

*Chapter 1***FROM 'MOTIVATIONAL CLIMATE' TO 'MOTIVATIONAL ATMOSPHERE': A REVIEW OF RESEARCH EXAMINING THE SOCIAL AND ENVIRONMENTAL INFLUENCES ON ATHLETE MOTIVATION IN SPORT**

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ABSTRACT

This chapter is intended to provide a comprehensive review of the various theories of social and environmental factors that influence athletes' motivation in sport. In order to achieve this, a short historical review is conducted of the various ways in which motivation has been studied over the past 100 years, culminating in the 'social-cognitive' approach that undergirds several of the current theories of motivation in sport. As an outcome of this brief review, the conceptualisation and measurement of motivation are discussed, with a focus on the manner in which motivation may be influenced by key social agents in sport, such as coaches, parents and peers. This discussion leads to a review of Deci & Ryan's (2000) self-determination theory (SDT), which specifies that environments and contexts which support basic psychological needs (competence, relatedness and autonomy) will produce higher quality motivation than environments which frustrate or exacerbate these needs. The research establishing the ways in which key social agents can support these basic needs is then reviewed, and the review depicts a situation wherein SDT has precipitated a way of studying the socio-environmental influences on motivation that has become quite piecemeal and fragmented. Following this, the motivational climate approach (Ames, 1992) specified in achievement-goals theory (AGT – Nicholls, 1989) is also reviewed. This section reveals a body of research which is highly consistent in its methodology and findings. The following two sections reflect recent debates regarding the nature of achievement goals and the way they are conceptualised (e.g., approach-avoidance goals and social goals), and the implications of this for motivational climate research are discussed. This leads to a section reviewing the current issues and concerns in the study of social and environmental influences on athlete motivation. Finally, future research directions and ideas are proposed to facilitate, precipitate and guide further research into the social and environmental influences on athlete motivation in sport. Recent studies that have attempted to address these issues are reviewed and their contribution is assessed.

INTRODUCTION

In the consideration of how social and environmental influences may affect the motivation of athletes, it may be helpful to define and delineate some of these important concepts. As soon as that is established, a number of theories of the way human motivation operates, or is regulated, also become relevant. These include achievement goal theory (Nicholls, 1989), trichotomous (Elliot & Church, 1997) and 2x2 achievement goals (Elliot & McGregor, 2001), self-determination theory (Deci & Ryan, 1985, 2000), and social goals (Urda & Maehr, 1995; Wentzel, 1993).

This chapter seeks to overview and synthesise the current knowledge base into a foundation from which informed research can be constructed. Firstly, the concept of motivation, and its historical development, is outlined and explained, with key definitions provided. Secondly, the broadest and arguably most inclusive theory is overviewed and explained: Deci and Ryan's (1985, 2000) self-determination theory (SDT). This represents the closest attempt at a grand-unifying theory of human motivation. SDT will be presented both in terms of its contribution to the way motivation is conceptualised/measured and the way motivation is determined/regulated. Thirdly, achievement goal theory (AGT) is described and its history and development are traced. AGT has made a significant contribution to the study of human motivation in achievement contexts, and also offers a specific model of social and environmental influences on motivation in the form of 'motivational climate' (Ames, 1992). Fourthly, approach-avoidance theory (Elliot & McGregor, 2001) is described and explained; its historical development, as well as attempts to reconcile it with AGT, are described and analysed. Fifth in this sequence, the contribution of social goals (Urda & Maehr, 1995; Wentzel, 1993), and their derivation from AGT is examined and explored, and throughout these sections an assessment is made of the ways in which these theoretical mechanisms and constructs might contribute to an analysis of the ways in which social (interpersonal and inter-group) and environmental (properties of the environment such as the nature of the sport, resources available, career stage, etc.) influences can be motivationally relevant/impactful. Finally, a series of recent qualitative studies are introduced and reviewed, and their implications for this area of research are examined. During this coverage, the important issues in the study of social and environmental influences on motivation are made clear and their relevance is assessed.

A BRIEF HISTORY OF THE STUDY OF MOTIVATION

Defining Motivation

Motivation is one of the most discussed constructs in psychology, both in scientific study and lay interpretations. Deci and Ryan (1985) succinctly summarise that motivation concerns the 'why' question in behaviour, while the title of Deci's (1995) paper coined a glib but highly appropriate definition: "Why we do what we do." In this interpretation, motivation refers to the reasons behind a behaviour, or absence of behaviour. In contrast, according to Maehr (1984), the study of human motivation "begins and ends with the study of behaviour" (p. 132). This is because, to date, scientists have been unable to design and produce a 'motivation-o-meter,' meaning that an individual's motivation must be *inferred* by measuring behavioural indices such as: i) attention, ii) effort, iii) choice of behaviours (and levels of challenge), iv) likelihood/consistency of behaviours, v) persistence following difficulty/failure, vi) bodily/facial expressions and vii) enjoyment, which *taken together* closely reflect the ideas that motivational researchers have used to operationalise motivation (Atkinson & Birch, 1970; 1978; Bolles, 1975; Eccles *et al.*, 1983; Ekman & Friesen, 1975). Historically, however, merely studying human behaviour proved to be problematic, and the emergence of theories to infer what *processes* occur in order to produce motivated behaviours became necessary.

Behaviourism and Physiological Needs

In the early days, internal processes were believed to be simple physiological needs which could be inferred by manipulating inputs, such as food and rewards or punishments, and observing 'outputs' (i.e., classic behaviourism). However, this approach could not account for apparently spontaneous behaviours that were exhibited with no apparent relation to physiological needs – examples include play and exploration. Likewise, the behaviourist approach could not explain highly complex behaviours, such as the learning and production of language. Despite being ultimately flawed, behaviourism was the beginning of a vast and growing literature on human motivation and represented the first attempts to systematically study human behaviour (Skinner, 1953; Watson, 1913). However, in conceptualising human motivation as purely 'mechanistic' – based on physiological needs and responses – the behaviourist approach failed to incorporate the complicated cognitive processes occurring between 'input' and 'output.'

To try and address this criticism, a number of 'instincts' were hypothesised to explain such behaviours, including suckling, play, locomotion, socialising or exploring, fight and 'mother offspring' (McDougall, 1926). The list of 'instincts' necessary to explain all human behaviours grew exponentially, perhaps reaching 6000 (Bernard, 1924; Dunlap, 1919). Additionally, a tautology was identified wherein 'instinct' arguments tended to explain a particular behaviour by naming an instinct after it. For example, the statement: "People are aggressive because they have an instinct to fight" does not actually explain why the behaviour occurred or why the instinct exists. As such, it became clear that human motivation could not be adequately explained by instinct theories or physiologically derived drive theories – it simply proved too complicated for such explanations.

