinsic motivation (compared to MAp; Elliot & Harackiewicz, 1996)</p> <p>Long-term retention (Elliot & McGregor, 1999)</p> <p>State test anxiety (Elliot & McGregor, 1999, 2001)</p> <p><i>State anxiety</i> (compared to MAp goal condition; Cury, Elliot, et al., 2002*, 2003*)</p> <p>Surface processing (Elliot & McGregor, 2001)</p> <p>Worry (Elliot & McGregor, 1999, 2001)</p>
PAv	<p>Disorganization (Elliot & McGregor, 2001)</p> <p>Emotionality (Elliot & McGregor, 1999, 2001)</p> <p>Health center visits, especially in combination with low MAp goals (Elliot & McGregor, 2001)</p> <p><i>State anxiety</i> (compared to MAp and PAp goal conditions; Cury et al., 2002*, 2003*)</p> <p>State test anxiety (Elliot & McGregor, 1999, 2001)</p> <p>Surface processing (Elliot & McGregor, 2001)</p> <p>Worry (Elliot & McGregor, 1999, 2001)</p>	<p>Change in GPA (Elliot & Church, 2003)</p> <p><i>Competence valuation</i> (compared to MAp and PAp goal conditions; Cury, Elliot, et al., 2002*, 2003*)</p> <p>Deep processing (Elliot & McGregor, 2001)</p> <p>Graded performance (Elliot & McGregor, 1999, 2001, Elliot & Church, 2003)</p> <p>Intrinsic motivation (Elliot & Harackiewicz, 1996)</p> <p>Long-term retention (Elliot & McGregor, 1999)</p> <p><i>Posttask free-choice behavior</i> (compared to MAp and PAp goal conditions; Cury, Elliot, et al., 2002b, 2003)</p> <p><i>Task absorption</i> (compared to MAp and PAp goal conditions; Cury, Elliot, et al., 2002*)</p>	None reported to date

Note: Antecedent variables are listed in alphabetical order. *Italicized* variables have been documented in sport contexts by the studies marked with an asterisk.

is possible that PAp goals energized by the appetitive motive may yield different consequences than would PAp goals that are energized by the aversive motive. A three-way Goal \times Motive \times Feedback interaction also is conceivable, as PAp goals may change differentially for individuals with different motive dispositions following failure/success feedback. These cross-level interaction hypotheses are open empirical questions.

Next, it will be important to capture the dynamic features of the goals construct to strengthen claims about the causal effects of goals on achievement processes and outcomes. Some argue that relying on dispositional conceptualizations of goals is inappropriate in the hierarchical model of achievement motivation, but researchers can vary the temporal resolution of their goal assessments. Some studies may assess goals for an event and track processes and outcomes over the course of the event to use in prospective prediction models (e.g., using preseason goals to predict changes in relevant outcomes over the course of the season). Other studies may assess goals, processes, and outcomes on more of a moment-to-moment basis (even though this is difficult to do, as we noted earlier) to capture dynamic links between goals and their consequences (e.g., using daily goals to predict daily fluctuations in relevant outcomes over the course of the season). Both approaches will be valuable provided that the temporal resolution of the goal assessment is clear when interpreting the results.

Finally, whereas a great deal of data has accumulated about individual difference antecedents of different achievement goals, relatively little is known about the situational factors that antecede 2×2 goals. Church, Elliot, and Gable (2001) reported differences in classroom environments that predicted students' tripartite goals. There are few published studies regarding links between situational characteristics and 2×2 goal involvement in sport, except research based on achievement goal theory investigating motivational climate that indirectly informs performance and mastery achievement striving (for an exception see Conroy, Kaye, & Coatsworth, 2006).

REFLECTIONS ON THE HIERARCHICAL MODEL AND ACHIEVEMENT GOAL THEORY

The introduction of the hierarchical model has challenged many of the tenets and underlying assumptions of what may be referred to as traditional achievement goal theory. One of the most important challenges and differences between the perspectives pertains to the energization of the motivational process. As we have seen, the hierarchical

model differentiates goals based on both the definition of competence (a similarity with the dichotomous model) and their valence or the degree to which the focal outcome is pleasant or unpleasant (a difference between the models). The argument is that achievement goals should consider both the definition of competence and the valence of the striving. However, it may be argued that in the hierarchical model we seem to be defining achievement goals as discrete goals based on a definition of competence and achievement strategies aimed at fulfilling some particular objective. In the hierarchical model, goals are midlevel constructs that mediate the effects of a host of individual differences (e.g., achievement motives, self-perceptions, relational variables, demographic characteristics, neurophysiologic predispositions) and situational factors (e.g., norm-based evaluation) on specific motivated behaviors and serve as proximal predictors of achievement-related processes and outcomes (Elliot, 1999). But it is the appetitive (approach) and aversive (avoidance) valence of competence striving that energizes the motivational process. It is assumed that the goals are the manifestation of needs, or at least the "motivational surrogates," as Elliot and Church (1997) state of the needs of achievement motivation (approach) and the fear of failure (avoidance; Kaplan & Maehr, 2002). This suggests that achievement goals represent approaches to self-regulation based on satisfying approach and avoidance needs that are evoked by situational cues. Achievement goals arise from affect-based objectives, at least in part, in the hierarchical model.

In traditional achievement goal theory, it is the goals themselves that are the critical determinants of achievement cognition, affect, and behavior. It is the goals that give meaning to the investment of personal resources because they reflect the purposes underlying achievement actions in achievement contexts. Once endorsed, the goal defines an integrated pattern of beliefs, attributions, and affect that underlie approach and avoidance strategies, different levels of engagement, and the different responses to achievement outcomes (Duda & Hall, 2001; Kaplan & Maehr, 2002). The way an individual interprets his or her performance can be understood in terms of what an individual considers to be important in a particular context and his or her beliefs about what it takes to be successful in that situation. Achievement goals refer to achievement-oriented or achievement-directed behavior where success is the goal. Nicholls (1989) argued that these beliefs and perceptions form a personal theory of achievement in the activity that drives the motivation process, and that a conceptually coherent pattern of relationships should therefore exist

between an individual's achievement goals (the subjective meaning of success) and his or her achievement striving. In the achievement goal approach, it is not how one defines competence with its attendant valence; it is how one defines success and the meaning of developing or demonstrating competence. Thus, the hierarchical approach presents energizing constructs that are different. The conceptual argument is whether we need "needs" to explain the energization of the motivational equation, or whether we can accept a cognitive theory of motivation that focuses on thoughts and perceptions as energizing motivated behavior (Maehr, 1987). We need more empirical investigation of the conceptual energizing constructs, and their roles, underlying achievement striving in achievement contexts to better understand the motivational equation.