The Cognitive Era

In the 1930's, Tolman promoted the idea that unobservable variables (or cognitions) played a mediating role between stimulus and response (Tolman, 1932). As such, humans were believed to have complete control over their behaviours; meaning that behaviours are deliberate choices based on the processing of information from internal (e.g. memories) and external (e.g. situations) sources; so called 'free-will.' This approach was conceived as managing/controlling a constant flow of motivation – for example: "Sound motivational theory... should assume that motivation is constant, never ending, fluctuating and complex and that it is an almost universal characteristic of practically every organismic state of affairs" (Maslow, 1954; p.69). From this perspective, the ground was laid to conceptualise cognitive processes as the central determinant of motivated action, examining how the individual deployed and managed their motivational resources. Weiner's (1990) review described how the main cognitive theories of motivation are based on interrelated cognitions, such as causal attributions (e.g. Weiner, 1985), self-efficacy (e.g. Schunk, 1991; Pajares & Miller, 1994), goals (Locke & Latham, 1990), expectations (Seligman, 1975) and subjective task values (e.g. Wigfield & Eccles, 1992). However, in order to produce testable hypotheses and explainable results, researchers using a purely cognitive approach tended to emphasise one particular aspect of motivation over another, losing generalisability and explanatory power (Wigfield, Eccles, & Rodriguez, 1998). For example, the majority of cognitively-derived motivation research manipulates variables such as success and failure feedback (Weiner, 1990), ignoring other variables (Reeve, 2009). The cognitive approach has also been criticised for failing to readily explain *why* a person may want to achieve and succeed, and for not systematically addressing the value attached to such outcomes (i.e., where do people's beliefs, values, desires etc. come from in the first place? Roberts & Treasure, 1992). A cognitive approach can also be argued to assign too much determining power to the individual, and not enough to 'inputs' (Elliot, 2005) or external variables (social norms, etc.). Put simply, a purely cognitive approach became too concerned with describing internal processes and forgot the original question of *why* (Deci & Ryan, 1985; 2000), which concerns outcomes and their associated values. In order to understand more about why behaviours are undertaken, it became important to understand how we come to define success and failure, and how we learn the value of these outcomes – through social processes.

The Social Cognitive Approach

The term ‘social cognitive’ covers a wide conceptual area, and as such many theories have been included under its remit. Fundamentally, the approach assumes that: “...variation in behaviour may not be the result of high or low motivation, as has been assumed in previous theories, but rather the manifestation of different perceptions of what is the appropriate goal within that social context.” (Roberts, 1993; p.416); notice how Roberts here focuses on the *perceptions* of the social context, rather than the social context itself. Reeve (2009; p.43), however, gives an even simpler definition: “ways of thinking guided by exposure to other people.” Hence, motivation – seen as effort, persistence, behavioural choice, preferred level of challenge and enjoyment/immersion – is not merely a function of satisfying some innate appetite, nor is it determined by a simple process of perceiving and processing information in the brain, but rather, motivation can be viewed as a function of: a) situational task requirements (e.g. the specific achievement domain); b) their perception and processing by the individual; c) socially learned ideas about the values of possible task outcomes; and also d) the immediate social indices of value in the possible task outcomes. Whilst all of these levels can be examined separately, a fuller understanding will come from examining all the levels together and their interactions and combinatory influences (Elliot & Thrash, 2002; Nicholls 1984; 1989). This combination of influences also seems to reflect both the ‘evolutionary baggage’; accumulated as scientific thinking progressed from mechanistic, through cognitive to social-cognitive theory; and also an increasingly central role in the study of motivation for the idea of *how* valuable/desirable outcomes are defined (e.g., demonstrating ability/competence/success - Duda & Whitehead, 1998; Elliot & Dweck, 2005).

As such, the social cognitive perspective gave rise to a wide variety of ‘mini theories’ (as opposed to grand unifying theories) – each addressing particular domains of activity, such as work (Locke & Latham, 1984), school (Weiner, 1979), coping with stress (Lazarus, 1966) and dealing with depression (Seligman, 1975). In each instance the ways in which success/failure were defined, and then pursued/avoided (respectively), became central considerations. Even in recent work regarding academic (and sporting) achievement contexts, Elliot and his colleagues (Elliot & Dweck, 2005) have highlighted the importance of placing competence at the centre of the achievement goal concept (note: not the entire study of motivation in sport). A key theme seems to emerge across all these research programmes and theories, pertaining to the ways in which un/desirable outcomes are defined and then pursued/avoided. Before moving on to discuss the ways in which motivated actions are defined and/or valenced (e.g., as desirable or otherwise), it is first useful to examine the ways in which motivation itself is conceptualised, measured and studied – such that we may understand what is being influenced by the social and environmental determinants being discussed in this chapter.

CONCEPTUALISING AND MEASURING MOTIVATION

In its broadest sense, motivation has been defined as: “the hypothetical construct used to describe the internal and/or external forces that produce the initiation, direction, intensity and persistence of behaviour” (Vallerand & Thill, 1993; p.18). This definition emphasises two key points. Firstly, that motivation is hypothetical – it cannot necessarily be thought of as real or independently observable. The following discussion of how motivation is conceptualised and measured reinforces this point. Secondly, a key component of motivation is the “external forces”, and yet these forces are arguably very difficult to define and measure; a point which has arguably led researchers to focus on evaluating participants’ *perceptions* of external influences, rather than the social and interpersonal aspects of the environment that might be considered to constitute an “external force.” This chapter aims to (a) identify and understand these external forces (b) in as full and comprehensive a manner as possible.

Deci and Ryan’s (1985; 2000) self-determination theory (SDT), which is actually a meta-theory containing four sub-theories, makes two important contributions to the study of motivation. Firstly, it provides researchers with a conceptualisation of ‘good’, ‘bad’ and ‘non-existent’ motivation – in the forms

of intrinsic regulation, extrinsic regulation, and amotivation, respectively. SDT also posits several levels in-between (Ryan & Connell, 1989; Ryan & Deci, 2002); these will be explained shortly (this section), and these aspects of SDT are explicitly derived from Organismic Integration Theory (OIT - Deci & Ryan, 1985; 1991). Secondly, SDT offers a mechanism/model of the ways in which motivation can be influenced. This mechanism takes the form of three psychological needs (Basic Needs Theory – Deci & Ryan, 1985, 1991), which can be met in a number of different ways by the environment and the individual's interaction with the environment. Like food and water, these needs are no sooner satiated than they become salient again shortly afterwards and, like food and water, environments which do not allow the individual to cater for these needs lead to maladaptive consequences. Deci and Ryan are relatively candid in outlining that, in meeting or undermining these needs, the interaction between person and environment can be relatively complex (a "person-environment dialectic" - see below, p.8). Whilst they are packaged up into a single theory at times, the conceptualisation/measurement aspects will be discussed here, followed by the proposed mechanisms of motivational regulation.

As already discussed, motivation is relatively difficult to "see", and whilst a range of behaviours and facial/bodily expressions can be assessed, it would be almost impossible to reliably capture these in a way that was consistent between participants and observers. Instead, research has focused on designing and validating questionnaires to measure subjective perceptions of motivation, and these have generally supported a conceptualisation based around the amount of external inducement required/perceived in order to complete a given task, or participate in a certain activity (Vallerand & Fortier, 1998). On the one hand, *intrinsic motivation* can be defined as the impetus to perform an activity for its own sake – for the pleasure and satisfaction inherent in participating in a task (Deci, 1975; Deci & Ryan, 1985) – i.e., no external inducement is required (or perceived). On the other hand, *extrinsic motivation* (or more specifically, *external regulation*) refers to engaging in an activity as a means-to-an-end and not for its own sake (Vallerand & Fortier, 1998), or instrumental behaviours, which are motivated by expected outcomes or contingencies (inducements) not inherent in the activity itself (Ryan & Deci, 2008). In addition, SDT conceptualises a state of *amotivation* – not having any intention or energy directed towards action – and also several different levels/types of extrinsic motivation, including: *introjected* (avoiding external disapproval, seeking external approval); *identified* (relating to internally held but learned values/contingencies); and *integrated* (relating to behaviours that have become so internalised that they can be deemed to satisfy psychological needs – see also Ryan & Deci, 2008; p.8). Behaviours that are more intrinsically motivated will continue even after the 'ends' associated with them are achieved (e.g., continuation of exercise after achieving desired target(s) – Vallerand, 1997). They will also produce experiential rewards such as enjoyment and pleasure, as opposed to palpable external rewards (money, approval, etc. – Berlyne, 1971; Deci & Ryan, 1985). As such, intrinsically motivated behaviours also carry improved longer term outcomes, as they are strongly associated with pleasure, enjoyment and positive subjective experiences, and very rarely associated with perceptions of pressure, tension, anxiety, or undermined personal autonomy – yet the opposite is apparent for more extrinsic forms of motivation (Frederick-Recascino & Ryan, 1995; Vansteenkiste, Soenens & Lens, 2008).

The above conceptualisation of motivational regulation types raises several questions in relation to measurement. Firstly, do these different forms of motivational regulation represent a single unidimensional continuum (e.g., intrinsic = 10/10, amotivation = 0/10), or can they all be experienced, to different degrees, simultaneously (the multidimensional approach – Deci, 1975; Harter, 1981). Research consensus seems to support the multi-dimensional conceptualisation by demonstrating factorial independence, and different profiles of antecedents and consequences for each form of regulation (Deci & Ryan, 1991; Deci, Vallerand, Pelletier & Ryan, 1991; Vallerand, 1993; 1997). To further complicate this issue, there are also questionnaires containing three different forms of intrinsic motivation (to know, towards accomplishment, and to experience stimulation – Pelletier *et al.*, 1995; Vallerand *et al.*, 1992; 1993). This range and complexity in forms of motivational regulation means that researchers wishing to measure motivation using these questionnaires must choose very carefully between available questionnaires, in relation to what they are trying to detect. For example, an experiment comparing the effects of reward structures in a boring task is unlikely to require the differentiation between three forms of intrinsic motivation.

A second question relates to the level of generality at which the constructs of IM/EM are measured. Are intrinsic (IM), extrinsic (EM) and amotivation (AM) properties of the individual in general (i.e., personality), are they relevant to specific tasks/activities, at certain points in time, or are they measured in relation to contexts (e.g., generally in this team/class)? In designing the Hierarchical Model of Intrinsic and Extrinsic Motivation (HMIEM), Vallerand (1997; 2007) specified that these constructs exist at all three levels: *global* (e.g., ever-present from the viewpoint of the actor, and usually taken to mean personality/traits), *context* (distinct spheres of activity, such as school, sport, relationships), and *situational* (the motivation experienced whilst engaged in an activity). In principle, global and contextual measures should be expected to exhibit temporal stability (i.e., test-retest reliability), whereas situational measures should not. Partly as a consequence of this, the vast majority of questionnaires for measuring intrinsic and extrinsic motivation are designed to assess the contextual, or quasi-contextual, level (e.g., Intrinsic Motivation Inventory - McAuley, Duncan & Tammen, 1989; Sport Motivation Scale – Pelletier *et al.*, 1995; The Motivational Orientation in Sport Scale – Weiss, Bredemeier & Shewchuk, 1985). This tendency is because test-retest reliability is a highly valued property for questionnaires (Rousson, Gasser & Seifert, 2002), which seems to rule out situational measures (in fact, a scale that claims to have test-retest reliability is arguably not a situational measure at all). Additionally, global measures are rare because personality/orientation type scales have already been developed in different spheres and represent close analogues of what a global intrinsic-extrinsic scale might measure (Vallerand & Fortier, 1998).

It is in this regard that the measurement of motivation still exhibits some divergent ideas and inconsistencies. For example, the IMI (McAuley *et al.*, 1989) does not return measures of IM and EM, but rather subjective ratings of interest/enjoyment, perceived competence, pressure/tension, effort/importance, perceived choice, value/usefulness and relatedness – with the latter three subscales being deployed much less frequently. As a general tendency, interest/enjoyment is taken to represent IM, whilst pressure/tension is taken to represent EM, but this is not strictly in accordance with the conceptualisations of IM and EM given above. Other measures, such as the Task Reaction Questionnaire (TRQ – Mayo, 1977) have also been criticised for including items that refer to determinants (e.g., perceived competence) and consequences (e.g., concentration) of IM, as well as not offering any indication of the scale's factorial structure (Guay, Vallerand & Blanchard, 2000; Vallerand & Fortier, 1998). The IMI contains exactly the same problems, and both Deci and Ryan (1987) and Markland and Hardy (1997) warn against confounding antecedents, motivational states and consequences into a single measure, not least because they almost guarantee positive results (i.e., significant findings) without necessarily allowing researchers to differentiate between causes and effects. Guay *et al.* (2000) developed the Situational Motivation Scale (SIMS) to try and overcome some of these issues, but even then only four (intrinsic, identified, external and amotivation) out of 6 possible subscales emerged (integrated and introjected were missing). In addition, the questionnaire method still requires participants to stop what they are doing to fill it in, presumably interrupting the motivated state and forcing participants to reflect on, and so potentially change, their motivation. Measuring motivation at the situational level of generality is necessarily complicated, and perhaps even impossible if the rigours of validity and reliability are to be fully applied. Upon reviewing the various scales available, it becomes clear that there is very little consensus on the best way of measuring IM/EM, especially when considering the levels-of-generality, life domains (work, school, sport), and cultural/linguistic differences. By way of emphasising this point, Meyer, Faber and Xu (2007) reviewed the various questionnaires that have been used in the study of motivation between 1930-2005, identifying 230 questionnaires relating to the measurement of motivation, 155 of which were specifically for measuring motivation in some form. In summarising this section, a case can be made that arguments surrounding measurement issues (validity, reliability etc.) and domain relevance (e.g., the workplace, academic settings, sport settings) have contributed to a degree of disarray in the conceptualisation and measurement of IM/EM. The sheer number and variability of scales available contributes to a degree of incompatibility between findings – a point first noted by Murray (1938):

Some use physiological techniques, others present batteries of questionnaires. Some record dreams and listen for hours to free associations, others note attitudes in social situations. These different methods yield data which, if not incommensurate, are, at least, difficult to organise into one construction (Murray 1938; p.6).

The heavy use of questionnaires and correlations (including structural equation modelling, multiple regressions, mediation analyses etc.) has also been criticised by Harwood *et al.* (2008) as problematic and often uninformative. Nonetheless, by understanding how motivation is conceptualised, observed and experienced, it becomes possible to make better informed appraisals of how key social protagonists (i.e., coaches, parents and peers) may influence the motivation of athletes. Notably, all of the following theories addressing the mechanisms for determining motivation have been quite consistently linked to measures of IM/EM, and so in addressing how the behaviours of social agents may affect athlete motivation, it is necessary to understand both what is meant by motivation (as described above), and also the mechanisms through which motivationally relevant behaviours may influence this motivation (the following sections).