One other conceptual difference has emerged from the development of measures for the hierarchical model of goals, especially of the 2×2 model in sport. Duda (2005) has argued that because the interrelationships between the performance-approach, mastery-avoidance, and performance-avoidance goals is low to moderate (e.g., Conroy et al., 2003), and only the mastery-approach and performance-avoidance goals have demonstrated independence, this creates conceptual problems for the hierarchical approach. How does this relate to the evidence that task and ego goals have been demonstrated to be orthogonal in the dichotomous achievement goal approach, at least from the Maehr and Nicholls approaches (e.g., Maehr & Braskamp, 1986; Maehr & Nicholls, 1980; Nicholls, 1989)? More research is clearly needed to explore this issue as proponents of the 2×2 model argue that limited positive correlations should be expected between goals that share either a definition of competence or a valence. However, this raises interesting questions: What are the expected relationships between the goals? Should they demonstrate greater independence to be recognized as extending the range of goals?

In addition, there is evidence that the hierarchical model may have different assumptions underlying performance-approach and avoidance goals. Performance-approach tendencies may be based on demonstrating normative ability and defining competence in normative terms, but recent research has suggested that performance-avoidance may be based on one of three facets: impression management, or "saving face" (Skaalvik, 1997; Skaalvik & Valas, 1994); a fear of failure (Elliot & Church, 1997); or a focus on avoiding demonstrating low ability (Middleton & Midgley, 1997). In an interesting study investigating the measurement technology underlying the hierarchical model, Smith,

Duda, Allen, and Hall (2002) wished to determine whether the different measures used were measuring the same constructs. They found that impression management (Skaalvik, 1997) explained the most variance (40%), with fear of failure (Elliot & Church, 1997) and avoiding demonstrating low ability (Middleton & Midgley, 1997) explaining only 9.4% and 8% of the variance, respectively. It would seem important for future research to clarify the conceptual underpinnings of performance-avoidance: What parts are played by fearing failure, avoiding demonstrating low ability, and protecting self-worth? Given the findings of Smith and colleagues, perhaps it is more important to performance-avoiding people to protect self-esteem rather than be motivated to avoid failing. What is the role the protection of self-worth plays? When individuals begin to question their ability to present a positive sense of self, are they more likely to favor avoidance strategies?

Similar arguments may be made for mastery-avoidance goals. These goals involve focusing on not making mistakes or not doing worse than a previous performance. They combine a desirable definition of competence with an undesirable focus on avoiding incompetence. It must be confessed that little is known of these goals as yet. With the traditional achievement goal approach, it is conceptually inconsistent to have a mastery- or task-involved goal with a focus on avoiding appearing incompetent. Traditional achievement goal theory argues that because dispositional orientations are assumed to be orthogonal, the individual may also have an ego-involving orientation, and it is this that may affect whether the individual is also concerned with the demonstration of incompetence. It may be that mastery-avoidance individuals have both ego and task goals; when the context is perceived to evoke ego-involving criteria, they may wish to avoid demonstrating incompetence. However, this needs to be investigated empirically; only when we have data informing theory will we be able to determine the energizing mechanisms behind achievement striving.

This brings us to a further point of conceptual departure between the two approaches: In achievement goal theory, the orientations are considered orthogonal; that is, one can have both orientations to one degree or another. For example, Duda (1988) examined the relationship between achievement goals and specific motivated behaviors such as persistence and behavioral intensity. Participants were classified into four groups, and the findings showed that being high in task orientation (regardless of ego orientation) meant the participants persisted longer and devoted more time to practice. Similar findings were found by Walling and Duda (1995). High-task-oriented

students were significantly more likely to believe that success is achieved through intrinsic interest in the activity, cooperation, and high effort, and the high-task/low-ego students were the least likely to believe that success stems from learning to skillfully deceive the teacher. Roberts et al. (1996) found that the high-task groups attributed success to effort more than did low-task groups. In contrast, high-ego groups attributed success to ability more than did low-ego groups. Even elite Olympic athletes, those we would expect to exhibit high ego involvement and to succeed with such a profile (Hardy, 1997), seem to function better when high ego involvement is tempered with high task involvement (e.g., Pensgaard & Roberts, 2002, 2003). This was also true of young elite soccer players (Lemyre et al., 2002).

Being both task- and ego-oriented is conceptually coherent with achievement goal theory. It may well be that being high in both task and ego involvement is valuable in the learning process because it provides multiple sources of competence information to the athlete. Swain and Hardwood (1996) have suggested that an individual with both goal orientations cannot fail to be satisfied. They argue that when one goal is not attained, the second goal can be achieved. Duda (1988) asserted a similar notion and states that persistence may be increased with both orientations because a person has two sources of determining success. For an athlete, being both task- and ego-involved in an activity is both intuitively plausible and conceptually consistent with achievement goal theory. Thus, an athlete may be very ego-involved in a sport when competing, but become very task-involved when training in the same sport. Further, an athlete may be ego-involved in competition, but then when the outcome is certain, or for some other reason, become task-involved before the game or event is completed. We must not forget that task and ego involvement are dynamic constructs and subject to ebb and flow as the athlete plays the game or continues with the activity (Roberts, 1992, 2001). It is not whether an individual should be either task- or ego-involved, but rather when being task-involved or ego-involved is appropriate. This shift of involvement is an important issue to investigate, as it may reflect on intervention strategies for enhancing motivation.

THE FUTURE OF ACHIEVEMENT GOALS

We have discussed the nature of achievement goals as being situated within situation and self-cognitive schemas, the traditional achievement goal approach, or being situated within affect-based incentives (at least partially) in the

hierarchical model. However, achievement goals have been based in other constructs, too.

One approach has been to use the concept of value, where goal orientations emerge from the value-laden attractiveness of an achievement context. Values are directed at desirable end states of behavior, and goals are seen as objectives (Bandura, 1986; Eccles & Harold, 1991; Ford, 1992; Kaplan & Maehr, 2002). As an example, Eccles and her colleagues (Eccles & Harold, 1991; Wigfield & Eccles, 1992) suggest that achievement goals emerge from values and expectancies. Thus, mastery goals emerge from intrinsic task values and a belief in one's competence to do the task, whereas performance goals emerge from the utility value of the task for success in an important domain and the expectancy of outperforming others. The research into task value and achievement goals is promising and increasing in sport (Wiess & Ferrer-Caja, 2002), but more research is needed to develop the conceptual base of the approach in physical activity.

Goals have also been seen as "self-primers," a form of heightened self-awareness (Kaplan & Maehr, 2002). Nicholls (1984) has suggested that heightened self-awareness could make thoughts of competence salient. What is an ego goal (or performance-approach and performance-avoidance goals) may well represent a heightened awareness of the self as the person may focus on what he or she can do. However, heightened self-awareness may also affect other thoughts about oneself. Self-awareness certainly may affect ego or performance goals, especially in terms of approach and avoidance goals. It is interesting that the research into self-awareness is meaningful to achievement goal theory and may propose a fruitful line of inquiry. However, more conceptual clarification and research is needed, especially in the mastery/task achievement goal.

There are other metaphors that may guide the development of achievement goals. It will be the business of future research to attempt to combine the various perspectives into a parsimonious explanation of how contexts and individual differences forge achievement goals.