SELF DETERMINATION THEORY – MECHANISMS AND MODELS

Overview of Self-Determination Theory

As noted previously, SDT is actually made up of four theories – Organismic Integration Theory (OIT), Causality Orientation Theory (COT), Cognitive Evaluation Theory (CET) and Basic Needs Theory (BNT). OIT refers to the above-explained conceptualisation of motivation in terms of the degree to which the motivated behaviour is perceived to originate from internal sources, or from external inducements. COT refers to a general stable tendency of individuals to act in either autonomous or controlled ways; i.e., the extent to which people's behaviours emanate from themselves, or whether they depend on rewards, deadlines, and externally construed values in order to generate action. Alternatively, if neither tendency is present, the amotivation is likely to dominate (Deci & Ryan, 1985). As Weiss and Amorose (2008) summarise: "COT represents one of the least studied portions of the SDT framework in the context of sport and physical activity" (p.136), perhaps not least because the attention of researchers studying this seems to be drawn to attribution theory (Weiner, 1986) which is very similar and arguably more expansive, including a broader explanatory framework, and addressing both trait (orientation) and state conceptualisations.

CET refers to the social-cognitive developments in motivational research, emphasising the subjective meaning (*functional significance* – Deci & Ryan, 1985) attributed to tasks, environments and interactions; specifying that this perceptual-cognitive process will ultimately determine the impact of such external events. CET emerged from an expansive body of research into feedback and rewards which had often produced contradictory findings, for example rewards/positive feedback undermining motivation (at the time this was viewed as contradictory, in the light of behaviourist ideas, although more recently such a finding is commonplace). This led researchers to re-examine individual differences in terms of orientations, preferences, and needs; leading to a re-emphasis on the cognitive processes in motivation.

Finally, BNT posits three basic psychological needs; competence, relatedness and autonomy. *Competence* represents "a need to feel effective in dealing with and mastering one's environment" (Markland & Vansteenkiste, 2008; p.91; Harter, 1978; White, 1959). *Relatedness* refers to "a concern about connections with others and the quality of our interpersonal relationships" (Allen & Hodge, 2006; p.268; Ryan, 1993), whilst *autonomy* refers to the degree to which athletes "engage in the activity for their own valued reasons and feel that they have freely chosen to be involved" (Allen & Hodge, 2006; p. 267); or as DeCharms (1968) denotes: the desire to be self-initiating in the regulation of one's actions.

Deci, Vallerand, Pelletier and Ryan (1991) summarised their position, that: "motivation, performance, and development will be maximised within social contexts that provide people the opportunity to satisfy their basic psychological needs for competence, relatedness, and autonomy" (p. 327-328 – also specified in Ryan & Deci, 2008; p.13). To the extent that social contexts do not allow satisfaction of the three basic psychological needs, they will diminish motivation, impair the natural developmental process, and lead to alienation and poorer performance. In addition (although perhaps not mutually exclusive), Deci and Ryan (1985; Ryan & Deci, 2002) propose that humans have innate tendencies towards psychological growth, integration of the self

and behavioural self-regulation, including a tendency for behaviours to progress towards to the integrated/intrinsic end of the spectrum if environmental conditions are conducive.

A particular aspect of this theory that has remained relatively unexplored is the person-environment dialectic or “organismic-dialectic” (Deci & Ryan, 2000; p.228). This dialectic denotes a continual interaction between an active, integrative human nature and social contexts that either nurture or impede the organism’s natural needs/tendencies. The dialectical view was reached following tensions between the humanistic and cognitive theories, which place an emphasis on intra-individual difference, and the behavioural/situational theories which place an emphasis on ‘inputs’, such as stimuli, rewards, punishments, contingencies etc. (Ryan & Deci, 2002). According to SDT, the problem cannot be fully addressed by either approach, but rather by considering the ongoing interactions between the two. This postulate of SDT remains theoretically plausible, but has rarely been explicitly addressed in research as it is difficult to envisage a methodology that might adequately evaluate such a complex system (although it has been examined in other areas, e.g., Mischel, 1968).

As already alluded to, OIT and BNT arguably represent the most significant and most researched aspects of SDT. COT has been paid quite little attention (for reasons described above), whilst CET has been quite widely researched, but is often less associated with the SDT label, addressing as it does, aspects of feedback and rewards. Overall, research into CET seems to be supporting the above stipulation that the degree to which environments, tasks, interactions and relationships support/deny athletes’ basic needs will determine the effects on motivation (Weiss & Amorose, 2008). As a result of this analysis and to comply with general usage in the literature, SDT will hereafter be used to refer to BNT (unless otherwise stated), while IM/EM will be used to refer to OIT and the way in which motivation is conceptualised/measured.

Research into SDT – The Effects of Supporting Psychological Needs

Reviews such as Reeve (2009), Vallerand (2007) and Weiss and Amorose (2008) present a relatively coherent picture, suggesting that when athletes perceive that their psychological needs are being supported, the results are almost universally positive in terms of producing more self-reported intrinsic motivation, and producing positive affective and behavioural responses. Vallerand (2007) reviewed this research in relation to how it had been conducted at three different levels of analysis: situational, contextual and global, whereas Reeve (2009) chose to review the literature in relation to the ways in which autonomy, competence and relatedness needs could be supported, respectively. In contrast, Weiss and Amorose (2008) attempted to briefly summarise the literature in relation to coach, peer and parent influences, but this was perhaps the most ambitious classification system, as the research available only facilitated the presentation of general themes and ideas, as opposed to a comprehensive review of the influences and effects of each social agent.

Even within the broadly consistent SDT literature occasional caveats exist, such as the interesting research conducted by Kast and Connor (1988), Pittman, Davey, Alafat, Wetherill and Kramer (1980) and Ryan, Mims and Koestner (1983). In these studies, positive-controlling feedback (e.g., “Well done, you did exactly what I told you and it worked!”) – which supported competence but undermined autonomy needs – produced less adaptive outcomes than genuine praise or informational feedback, and could not be separated from a ‘no feedback’ condition. This playoff, cancelling out the effects of competence support, highlights a degree of interactivity between the basic needs and the ways in which the environment meets them. Henderlong and Lepper (2002; p.784) surmise: “Though it is often easy to make predictions about the effects of informational versus controlling statements relative to one another, it is typically much more difficult to make absolute predictions about whether the net effects are likely to be positive, negative, or neutral relative to a control condition.” In many ways, these difficulties permeate research into SDT (see below), although more attention is invariably paid to positive findings where the tenets of SDT are more clearly supported – and this is arguably much easier to detect at the contextual level of analysis than the situational.