The foregoing reflects one major trend in achievement goal research: the attempt to converge achievement goals into a larger, more parsimonious framework. As discussed earlier, Elliot and colleagues (e.g., 2005) have integrated achievement goal theory with more traditional concepts of achievement needs. Kaplan and Maehr (2002) have argued for more general processes of meaning construction that involve the self and the context in a broader framework. This trend is welcome, as the development of specific

achievement goals should be based on a sound conceptual framework.

Still other achievement goals have been identified. Initially pursued (e.g., Maehr & Braskamp, 1986), they fell into disuse as the parsimony of the dichotomous interpretation was demonstrated over time. One early goal was termed a social goal, referring to social approval and/or interpersonal reasons for engaging in achievement tasks (e.g., Ewing, 1981; Maehr & Nicholls, 1980). But little attention has been given to social goals in physical activity in recent times. Another early goal involved extrinsic orientation, where the individual strove to achieve an external criterion of success (e.g., Maehr & Braskamp, 1986). But little attention has been paid to extrinsic goals, except within the framework of other motivational conceptualizations (e.g., Deci & Ryan, 1985, 2002). And qualitative research has identified other goals in addition to ego and task goals (e.g., Dowson & McInerney, 2001). It may well be that future research, particularly qualitative research, may identify and demonstrate how these goals may further our understanding of the origin and development of achievement goals and their behavioral implications.

This reflects a second trend in achievement goal research, that of developing other achievement goals. In particular, there have been arguments in favor of recognizing different criteria of engagement in achievement striving, and that these have their own patterns of consequences. We have discussed the approach and avoidance arguments of Elliot and colleagues that began this trend, but it has also been suggested that we may be able to bifurcate the current mastery (task) definitions of competence into separate categories for absolute (e.g., Did I perform this task as well as this task can be performed?) and intrapersonal (e.g., Did I perform this task better than I did previously?) definitions of competence (Elliot, 1999; Elliot & Conroy, 2005; Harwood, Hardy, & Swain, 2000). The same may be argued for other goals, such as social goals and extrinsic goals, which may also be partitioned into approach and avoidance categories (Dowson & McInerney, 2001). Thus, for example, social goals can be categorized as either approach, in that one can demonstrate competence to gain friends (“If I play well, my friends will like me”), or avoidance, in that competence, or the expectation of failing to demonstrate competence, will lead to social castigation (“If I don’t play well, my father shouts at me”). Thus, the trend begun by Elliot continues. However, Elliot and Conroy (2005) argue that any expansions of the achievement goal construct need to relate to existing dimensions of achievement goals (i.e., definitions of competence, valence of

strivings) or provide a rationale for incorporating new dimensions of competence. But researchers need to be careful not to add unnecessary complexity to the parsimonious interpretation of achievement goals without a concomitant increase in conceptual integration.

CONCLUSION

There are two important conclusions we may draw. First, performance goals (however they have been defined and conceptualized) are more likely to lead to maladaptive achievement behavior, especially when participants perceive competence to be low, are concerned with failure, or are invested in protecting self-worth. In such circumstances, the evidence is quite clear: Motivation ebbs, task investment is low, persistence is low, performance suffers, satisfaction and enjoyment are lower, and participants feel more negatively about themselves and the achievement context. But this does not mean that ego-oriented goals are always negative; in some situations for some people they are positive. A performance-approach goal (e.g., Elliot, 1997) or an ego (or performance) goal with high perception of competence (e.g., Pensgaard & Roberts, 2002) is facilitative of achievement and functions as a motivating construct. But even then, performance (ego) goals are more fragile and can lead to maladaptive achievement striving as context information is processed (Dweck & Leggett, 1988; Midgley, Kaplan, & Middleton, 2001).

Second, the research is unequivocal that task (mastery) goals are adaptive. When task-involved participants perceive mastery criteria in the context, motivation is optimized, participants are invested in the task, they persist longer, performance is higher, satisfaction and enjoyment are higher, and participants feel more positively about themselves and the task. Being task-involved has been consistently associated with desirable cognitive and affective responses. The research is now clear that if we wish to optimize motivation in physical activity we ought to promote task involvement. It does not matter whether we do it through enhancing socialization experiences so that the individual has a task goal orientation and is naturally task-involved (Nicholls, 1989), or we structure the physical activity context to be more task-involving (e.g., Treasure & Roberts, 1995, 2001). The evidence has led many sport psychologists to conclude that task involvement better enables learners to manage motivation in the sport experience. Consequently, they have urged those involved in pedagogy to promote task involvement as well as develop mastery-oriented environments to facilitate effective motivational

patterns for all participants, even if the individuals are high in ego orientation (e.g., Brunel, 2000; Duda, 1992; Hall & Kerr, 1997; Pensgaard & Roberts, 2002; Roberts, 2001; Roberts et al., 1997; Theeboom et al., 1995; Treasure & Roberts, 1995).

However, an important assumption of achievement goal theory from the Nicholls perspective is that the goals are orthogonal; that is, being task- or ego-involved is independent, which means that one can be high or low in each or in both orientations at the same time. The findings of the research discussed here suggest that rather than depressing a high-ego state of involvement and replacing it with a high-task state of involvement, as has been advocated by many researchers, we should concentrate on enhancing the task-involved state. This finding suggests that we do not have to explicitly depress ego involvement to maintain motivation; rather, we should enhance task involvement to moderate the potentially debilitating effects of a high-ego state of involvement.

It may well be that always fostering task-involving criteria may not satisfy all individuals in the sport experience, especially elite athletes (Hardy, 1997). It may well be that athletes at all levels of competition would benefit from being *both* task- and ego-involved. Being both task- and ego-involved is conceptually coherent with achievement goal theory and may be valuable in the learning process because it provides multiple sources of competence information to the athlete. Encouraging individuals to be task-involved in achievement tasks has been demonstrated to optimize motivation, even with elite athletes, but we need not be blind to the fact that some athletes do favor and are motivated by ego-involving criteria. The task for the investigator and the practitioner is to determine when task- or ego-involving criteria of success and failure are motivational. Only further research will verify this hypothesis.

As is clear from the foregoing, it may be concluded that where achievement goals come from, how they are operationalized, and how they are measured are areas with rich research traditions. We may ask: What are the key constructs underlying the motivational equation? Of all the motivational paradigms that are extant, which of the constructs is central to understanding motivation? As Duda and Hall (2001) have suggested, perhaps it is time to begin to seriously attempt to integrate some key constructs and untangle the motivation puzzle, as we and some others have attempted (e.g., Kaplan & Maehr, 2002). Are achievement goals the manifestation of needs, values, the valence of outcomes, or cognitive schemas driving how one sees one's world and responds to the environmental cues with achieve-

ment striving? What gives meaning to achievement striving? In sport and physical activity, we need to address these questions and expand our conceptual understanding of motivational processes and achievement behaviors so that we can intervene effectively to enhance motivation and make the sport and physical activity context enjoyable and satisfying for all.