At the contextual level, Allen and Howe (1998) assessed the relationship between perceived coaching behaviours and self-rated competence perceptions in female hockey players. In line with SDT, praise was

positively associated with perceived competence, but in direct contradiction of SDT, encouragement and information following skill-errors were negatively associated with perceived competence. This appears to be a problematic finding, and Weiss and Amorose's attempt to account for it might be considered rather speculative: "It is conceivable that the players in Allen and Howe's study perceived an emphasis on performance [competitive] oriented climates [which was not measured] and that coaches' encouragement plus instruction after errors was interpreted within that social context" (p.125 – parentheses added). The suggestion, derived from Wilko's (2004) unpublished study, is that a competitive motivational climate may lead an individual receiving instruction following an error to interpret this action as criticism, or highlighting the error in a public way – perhaps even acting as a punishment rather than a reinforcer – whereas in a perceived mastery context [emphasising improvement and individual development], instruction would be interpreted as helpful and positive, especially following an error. Viewed critically, these minor inconsistencies can be argued to reflect SDT's all-encompassing nature as a 'grand' theory, which at times becomes cumbersome to apply and interpret. This situation can occasionally cast the scientist as a puzzle solver (reconciling results with theories, as Weiss and Amorose attempted above) rather than as a theory-tester. As a rule-of-thumb, SDT (and many other theories) seems to lose predictive accuracy (and conceptual clarity) at the situational level, where multiple behaviours and interactions can occur concurrently and have combinatorial effects (an observation echoed by Henderlong & Lepper, 2002; with specific regard to praise having mixed effects). At the more general contextual and global levels, where participants' general perceptions of an activity (or themselves) are measured, findings tend to be more readily reconciled with SDT.

The Global Level-of-Generality

The global level of generality in Vallerand's HMIEM has attracted remarkably little research interest. As Vallerand (2007; p.72) comments: "Very little research has focused on motivation and determinants and consequences at the global level... [and]... no research appears to have examined how global social factors may affect global motivation." One can speculate that this is for (at least) two main reasons. Firstly, research at the contextual level of generality tends to subsume variables that might otherwise be labelled as global. Differentiating between these two levels can be difficult and, indeed, Vallerand's (2007) chapter appears to question the distinction in the subsection labelled "Two or three levels of generality?" (p.74).

This difficulty may reflect both the genuine uncertainty in determining whether a variable is contextual or global, as well as reflecting the disproportionate prevalence of studies examining the contextual level of generality. Secondly, the global level of analysis tends to contain both intrapersonal/personality variables (relatively omnipotent – hence 'global') as well as 'global' social variables. Whilst social global variables are difficult to define, intrapersonal global variables tend to have been studied in different domains of motivation research, which are often not immediately reconcilable with SDT. For example, whilst Need-for-Achievement (NAch) and Fear-of-Failure (FoF – Atkinson, 1957; McClelland, Atkinson, Clark, & Lowell, 1953) can be measured as global/personality variables, they are not easily converted into 'need for relatedness' or 'need for autonomy', and indeed these concepts are rarely measured directly (Guiffreda, Gouveia, Wall & Seward, 2008). Instead, the participant's perception that these needs have been met/undermined (i.e., need satisfaction) is more frequently measured, and then correlated with motivational outcomes (e.g., Deci, Ryan, Gagne *et al.*, 2001; Kasser & Ryan; 1999; Reinboth & Duda, 2006; Reinboth, Duda & Ntoumanis, 2004), but this does neglect that different individuals may experience the needs for competence, relatedness and autonomy to different degrees, in terms of urgency/salience, and thus react differently to different social environments.

The Contextual Level-of-Generality

Vallerand's (2007) chapter identified several factors that that were proposed to occupy the contextual level: the coach (Pensgaard & Roberts, 2002; Mageau & Vallerand, 2003), perceived motivational climate (Ames, 1992; Duda & Hall, 2001), and sport/scholarship structures (Amorose & Horn, 2000; 2001). It is unclear why the coach is classified as a contextual variable in this formulation, as the coach can presumably influence motivation situationally (with immediate behaviours and interactions), or globally (in the coach's role as relatively omnipresent social agent during all sporting involvements). Likewise, it is

unclear why sport/scholarship structures might be classified as exclusively contextual influences, when these are unlikely to change year-on-year and so might be argued to constitute social-global influences. As outlined shortly, most measures of perceived motivational climate do use question stems addressing a generic level, e.g., “on this team...”, which is arguably quite suitable for the contextual level of generality (e.g., PMCSQ-2 – Newton, Duda & Yin, 2000); so perhaps perceived motivational climate may well be classified as a social contextual variable.

At the contextual level, self-report measures of contextual IM have been positively associated with affective consequences such as increased satisfaction and enjoyment (Brière *et al.*, 1995; Pelletier *et al.*, 1995) and reduced burnout (Cresswell & Eklund, 2005; Hodge, Lonsdale & Ng, 2008; Lemyre, Treasure & Roberts, 2006); cognitive consequences such as increased concentration (Brière *et al.*, 1995; Pelletier *et al.*, 1995) and imagery style (Wilson, Rodgers, Hall & Gammage, 2003); and behavioural consequences such as self-reported intention to participate in sport (Chatziserantis *et al.*, 2003; Sarrazin *et al.*, 2002) as well as teacher-rated effort/engagement in PE (Weiss & Ferrer-Caja, 2000). It is not clear, on the basis of the existing research, which variables from the contextual level of generality could be argued to support the needs for competence, autonomy and relatedness, respectively – not least because the perceived degree to which these needs have been met tends to constitute a starting point for research – indeed perceived need satisfaction becomes a key variable in itself (as noted above), with the antecedents of need satisfaction receiving significantly less empirical attention.

One theoretical proposition that has been tentatively supported is the ‘top-down’ effect, with features of the contextual level influencing situational indices. For example, Gagné *et al.* (2003) found that gymnasts who rated themselves as intrinsically motivated at the contextual level were generally more intrinsically motivated when sampled for situational motivation before training ($0.22 \leq r \leq 0.50$), although it is worth noting that such a finding is quite unsurprising. Throughout the rest of the study, once participant attrition was accounted for, only one significant correlation was apparent between contextual and situational variables (parent autonomy support associated with situational identified regulation, but not the other forms). A study by Blanchard, Mask, Vallerand, Sablonière and Provencher (2007) also found weak but statistically significant correlations ($0.20 \leq r \leq 0.44$) between contextual motivation (for basketball) and situational motivation (following matches). Once again, however, whilst providing support for Vallerand’s (1997) HMIEM, very little is unveiled about what specific variables and perceptions led to contextual IM/IM, or what specific situational factors moderate/mediate the impact of these contextual factors on situational motivation.

Recent studies at the contextual level have, however, suggested that the degree to which the basic needs for competence, autonomy and relatedness are met, when measured as contextual-level variables, mediates the relationship between antecedents, such as perceived coach autonomy support (again, contextual measure), and outcome variables such as motivational orientation (Amorose & Anderson-Butcher, 2007) or subjective well-being/vitality (Adie, Duda & Ntoumanis, 2008 – *also* measured as generalised, contextual constructs). As above, such findings provide support for theory, SDT in this case, but they give very little detail about what leads athletes to feel that coaches support/prevent autonomy, competence or relatedness and so whilst theoretically relevant, these studies do not provide the sort of specificity needed to train future coaches or parents, nor do they offer anything more than an overview of a rich, fluid and deeply complex system of motivational processes.