REFERENCES

- Aguinis, H., & Stone-Romero, E. F. (1997). Methodological artifacts in moderated multiple regression and their effects on statistical power. *Journal of Applied Psychology, 82*, 192–206.
- Ames, C. (1984a). Competitive, cooperative, and individualistic goal structures: A cognitive-motivational analysis. In C. Ames & R. Ames (Eds.), *Research on motivation in education: Vol. 1. Student motivation* (pp. 117–208). New York: Academic Press.
- Ames, C. (1984b). Conceptions of motivation within competitive and noncompetitive goal structures. In R. Schwarzer (Ed.), *Self-related cognitions in anxiety and motivation* (pp. 205–241). Hillsdale, NJ: Erlbaum.
- Ames, C. (1992a). Achievement goals and the classroom motivational climate. In D. H. Schunk & J. L. Meece (Eds.), *Student perceptions in the classroom* (pp. 327–348). Hillsdale, NJ: Erlbaum.
- Ames, C. (1992b). Achievement goals, motivational climate, and motivational processes. In G. C. Roberts (Ed.), *Motivation in sport and exercise* (pp. 161–176): Champaign, IL: Human Kinetics.
- Ames, C. (1992c). Classrooms: Goals, structures, and student motivation. *Journal of Educational Psychology, 84*, 261–271.
- Ames, C., & Archer, J. (1988). Achievement goals in the classroom: Students' learning strategies and motivation processes. *Journal of Educational Psychology, 80*, 260–267.
- Bandura, A. (1986). *Social foundation of thought and action: A social cognitive theory*. Englewood Cliffs, NJ: Prentice-Hall.
- Biddle, S., Akande, A., Vlachopoulos, S., & Fox, K. (1996). Towards an understanding of children's motivation for physical activity: Achievement goal orientations, beliefs about sport success, and sport emotion in Zimbabwean children. *Psychology and Health, 12*, 49–55.
- Boyd, M. P. (1990). *The effects of participation orientation and success-failure on post-competitive affect in young adults*. Unpublished dissertation, University of Southern California, Los Angeles.
- Brunel, P. (2000). Achievement motivation: Toward interactive effects of dispositional and situational variables on motivation and social cognition. *Habilitation a diriger les recherches*. France: University of Limoges Press.

- Chi, L. (1994). *The prediction of achievement related cognitions and behaviors in the physical activity domain: A test of the theories of goal perspectives and self-efficacy*. Unpublished doctoral dissertation, Purdue University, West Lafayette, IN.
- Church, M. A., Elliot, A. J., & Gable, S. L. (2001). Perceptions of classroom environment, achievement goals, and achievement outcomes. *Journal of Educational Psychology, 93*, 43–54.
- Cohn, P. J. (1990). An exploratory study on sources of stress and athlete burn out in youth golf. *Sport Psychologist, 4*, 95–106.
- Conroy, D. E. (2004). The unique psychological meanings of multidimensional fears of failing. *Journal of Sport and Exercise Psychology, 26*, 484–491.
- Conroy, D. E., & Elliot, A. J. (2004). Fear of failure and achievement goals in sport: Addressing the issue of the chicken and the egg. *Anxiety, Stress, and Coping, 17*, 271–285.
- Conroy, D. E., Elliot, A. J., & Hofer, S. M. (2003). A 2 × 2 Achievement Goals Questionnaire for Sport: Evidence for factorial invariance, temporal stability, and external validity. *Journal of Sport and Exercise Psychology, 25*, 456–476.
- Conroy, D. E., Kaye, M. P., & Coatsworth, J. D. (2006). Coaching climates and the destructive effects of mastery-avoidance achievement goals on situational motivation. *Journal of Sport and Exercise Psychology, 28*, 69–92.
- Cury, F., Biddle, S., Famose, J. P., Goudas, M., Sarrazin, P., & Durand, M. (1996). Personal and situational factors influencing intrinsic interest of adolescent girls in physical education: A structural equation modeling analysis. *Educational Psychology, 16*(3), 305–314.
- Cury, F., Biddle, S. J. H., Sarrazin, P., & Famose, J. P. (1997). Achievement goals and perceived ability predict investment in learning a sport task. *British Journal of Educational Psychology, 67*(3), 293–309.
- Cury, F., Da Fonséca, D., Rufo, M., Peres, C., & Sarrazin, P. (2003). The trichotomous model and investment in learning to prepare for a sport test: A mediational analysis. *British Journal of Educational Psychology, 73*, 529–543.
- Cury, F., Da Fonséca, D., Rufo, M., & Sarrazin, P. (2002). Perceptions of competence, implicit theory of ability, perception of motivational climate, and achievement goals: A test of the trichotomous conceptualization of endorsement of achievement motivation in the physical education setting. *Perceptual and Motor Skills, 95*, 233–244.
- Cury, F., Elliot, A., Sarrazin, P., Da Fonséca, D., & Rufo, M. (2002). The trichotomous achievement goal model and intrinsic motivation: A sequential mediational analysis. *Journal of Experimental Social Psychology, 38*, 473–481.
- Cury, F., & Sarrazin, P. (1998). Achievement motivation and learning behaviors in a sport task. *Journal of Sport and Exercise Psychology, 20*, S11.
- Cury, F., Sarrazin, P., & Famose, J. P. (1997). Achievement goals, perceived ability and active search for information. In *European Yearbook of Sport Psychology* (Vol. 1, pp. 167–183). Sank Augustin, Germany: Sank Augustin.
- deCharms, R. (1976). *Enhancing motivation: Change in the classroom*. New York: Irvington.
- deCharms, R. (1984). Motivation enhancement in educational settings. In R. Ames & C. Ames (Eds.), *Research on motivation in education* (Vol. 2, pp. 275–310). New York: Academic Press.
- Deci, E. L., & Ryan, R. M. (1985). *Intrinsic motivation and self-determination in human behavior*. New York: Plenum Press.
- Deci, E. L., & Ryan, R. M. (2002). *Handbook of self-determination research*. Rochester, NY: University of Rochester Press.
- Dennett, D. C. (1978). *Brainstorms: Philosophical essays on mind and psychology*. Montgomery, VT: Bradford.
- Dowson, M., & McInerney, D. M. (2001). Psychological parameters of students' social and work avoidance goals: A qualitative analysis. *Journal of Educational Psychology, 93*, 35–42.
- Duda, J. L. (1988). The relationship between goal perspectives, persistence and behavioral intensity among male and female recreational sport participants. *Leisure Sciences, 10*(2), 95–106.
- Duda, J. L. (1989). Relationship between task and ego orientation and the perceived purpose of sport among high school athletes. *Journal of Sport and Exercise Psychology, 11*(3), 318–335.
- Duda, J. L. (1992). Motivation in sport settings: A goal perspective approach. In G. C. Roberts (Ed.), *Motivation in sport and exercise* (pp. 57–91). Champaign, IL: Human Kinetics.
- Duda, J. L. (2001). Achievement goal research in sport: Pushing the boundaries and clarifying some misunderstandings. In G. C. Roberts (Ed.), *Advances in motivation in sport and exercise* (pp. 129–182). Champaign, IL: Human Kinetics.
- Duda, J. L. (2005). Motivation in sport: The relevance of competence and achievement goals. In A. J. Elliot & C. S. Dweck (Eds.), *Handbook of competence and motivation* (pp. 318–335). New York: Guilford Press.
- Duda, J. L., Chi, L., Newton, M. L., Walling, M. D., & Catley, D. (1995). Task and ego orientation and intrinsic motivation in sport. *International Journal of Sport Psychology, 26*, 40–63.
- Duda, J. L., Fox, K. R., Biddle, S. J. H., & Armstrong, N. (1992). Children's achievement goals and beliefs about success in sport. *British Journal of Educational Psychology, 62*(3), 313–323.
- Duda, J. L., & Hall, H. (2001). Achievement goal theory in sport: Recent extensions and future directions. In R. N. Singer, H. A. Hausenblas, & C. M. Janelle (Eds.), *Handbook of sport psychology* (2nd ed., pp. 417–443). New York: Wiley.
- Duda, J. L., & Nicholls, J. G. (1992). Dimensions of achievement motivation in schoolwork and sport. *Journal of Educational Psychology, 84*(3), 290–299.
- Duda, J. L., & White, S. A. (1992). Goal orientations and beliefs about the causes of sport success among elite skiers. *Sport Psychologist, 6*(4), 334–343.