The Situational Level-of-Generality

Like the global level, the situational level has received little relatively empirical attention, particularly in sport. Vallerand’s (2007) review simply highlights four concepts which he proposes can be considered situational: rewards and awards, competition, feedback (positive/negative) and choice. Research on rewards contributed in no small part to the conception of SDT, or at least CET. As such, Deci, Koestner and Ryan (1999, 2001) were able to conduct meta-analytic reviews revealing that any rewards which are contingent upon participation, effort or achievement undermine IM, but unexpected and non-contingent rewards appeared to have no effect. Initial research into competition suggested it was detrimental to IM (Deci, Betley, Kahle, Abrams & Porac, 1981), but it subsequently became clear that those who won, or felt they performed well in competitions had significantly higher IM than losers and participants who felt they

performed poorly (Vallerand, Gauvin & Halliwell, 1986; Weinberg & Ragan, 1979). In addition, the findings of Tauer and Harackiewicz (2004) suggested that competing as part of a team was relatively beneficial to IM. Positive feedback generally increases IM, whereas negative feedback is generally detrimental to IM (Vallerand & Reid, 1988). However, interactions with other variables (e.g., controlling praise – as mentioned earlier – Deci *et al.*, 1981), led Henderlong and Lepper (2002) to conclude that praise could be beneficial, detrimental or inconsequential for IM *depending on other factors*. Choice is generally beneficial to IM (Dwyer, 1995; Goudas, Biddle, Fox & Underwood, 1995) but only on the condition that it is perceived to be a genuine choice, and not a forced choice (Patall, Cooper & Robinson, 2008; Reeve, Nix & Hamm, 2003). A genuine choice leaves all options open, for example “what would you like to do today?” whereas a forced choice usually only offers 2-3 options, some/none of which may be desirable to the participant; e.g., “would you like to listen to classical or country music this afternoon?”

Overall, despite Vallerand's (2007) careful analysis, it remains extremely difficult to differentiate between situational, contextual and global level variables – and indeed many research studies do not specify which level their measures relate to. It might be helpful to differentiate between intrapersonal and social-environmental varieties of each, as well as seeking additional clarity about how each level interacts. For example, how many times must a specific behaviour be observed at the situational level before it influences (or even becomes) a contextual variable? If a coach is always smiling, tolerant of skill failures and welcoming, at what point does this become represented as a contextual variable (e.g., positive coach affective style)? Thus, whilst the situational level arguably contributes the building blocks of the contextual level and occurrences at the situational level appear most likely to predict immediate motivated behaviours, at this time very little is known about the specific influences at each level, and how they interact in order to produce perceptions and/or influence IM/EM.

Supporting Basic Psychological Needs

Reeve (2009) arranged his discussion of SDT not around levels of generality, but instead around the ways in which each psychological need can be supported or undermined. Care is required in interpreting this summary for the following reasons: 1) the review is a little (necessarily) abstract in places; 2) the review overlooks the potential interactivity between antecedents in determining outcomes; and 3) it does not differentiate between behaviours occurring at the global, contextual or situational levels of generality.

Table 1. A summary of ways in which basic psychological needs have been shown to be supported in studies. Adapted from Reeve (2009; p.145-164).

Basic psychological need	General antecedent	Specific variations	Studies supporting link
Autonomy	Offering choices	'Forced' versus 'genuine'	<ul style="list-style-type: none"> •Patall et al. (2008) •Reeve et al. (2003) •Williams (1998); •Zuckerman, Porac, Lathin, Smith & Deci (1978) •Flowerday & Schraw (2003) •Flowerday, Schraw & Stevens (2004) •Moller, Deci & Ryan (2006)
Autonomy	Autonomy supportive style	Nurtures recipient's inner motivational resources - rather than seeking compliance	<ul style="list-style-type: none"> •Deci, Schwartz et al. (1981) •Flink et al. (1990) •Reeve et al. (1999)
		Informational language – as opposed to controlling language	<ul style="list-style-type: none"> •Assor, Roth & Deci (2004) •Ryan (1982) •Soenens, Vansteenkiste, Duriez, Luyten & Goossens (2005)
	Versus Controlling style	Providing explanations and rationales – rather than relying on unquestioning compliance	<ul style="list-style-type: none"> •Deci, Eghrari, Patrick, & Leone (1994) •Koestner, Ryan, Bernieri & Holt (1984) •Newby (1991) •Reeve, Jang, Hardre & Omura (2002) •Sansone, Weir, Harpster & Morgan (1992) •Sansone, Wiebe, & Morgan (1999)
		Acknowledge/accept negative affect associated with task– as opposed to ignoring or punishing it	Not evidenced but suggested by: <ul style="list-style-type: none"> •Deci, Spiegel, Ryan, Koestner & Kauffman (1982) •Reeve et al. (1999) •Reeve & Jang (2006)
Competence	Optimal challenge	Level of task must be ' optimal ' as opposed to too difficult or too easy	<ul style="list-style-type: none"> •Csikszentmihalyi, Rathunde & Whalen (1993) •Csikszentmihalyi & Csikszentmihalyi (1988) •Keller & Bless (2008)
Competence	Feedback	Positive feedback supports competence but negative feedback undermines it	<ul style="list-style-type: none"> •Anderson et al (1976) •Blank et al (1984) •Deci (1971) •Dollinger & Thelen (1978) •Vallerand & Reid (1984)
Competence	Task structure	Clear goals and structure – and support in progressing	<ul style="list-style-type: none"> •Hokoda & Fincham (1996) •Hollembek & Amorose (2005) •Ntoumanis (2005) •Taylor & Ntoumanis (2007)
Competence	Tolerance of failures	Social environment is permissive of failures and does not punish them	<ul style="list-style-type: none"> •Clifford (1988, 1990)

Relatedness	Perceptions of a social bond	Beyond mere involvement Must know and accept "the real me" Knowledge of specifics appears to be lacking	<ul style="list-style-type: none"> •Deci & Ryan (1995) •Wheeler, Reis & Nezlek (1983) •Carstensen (1993)
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Reeve's (2009) review nonetheless offers an initial insight into the ways that social agents (and environments) can support, or undermine, psychological needs. The considerations identified in Table 1 could be enacted by coaches, parents, teachers, peers or, indeed, experimenters. This review is informative, but it also highlights the relative paucity of knowledge built up in this area. Whilst numerous studies are conducted under the auspices of SDT, a fuller awareness of issues regarding level-of-generality, the interaction between variables (from different levels) and the mechanisms by which need satisfaction mediates motivational outcomes are all undermined by the predominance of questionnaire methodologies, correlating quite general perceptions and leading to, at best, rules of thumb.

A preference can be identified in the extant literature for measuring the degree to which participants perceive that their psychological needs are met, and the way this precipitates motivational consequences. This methodological tendency bypasses the identification of social and environmental features that may lead to these needs being met – but it does support the idea that when psychological needs are (perceived to be) met, the consequences are generally positive in terms of adaptive behaviours, cognitions and positive affect (Adie, Duda & Ntoumanis, 2008; Coatsworth & Conroy, 2009; Gillet, Berjot & Gobance, 2009; Reinboth & Duda, 2006; Reinboth, Duda & Ntoumanis, 2004). Supporting this link at the contextual level of generality is useful, and supports Vallerand's (1997) HMIEM as well as supporting a key tenet of SDT, but it does leave a lot to be discovered – not least because it would still be rather difficult to convey to coaches, parents and peers exactly how they should support these needs such that their specific athletes perceive their needs to be met, and experience positive motivational outcomes as a result. Research aimed at bridging this gap between theoretical ideas and detailed behavioural recommendations may well be fruitful and pertinent in this moment of motivational research.