- Duda, J. L., & Whitehead, J. (1998). Measurement of goal perspectives in the physical domain. In J. L. Duda (Ed.), *Advances in sport and exercise psychology measurement* (pp. 21–48). Morgantown, WV: Fitness Information Technology.
- Durand, M., Cury, F., Sarrazin, P., & Famose, J. P. (1996). Le Questionnaire du Succès en Sport: Validation Française du “Perception of Success Questionnaire.” *International Journal of Sport Psychology*, 27, 251–268.
- Dweck, C. S. (1986). Motivational processes affecting learning. *American Psychologist*, 41, 1040–1048.
- Dweck, C. S., & Leggett, E. L. (1988). A social-cognitive approach to motivation and personality. *Psychological Review*, 95(2), 256–273.
- Eccles, J. S., & Harold, R. D. (1991). Gender differences in sport involvement: Applying the Eccles expectancy-value model. *Journal of Applied Sport Psychology*, 3, 7–35.
- Elliot, A. J. (1994). *Approach and avoidance achievement goals: An intrinsic motivation analysis*. Unpublished doctoral dissertation, University of Wisconsin, Madison.
- Elliot, A. J. (1997). Integrating the “classic” and “contemporary” approaches to achievement motivation: A hierarchical model of approach and avoidance achievement motivation. In M. Maehr & P. Pintrich (Eds.), *Advances in motivation and achievement* (Vol. 10, pp. 143–179). Greenwich, CT: JAI Press.
- Elliot, A. J. (1999). Approach and avoidance motivation and achievement goals. *Educational Psychologist*, 34, 169–189.
- Elliot, A. J. (2005). A conceptual history of the achievement goal construct. In A. J. Elliot & C. S. Dweck (Eds.), *A conceptual history of the achievement goal construct* (pp. 52–72). New York: Guilford Press.
- Elliot, A. J., & Church, M. A. (1997). A hierarchical model of approach and avoidance achievement motivation. *Journal of Personality and Social Psychology*, 72, 218–232.
- Elliot, A. J., & Church, M. A. (2003). A motivational analysis of defensive pessimism and self-handicapping. *Journal of Personality*, 71, 369–396.
- Elliot, A. J., & Conroy, D. E. (2005). Beyond the dichotomous model of achievement goals in sport and exercise psychology. *Sport and Exercise Psychology Review*, 1, 17–25.
- Elliot, A. J., & Covington, M. (2001). Approach and avoidance motivation. *Educational Psychology Review*, 12, 73–92.
- Elliot, A. J., & Harackiewicz, J. M. (1996). Approach and avoidance achievement goals and intrinsic motivation: A mediational analysis. *Journal of Personality and Social Psychology*, 70, 968–980.
- Elliot, A. J., & McGregor, H. A. (1999). Test anxiety and the hierarchical model of approach and avoidance achievement motivation. *Journal of Personality and Social Psychology*, 76, 628–644.
- Elliot, A. J., & McGregor, H. A. (2001). A 2 × 2 achievement goal framework. *Journal of Personality and Social Psychology*, 80, 501–519.
- Elliot, A. J., & Reis, H. T. (2003). Attachment and exploration in adulthood. *Journal of Personality and Social Psychology*, 85, 317–331.
- Elliot, A. J., & Thrash, T. M. (2001). Achievement goals and the hierarchical model of achievement motivation. *Educational Psychology Review*, 12, 139–156.
- Elliot, A. J., & Thrash, T. M. (2002). Approach-avoidance motivation in personality: Approach and avoidance temperaments and goals. *Journal of Personality and Social Psychology*, 82, 804–818.
- Elliott, E. S., & Dweck, C. S. (1988). Goals: An approach to motivation and achievement. *Journal of Personality and Social Psychology*, 54, 5–12.
- Epstein, J. (1988). Effective schools or effective students? Dealing with diversity. In R. Haskins & B. MacRae (Eds.), *Policies for America's public schools* (pp. 89–126). Norwood, NJ: Ablex.
- Epstein, J. (1989). Family structures and student motivation: A developmental perspective. In C. Ames & R. Ames (Eds.), *Research on motivation in education* (Vol. 3, pp. 259–295). New York: Academic Press.
- Ewing, M. (1981). *Achievement orientations and sport behaviors of males and females*. Unpublished doctoral dissertation, University of Illinois, Champaign.
- Ford, M. (1992). *Motivating humans: Goals, emotions, and personal agency beliefs*. Boston: Sage.
- Freudenberger, H. J. (1980). *Burnout: The high cost of high achievement*. Garden City, NY: Anchor Press.
- Gernigon, C., d'Arripe-Longueville, F., Delignières, D., & Ninot, G. (2004). A dynamical systems perspective on goal involvement states in sport. *Journal of Sport and Exercise Psychology*, 26, 572–596.
- Gill, D. L., & Deeter, T. E. (1988). Development of the Sport Orientation Questionnaire. *Research Quarterly for Exercise and Sport*, 59, 191–202.
- Goudas, M., Biddle, S. J. H., & Fox, K. (1994). Perceived locus of causality, goal orientations, and perceived competence in school physical education classes. *British Journal of Educational Psychology*, 64(3), 453–463.
- Goudas, M., Biddle, S. J. H., Fox, K., & Underwood, M. (1995). It ain't what you do, it's the way you do it! Teaching style affects children's motivation in track and field lessons. *Sport Psychologist*, 9, 254–264.
- Gould, D. (1996). Personal motivation gone awry: Burnout in competitive athletes. *Quest*, 48, 275–289.
- Gould, D., Tuffey, S., Udry, E., & Loehr, J. (1996). Burnout in competitive junior tennis players: Pt. II. Qualitative analysis. *Sport Psychologist*, 10, 341–366.
- Gould, D., Udry, E., Tuffey, S., & Loehr, J. (1996). Burnout in competitive junior tennis players: Pt. I. A quantitative psychological assessment. *Sport Psychologist*, 10, 322–340.

- Guivernau, M., & Duda, J. L. (1995). Psychometric properties of a Spanish version of the Task and Ego Orientation in Sport Questionnaire (TEOSQ) and beliefs about the causes of success inventory. *Revista de Psicologia del Deporte*, 5, 31–51.
- Hagger, M. S., & Chatzisarantis, N. (in press). *Self-determination theory in sport and exercise*. Champaign, IL: Human Kinetics.
- Hall, H. K., & Kerr, A. W. (1997). Motivational antecedents of precompetitive anxiety in youth sport. *Sport Psychologist*, 11, 24–42.
- Hall, H. K., Kerr, A. W., & Matthews, J. (1998). Precompetitive anxiety in sport: The contribution of achievement goals and perfectionism. *Journal of Sport and Exercise Psychology*, 20, 194–217.
- Hardy, L. (1997). The Coleman Roberts Griffith address: Three myths about applied consultancy work. *Journal of Applied Sport Psychology*, 9, 277–294.
- Harwood, C., & Hardy, L. (2001). Persistence and effort in moving achievement goal research forward: A response to Treasure and colleagues. *Journal of Sport and Exercise Psychology*, 23, 330–345.
- Harwood, C., Hardy, L., & Swain, A. (2000). Achievement goals in sport: A critique of conceptual and measurement issues. *Journal of Sport and Exercise Psychology*, 22, 235–255.
- Harwood, C., & Swain, A. (1998). Antecedents of pre-competition achievement goals in elite junior tennis players. *Journal of Sport Sciences*, 16, 357–371.
- Hom, H. L., Duda, J. L., & Miller, A. (1993). Correlates of goal orientations among young athletes. *Pediatric Exercise Science*, 5(2), 168–176.
- Jackson, S., & Roberts, G. C. (1992). Positive performance states of athletes: Toward a conceptual understanding of peak performance. *Sport Psychologist*, 6, 156–171.
- Kaplan, A., & Maehr, M. (2002). Adolescents' achievement goals: Situating motivation in socio-cultural contexts. In T. Urdan & F. Pajars (Eds.), *Adolescence and education: Vol. 2. Academic motivation of adolescents* (pp. 125–167). Greenwich, CT: Information Age Publishing.
- Kavussanu, M., & Ntoumanis, N. (2003). Participation in sport and moral functioning: Does ego orientation mediate their relationship? *Journal of Sport and Exercise Psychology*, 25, 1–18.
- Kavussanu, M., & Roberts, G. C. (1996). Motivation in physical activity contexts: The relationship of perceived motivational climate to intrinsic motivation and self-efficacy. *Journal of Sport and Exercise Psychology*, 18(3), 264–280.
- Kavussanu, M., & Roberts, G. C. (2001). Moral functioning in sport: An achievement goal perspective. *Journal of Sport and Exercise Psychology*, 23, 37–54.
- Kavussanu, M., Roberts, G. C., & Ntoumanis, N. (2002). Contextual influences on moral functioning of college basketball players. *Sport Psychologist*, 16, 347–367.
- Kuczka, K. K., & Treasure, D. C. (2005). Self-handicapping in competitive sport: Influence of the motivational climate, self-efficacy, and perceived importance. *Psychology of Sport and Exercise*, 6, 539–550.
- Kuhl, J. (1986). Motivation and information processing: A new look at decision making, dynamic change, and action control. In R. M. Sorrentino & E. Higgins (Eds.), *Handbook of motivation and cognition: Foundations of social behavior* (pp. 403–434). New York: Guilford Press.
- Lemyre, P.-N. (2005). *Determinants of burnout in elite athletes: A multidimensional perspective*. Oslo Norway: Norwegian University of Sport Science.
- Lemyre, P.-N., Roberts, G. C., & Ommundsen, Y. (2002). Achievement goal orientations, perceived ability, and sportspersonship in youth soccer. *Journal of Applied Sport Psychology*, 14, 120–136.
- Lemyre, P.-N., Roberts, G. C., Ommundsen, Y., & Miller, B. (2001). Sportspersonship in soccer. In A. Papaioanou, M. Goudas, & Y. Theodorakis (Eds.), *Proceedings of the 10th World Congress of Sport Psychology* (pp. 149–151). Thessaloniki, Greece: University of Thessaloniki Press.
- Lemyre, P.-N., Roberts, G. C., Treasure, D. C., Stray-Gundersen, J., & Matt, K. (2004). Psychological and physiological determinants of overtraining and burnout in elite athletes. *Journal of Sport and Exercise Psychology*, 26, S118–S119.
- Lemyre, P.-N., Treasure, D. C., & Roberts, G. C. (2006). Influence of variability in motivation and affect on elite athlete burnout susceptibility. *Journal of Sport and Exercise Psychology*, 28(1).
- Lloyd, J., & Fox, K. (1992). Achievement goals and motivation to exercise in adolescent girls: A preliminary intervention study. *British Journal of Physical Education Research Supplement*, 11, 12–16.
- Lochbaum, M. R., & Roberts, G. C. (1993). Goal orientations and perceptions of the sport experience. *Journal of Sport and Exercise Psychology*, 15, 160–171.
- Maehr, M. L. (1987). Thoughts about motivation. In C. Ames & R. Ames (Eds.), *Research in motivation and education: Goals and cognitions* (Vol. 3, pp. 299–315). New York: Academic Press.
- Maehr, M. L., & Braskamp, L. A. (1986). *The motivation factor: A theory of personal investment*. Lexington, MA: Lexington Books/D. C. Heath.
- Maehr, M. L., & Nicholls, J. G. (1980). Culture and achievement motivation: A second look. In N. Warren (Ed.), *Studies in cross-cultural psychology* (Vol. 2, pp. 221–267). New York: Academic Press.
- Marsh, H. (1994). Sport motivation orientations: Beware of jingle-jangle fallacies. *Journal of Sport and Exercise Psychology*, 16, 365–380.
- Middleton, M. J., & Midgley, C. (1997). Avoiding the demonstration of lack of ability: An underexplored aspect of goal theory. *Journal of Educational Psychology*, 89, 710–718.