ACHIEVEMENT GOAL THEORY

Overview of Achievement Goal Theory

Achievement goal theory (AGT - Nicholls, 1989) evolved alongside SDT, but in the sport and educational domains AGT has arguably become the dominant theory in explicitly examining the idea of how success/failure in achievement contexts is defined. Achievement contexts are defined by the presence of some evaluative elements and so can include school, sports, and sometimes exercise/health (Roberts, 2001). The debate is ongoing as to whether the subjective definition of success/failure used in AGT should extend to any aspects of the achievement context, or whether it should focus exclusively on competence, and much of the existing research also considers other non-competence concerns, such as self presentation or social status (Elliot & Dweck, 2005). Maehr and Nicholls (1980; p.262) proposed that: "Achievement motivation should be defined in terms of its purpose or meaning for people rather than in terms of overt behaviours or the characteristics of situations in which the behaviour occurs." This focus on subjective meaning became the lynchpin of achievement goal theory. Nicholls (1984, 1989) asserted that an individual's internal sense of competence was pivotal in achievement contexts and that importantly, the meaning of competence could be defined in at least two different ways:

Achievement behaviour is defined as behaviour directed at developing or demonstrating high rather than low competence. It is shown that competence can be conceived in two ways. First, ability can be judged high or low with reference to the individual's *own past performance or knowledge*. In this context, gains in mastery indicate competence. Second, ability can be judged as capacity *relative to that of others*.

In this context, a gain in mastery alone does not indicate high competence. To demonstrate high capacity, one must achieve more with equal effort or use less effort than do others for an equal performance. (Nicholls, 1984; p. 328 – italics added)

Hence, individuals are *task involved* when improvements in, or the mastering of, a skill or task provide them with a sense of competence (and subsequent satisfaction). Alternatively, an individual is *ego involved* when their sense of competence depends upon demonstrating superior performance to others (e.g., genuinely superior or an equal performance to their competitor with less effort exhibited). These two definitions of competence can be applied at the involvement level-of-analysis, the situational/contextual level (climate), and the pre-dispositional level (orientation), as well as being two separate definitions in their own right.

Developmental Processes

Nicholls' contribution to achievement goal theory emerged from developmental ideas surrounding how young children develop through process whereby children gradually become able to differentiate the concept of ability from effort, task difficulty and luck (Nicholls & Miller, 1984). Initially, between 5 and 7 years of age, Nicholls proposed that children did not differentiate between the concepts of ability/capacity and effort. Tasks which children are uncertain of completing were viewed as difficult, requiring more effort and so completion would provide children with a sense of achievement and competence. In effect, the limitation of ability in restricting what effort could produce is not realised and so, in the mind of a 5-year old, effort and ability were one-and-the same. Thus, achieving-by-trying would be the same as achieving-through-ability. This undifferentiated definition of competence was arguably the earliest (or even the purest) form of task involvement. Ironically it represents a mindset that Nicholls and all achievement goal theorists seek to re-introduce and reinforce in older, cognitively more sophisticated, athletes.

In Nicholls' conception, as children mature they move through a series of cognitive-developmental stages whereby, at 11 or 12 years-of-age, children are able to conceptualise ability as a relatively stable capacity, separate from effort (Fry, 2001). Children with a differentiated understanding of competence understand that difficult tasks are often those that only few can complete, and that this is a relatively good heuristic/rule-of-thumb for appraising task difficulty and one's own level of achievement. As such, children begin to understand that ability (on the specific task), perhaps more than effort, determines whether achievement tasks are successfully completed. Fundamentally, during this phase-of-development children realise that the outcome of a task is a *product* of ability/capacity and effort (and sometimes luck). Low ability/capacity can undermine compelling effort, and likewise lack-of-effort can produce underperformance in the more able athletes. Hence, the role of effort can become a double-edged-sword (Covington & Omelich, 1979), with some tasks demanding effort in order to maximise capacity/ability and increase the likelihood of success, some tasks where low effort expenditure and success-through-ability can combine to 'look good', and others where the likelihood of success is minimal, regardless of effort, so effort is best not expended.

Nicholls proposed that when children achieve the more sophisticated definition of competence they are capable of being ego-involved, by focusing on interpersonal comparisons of ability, and perhaps even overemphasising the role of ability in task outcomes. It should be noted, however, that these findings were originally achieved in an academic setting, and it should not necessarily be assumed that the same results would be found in sport (Fry & Duda, 1997; Smith, Smoll & Cummings, 2009). The complexity of the task and instructions has been cited as reasons why younger children may have failed to 'differentiate' (Heyman *et al.*, 2003) as some of the studies involved rather complex experimental procedures (e.g., Nicholls, 1978; Nicholls & Miller, 1983). Additionally, the salience of concepts such as ability and effort are proposed to be much more salient in sport than academic settings (Smith *et al.*, 2009). Score keeping, performance statistics, league standings and the awarding of trophies all amplify the salience of ability, whilst grimacing, exclamations, sweating/breathing and fatigue are all highly salient signs of effort exertion in sport, which are not as salient in academic settings. In addition, Smith *et al.*'s (2009) re-analysis of Fry and

Duda's (1997) findings suggested that 9 and 11 year-old children did not differ significantly in their ability to differentiate effort from ability in sport, and that the majority of children at both ages were able to differentiate. Finally, studies such as Cumming, Smith, Smoll, Standage & Grossbard (2008) and Smoll, Smith and Cumming (2007) have validated perceived motivational climate questionnaires with younger athletes. These studies could also be taken as support for the notion that children below 12 can differentiate between effort and ability. Hence, the decision to exclude athletes under the age of 12 from studies (e.g., Vazou *et al.*, 2005) may not be as well substantiated as previously argued.

Overall, Nicholls' body of work is persuasive in establishing how maintaining optimal motivation in sport revolves around producing task-involvement (particularly once children have become capable of ego involvement) by encouraging a focus on effort, improvement and intrapersonal comparisons. On occasion, task involvement is referred to as 'less/un-differentiated', and ego involvement as more differentiated; this nomenclature could easily be interpreted as meaning task involvement is less sophisticated. However, in adults this may be a misnomer, as the strong salience of an ego/performance definition may imply that there is more cognitive effort and sophistication required in separating out results from ability, and realising the role of effort in both immediate performance and subsequently improved performances. As a further consideration, the differentiation process is, according to Nicholls, completed around the time that athletes transition to secondary school, which coincides with the time many athletes transition from sampling sports to specialising into a single sport (Côté, *et al.*, 2003 and Wylleman *et al.*, 2004). This transition is also likely to play a significant role in the ways children define, interpret and value success/failure.