- Midgley, C., Kaplan, A., & Middleton, M. J. (2001). Performance approach goals: Good for what, for whom, under what circumstances, and at what cost? *Journal of Educational Psychology, 93*, 77–86.
- Miller, B. W., & Roberts, G. C. (2003). The effect of motivational climate on determinants of cheating among competitive Norwegian youth football players. In E. Müller, H. Schwameder, G. Zallinger, & V. Fastenbauer (Eds.), *Proceedings of the 8th Annual Congress of the European College of Sport Science* (pp. 311–312). Salzburg, Austria: University of Salzburg Press.
- Miller, B. W., Roberts, G. C., & Ommundsen, Y. (2004). Effect of motivational climate on sportspersonship among young male and female football players. *Scandinavian Journal of Medicine and Science in Sports, 14*, 193–202.
- Miller, B. W., Roberts, G. C., & Ommundsen, Y. (2005). The relationship of perceived motivational climate to moral functioning, moral atmosphere perceptions, and the legitimacy of intentionally injurious acts among competitive youth football players. *Psychology of Sport and Exercise, 6*, 461–477.
- Newton, M., & Duda, J. L. (1992). The relationship of task and ego orientation to performance-cognitive content, affect, and attributions in bowling. *Journal of Sport Behavior, 16*, 209–220.
- Nicholls, J. G. (1976). Effort is virtuous, but it's better to have ability: Evaluative responses to perceptions of effort and ability. *Journal of Research in Personality, 10*, 306–315.
- Nicholls, J. G. (1978). The development of the concepts of effort and ability, perception of academic attainment, and the understanding that difficult tasks require more ability. *Child Development, 49*, 800–814.
- Nicholls, J. G. (1980). The development of the concept of difficulty. *Merrill-Palmer Quarterly, 26*, 271–281.
- Nicholls, J. G. (1984). Achievement motivation: Conceptions of ability, subjective experience, task choice, and performance. *Psychological Review, 91*, 328–346.
- Nicholls, J. G. (1989). *The competitive ethos and democratic education*. Cambridge, MA: Harvard University Press.
- Nicholls, J. G. (1992). The general and the specific in the development and expression of achievement motivation. In G. C. Roberts (Ed.), *Motivation in sport and exercise* (pp. 31–57). Champaign, IL: Human Kinetics.
- Nicholls, J. G., & Miller, A. T. (1983). The differentiation of the concepts of difficulty and ability. *Child Development, 54*, 951–959.
- Nicholls, J. G., & Miller, A. T. (1984a). Development and its discontents: The differentiation of the concept of ability. In J. G. Nicholls (Ed.), *Advances in motivation and achievement: Vol. 3. The development of achievement motivation* (pp. 185–218). Greenwich, CT: JAI Press.
- Nicholls, J. G., & Miller, A. T. (1984b). Reasoning about the ability of self and others: A developmental study. *Child Development, 55*, 1990–1999.
- Nicholls, J. G., Patashnik, M., & Nolen, S. B. (1985). Adolescent theories of education. *Journal of Educational Psychology, 77*, 683–692.
- Ntoumanis, N., & Biddle, S. J. H. (1999). Affect and achievement goals in physical activity: A meta analysis. *Scandinavian Journal of Medicine and Science in Sports, 9*, 333–343.
- Ommundsen, Y. (2004). Self-handicapping related to task and performance-approach and avoidance goals in physical education. *Journal of Applied Sport Psychology, 16*, 183–197.
- Ommundsen, Y., & Pedersen, B. H. (1999). The role of achievement goal orientations and perceived ability upon somatic and cognitive indices of sport competition trait anxiety. *Scandinavian Journal of Medicine and Science in Sports, 9*, 333–343.
- Ommundsen, Y., & Roberts, G. C. (1999). Concomitants of motivational climate in team sport. *Scandinavian Journal of Medicine and Science in Sports, 9*, 389–397.
- Papaioannou, A., & Kouli, O. (1999). The effect of task structure, perceived motivational climate and goal orientations on students' task involvement and anxiety. *Journal of Applied Sport Psychology, 11*, 51–71.
- Papaioannou, A., & McDonald, A. I. (1993). Goal perspectives and purposes of physical education as perceived by Greek adolescents. *Physical Education Review, 16*, 41–48.
- Parish, L., & Treasure, D. C. (2003). Physical activity and situational motivation during free-choice activity in physical education: Influence of perceptions of the motivational climate and perceived ability. *Research Quarterly for Exercise and Sport, 74*, 173–182.
- Pensgaard, A.-M., & Roberts, G. C. (2002). Elite athletes' experiences of the motivational climate: The coach matters. *Scandinavian Journal of Medicine and Science in Sport, 12*, 54–60.
- Pensgaard, A.-M., & Roberts, G. C. (2003). Achievement goal orientations and the use of coping strategies among winter Olympians. *Psychology of Sport and Exercise, 4*, 101–116.
- Pinder, C. C. (1984). *Work motivation*. Glenview, IL: Scott, Foresman.
- Rasclé, O., Coulomb, G., & Pfister, R. (1998). Aggression and goal orientations in handball: Influence of institutional sport context. *Perceptual and Motor Skills, 86*(3, Pt. 2), 1347–1360.
- Rawsthorne, L. J., & Elliot, A. J. (1999). Achievement goals and intrinsic motivation: A meta-analytic review. *Personality and Social Psychology Review, 3*, 326–344.
- Roberts, G. C. (1984). Achievement motivation in children's sport. In J. Nicholls (Ed.), *The development of achievement motivation* (pp. 251–281). Greenwich, CT: JAI Press.
- Roberts, G. C. (1986). The perception of stress: A potential source and its development. In M. R. Weiss & D. Gould (Eds.), *Sport for children and youths* (pp. 119–126). Champaign, IL: Human Kinetics.
- Roberts, G. C. (1992). Motivation in sport and exercise: Conceptual constraints and convergence. In G. C. Roberts (Ed.), *Mo-*

- tivation in sport and exercise (pp. 3–29), Champaign, IL: Human Kinetics.
- Roberts, G. C. (2001). Understanding the dynamics of motivation in physical activity: The influence of achievement goals on motivational processes. In G. C. Roberts (Ed.), *Advances in motivation in exercise and sport* (pp. 1–50). Champaign, IL: Human Kinetics.
- Roberts, G. C., & Balague, G. (1989, August). *The development of a social cognitive scale of motivation*. Paper presented at the 7th World Congress of Sport Psychology, Singapore.
- Roberts, G. C., Hall, H. K., Jackson, S. A., Kimiecik, J. C., & Tonymon, P. (1995). Implicit theories of achievement and the sport experience: Goal perspectives and achievement strategies. *Perceptual and Motor Skills*, 33, 219–224.
- Roberts, G. C., & Ommundsen, Y. (1996). Effect of goal orientations on achievement beliefs, cognitions, and strategies in team sport. *Scandinavian Journal of Medicine and Science in Sport*, 6, 46–56.
- Roberts, G. C., & Treasure, D. C. (1992). Children in sport. *Sport Science Review*, 1, 46–64.
- Roberts, G. C., Treasure, D. C., & Balague, G. (1998). Achievement goals in sport: The development and validation of the Perception of Success Questionnaire. *Journal of Sport Sciences*, 16, 337–347.
- Roberts, G. C., Treasure, D. C., & Kavussanu, M. (1996). Orthogonality of achievement goals and its relationship to beliefs about success and satisfaction in sport. *Sport Psychologist*, 10, 398–408.
- Roberts, G. C., Treasure, D. C., & Kavussanu, M. (1997). Motivation in physical activity contexts: An achievement goal perspective. In P. Pintrich & M. Maehr (Eds.), *Advances in motivation and achievement* (Vol. 10, pp. 413–447). Stamford, CT: JAI Press.
- Ryska, T. A. (2003). Sportsmanship in youth athletes: The role of competitiveness, motivational orientation, and perceived purposes of sport. *Journal of Psychology*, 137, 273–293.
- Sarrazin, P., Roberts, G. C., Cury, F., Biddle, S. J. H., & Famose, J. P. (2002). Exerted effort and performance in climbing among boys: The influence of achievement goals, perceived ability, and task difficulty. *Research Quarterly for Exercise and Sport*, 73, 425–436.
- Seifriz, J., Duda, J. L., & Chi, L. (1992). The relationship of perceived motivational climate to intrinsic motivation and beliefs about success in basketball. *Journal of Sport and Exercise Psychology*, 14, 375–391.
- Skaalvik, E. M. (1997). Self-enhancing and self-defeating ego orientation: Relations with task and avoidance orientation, achievement, self-perceptions, and anxiety. *Journal of Educational Psychology*, 89, 71–81.
- Skaalvik, E. M., & Valas, H. (1994). Task involvement and ego involvement: Relations with academic achievement, academic self-concept, and self-esteem. *Scandinavian Journal of Educational Research*, 38, 231–243.
- Smith, J. M. J., & Harwood, C. G. (2001, September). *The transiency of goal involvement states in matchplay: An elite player case study*. Paper presented at the BASES conference, Newport, RI.
- Smith, M., Duda, J. L., Allen, J., & Hall, H. (2002). Contemporary measures of approach and avoidance goal orientations: Similarities and differences. *British Journal of Educational Psychology*, 72, 155–190.
- Solmon, M. A. (1996). Impact of motivational climate on students' behaviors and perceptions in a physical education setting. *Journal of Educational Psychology*, 88, 731–738.
- Spink, K. S., & Roberts, G. C. (1980). Ambiguity of outcome and causal attributions. *Journal of Sport Psychology*, 2, 237–244.
- Standage, M., Duda, J. L., & Ntoumanis, N. (2003). Predicting motivational regulations in physical education: The interplay between dispositional goal orientations, motivational climate, and perceived competence. *Journal of Sport Sciences*, 21(8), 631–647.
- Standage, M., Treasure, D. C., Hooper, K., & Kuczka, K. (in press). Self-handicapping in school physical education: The influence of the motivational climate. *British Journal of Educational Psychology*.
- Swain, A. B. J., & Harwood, C. G. (1996). Antecedents of state goals in age group swimmers: An interactionist perspective. *Journal of Sports Sciences*, 14, 111–124.
- Tammen, V., Treasure, D., & Power, K. T. (1992). The relationship between competitive and mastery achievement goals and dimensions of intrinsic motivation. *Journal of Sport Sciences*, 10, 630.
- Theeboom, M., De Knop, P., & Weiss, M. R. (1995). Motivational climate, psychological responses, and motor skill development in children's sport: A field-based intervention study. *Journal of Sport and Exercise Psychology*, 17, 294–311.
- Thorkildsen, T. (1988). Theories of education among academically precocious adolescents. *Contemporary Educational Psychology*, 13, 323–330.
- Thrash, T. M., & Elliot, A. J. (2002). Implicit and self-attributed achievement motives: Concordance and predictive validity. *Journal of Personality*, 70, 729–755.
- Treasure, D. C., Duda, J. L., Hall, H., Roberts, G. C., Ames, C., & Maehr, M. (2001). Clarifying misconceptions and misrepresentations in achievement goal research: A response to Harwood, Hardy, and Swain (2000). *Journal of Sport and Exercise Psychology*, 23, 317–329.
- Treasure, D. C., & Roberts, G. C. (1994a). Cognitive and affective concomitants of task and ego goal orientations during the middle school years. *Journal of Sport and Exercise Psychology*, 16, 15–28.

30 Motivation, Emotion, and Psychophysiology

- Treasure, D. C., & Roberts, G. C. (1994b). Perception of Success Questionnaire: Preliminary validation in an adolescent population [Special Issue]. *Perceptual and Motor Skills*, 79(1, Pt. 2), 607–610.
- Treasure, D. C., & Roberts, G. C. (1995). Applications of achievement goal theory to physical education: Implications for enhancing motivation. *Quest*, 47, 475–489.
- Treasure, D. C., & Roberts, G. C. (1998). Relationship between female adolescents' achievement goal orientations, perceptions of the motivational climate, belief about success and sources of satisfaction in basketball. *International Journal of Sport Psychology*, 29, 211–230.
- Treasure, D. C., & Roberts, G. C. (2001). Students' perceptions of the motivational climate, achievement beliefs and satisfaction in physical education. *Research Quarterly for Exercise and Sport*, 72, 165–175.
- Van Yperen, N. W., & Duda, J. L. (1999). Goal orientations, beliefs about success, and performance improvement among young elite Dutch soccer players. *Scandinavian Journal of Medicine and Science in Sports*, 9, 358–364.
- Vealey, R. S., & Campbell, J. L. (1988). Achievement goals of adolescent figure skaters: Impact on self-confidence, anxiety, and performance. *Journal of Adolescent Research*, 3, 227–243.
- Vlachopoulos, S., & Biddle, S. J. H. (1996). Achievement goal orientations and intrinsic motivation in a track and field event in school physical education. *European Physical Education Review*, 2, 158–164.
- Vlachopoulos, S., & Biddle, S. J. H. (1997). Modeling the relation of goal orientations to achievement-related affect in physical education: Does perceived ability matter? *Journal of Sport and Exercise Psychology*, 19, 169–187.
- Walling, M. D., & Duda, J. L. (1995). Goals and their associations with beliefs about success in and perceptions of the purposes of physical education. *Journal of Teaching in Physical Education*, 14(2), 140–156.
- Walling, M. D., Duda, J. L., & Chi, L. (1993). The Perceived Motivational Climate in Sport Questionnaire: Construct and predictive validity. *Journal of Sport and Exercise Psychology*, 15, 172–183.
- Weiner, B. (1972). *Theories of motivation: From mechanism to cognition*. Chicago: Markham.
- Weiss, M., & Ferrer-Caja, E. (2002). Motivational orientations and sport behavior. In T. Horne (Ed.), *Advances in sport psychology* (pp. 101–184). Champaign, IL: Human Kinetics.
- White, S. A., & Duda, J. L. (1993). Dimensions of goals and beliefs among adolescent athletes with physical disabilities. *Adapted Physical Activity Quarterly*, 10(2), 125–136.
- White, S. A., Duda, J. L., & Keller, M. R. (1998). The relationship between goal orientation and perceived purposes of sport among youth sport participants. *Journal of Sport Behavior*, 21, 474–483.
- White, S. A., & Zellner, S. R. (1996). The relationship between goal orientation, beliefs about the causes of sport success, and trait anxiety among high school, intercollegiate, and recreational sport participants. *Sport Psychologist*, 10, 58–72.
- Wigfield, A., & Eccles, J. S. (1992). The development of achievement task values: A theoretical analysis. *Developmental Review*, 12, 265–310.
- Williams, L. (1998). Contextual influences and goal perspectives among female youth sport participants. *Research Quarterly for Exercise and Sport*, 69, 47–57.