A Related (but Separate) Theory: Dweck's Implicit Theories

During the development of AGT (through a series of seminars in the 1970's at the University of Illinois), whilst Nicholls was studying developmental processes surrounding ability/competence, Carol Dweck's work focused on why children of equal ability reacted differently to success and failure on tasks (in terms of withdrawal versus increasing effort). Based on their research, Dweck and her colleagues (Diener & Dweck, 1978; 1980; Dweck, 1975) proposed specific individual differences that lead to the pursuit of different goals. These individual differences in belief or 'implicit theories-of-ability' (ITA) have become known as *implicit theories*. According to Dweck (1999), attributes of the self, other people, places, and the world-in-general can be conceived: a) as fixed, uncontrollable factors; or, alternatively b) as malleable and controllable factors that are open to development. The first approach has been termed an *entity theory*, the second an *incremental theory*, and individuals can be described as entity or incremental theorists depending on their views of attributes within a given achievement domain (sport, school, work), or even activities within that domain.

Dweck proposed that entity theorists are more likely to endorse performance/ego goals, whereas incremental theorists are more likely to pursue task/mastery goals. This is because performance goals serve to demonstrate or prove one's stable ability (or avoid displaying the inadequacy of one's fixed and unchangeable ability), whereas one form of the task goal is to develop/improve one's malleable ability. Hence, individuals can interpret achievement settings differently depending on their underlying implicit theories. It is also likely that, by reinforcing or challenging such beliefs, coaches, parents and peers will influence a player's conception of ability (improvable versus fixed) within a certain achievement domain and therefore influence their interpretations of what constitutes competence within that situation (Gottfried, Fleming & Gottfried, 1994; Kamins & Dweck, 1999; Mueller & Dweck, 1999). This is a potentially important (and relatively under-represented) aspect of the socially determined 'motivational climate.'

There is an issue of measurement with regard to the study of ITAs, identified by Weiner (1995). Dweck, Chiu and Hong (1995) used three Likert-scaled items to measure implicit beliefs, but Weiner observes that "the wording of the items overlaps significantly" (p.319) in order to ensure strong reliability, but that this also compromises the validity and utility of the measure. Another approach is to use forced-choice indicators, along the lines of: "Do you believe that practice on this task will improve

your level of performance?” [Yes/No]. The problem with this is that, when given more choices (e.g., Dweck et al., 1995), participants often endorsed *both* conceptions of ability. Hence, measuring ITAs seems to be rather difficult, so instead researchers have tended to try and manipulate these beliefs regarding a specific task by changing the instructions given to participants (e.g., Jourden, Bandura & Banfield, 1991; Niiya, Crocker & Bartmess, 2004). One difficulty with this is that the only available option for observing whether such a manipulation ‘works’ is to look at the experimental results (usually free-time task choice, effort, or persistence) – as the above measures of ITA (i.e., as a manipulation check) seem to be compromised from the outset.

Levels of Application

According to AGT (Nicholls, 1984; 1989) the states of task and ego involvement are induced by a combination of relatively stable intrapersonal traits (“orientation”) with the specific pragmatic and social situations in which the achievement task is defined (“climate”). Duda (1993) suggested that this orientation – proneness to one-or-the-other goal involvement – is a product of socialisation experiences within achievement domains. Hence, it is possible to argue that the “climates” experienced by the developing sports participant influence that participant’s subsequent “orientation” – although the interplay between these constructs is still relatively unknown except to say that they correlate strongly, and frequently (see below). The central point, however, is that achievement goal theory conceptualises two contrasting definitions of competence (task versus ego) at three different levels of analysis: i) involvement – the immediate here and now, ii) orientation – intrapersonal predispositions to either/both kinds of goal involvement and iii) climate – the situational factors that interact with orientation in determining immediate goal involvement (Nicholls, 1989 – although note that in the vast majority of cases, participants’ perceptions of the climate are measured, and these often bear little relation to objectively observable events - Cumming, Smith, Smoll & Grossbard, 2007; Papaioannou, Marsh & Theodorakis, 2004; Morgan, Sproule, Weigand & Carpenter, 2005).

Numerous psychometric instruments exist in order to measure the endorsement of each definition of competence at all three levels, in different domains (sport, PE, exercise - Duda & Whitehead, 1998). It is important to note, however, that the researchers responsible for the emergence of approach-avoidance goals (discussed shortly) do not conceptualise these three levels of analysis but rather a vast set of interacting intrapersonal antecedents and situational antecedents that combine to produce a goal-involvement state. Hence, goals are not analogised between levels but restricted to the level of involvement (although this ‘involvement’ can last weeks and months as opposed to moments, as Nicholls’ definition would denote – i.e., Elliot, 1999). In the two-by-two theory of achievement goals, ‘involvement’ (termed *goal adoption*) spans both the situational and contextual levels), meaning that intrapersonal and environmental/social ‘goals’ are instead conceptualised as antecedent variables.

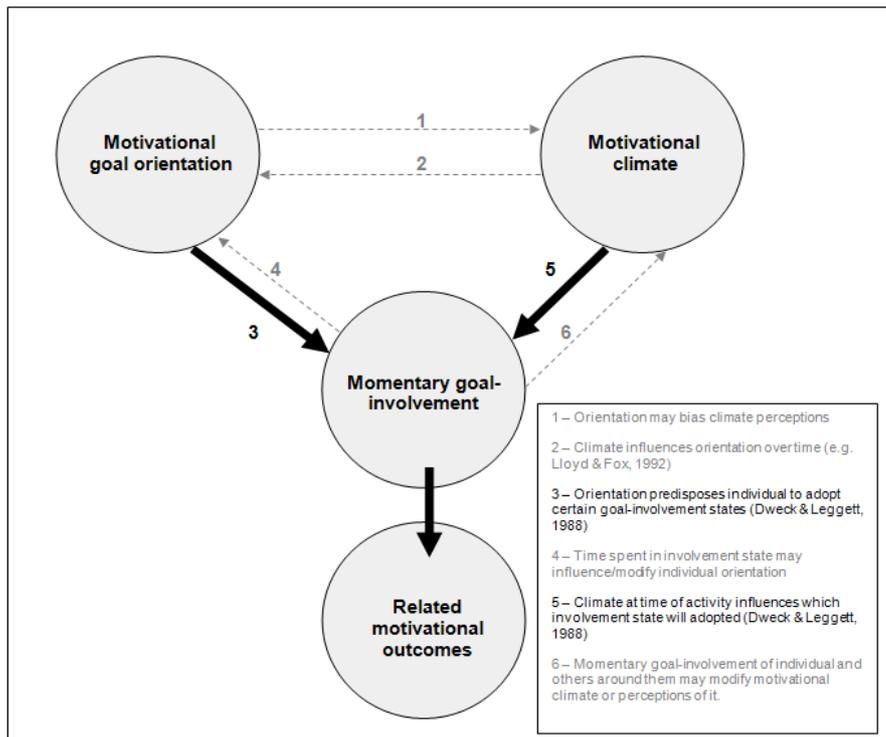


Figure 1. A representation of Nicholls' (1984; 1989) traditional AGT framework. Theoretical links between goal orientations (e.g., personality / trait), motivational climates (contextual + situational determinants) and momentary goal involvement, leading to potential influences on motivational outcomes. Thick arrows indicate relationships indicated by Nicholls. Dashed arrows indicate other potential relationships.

This difference between Nicholls' and Elliot's formulations raises the question of whether it is acceptable to apply achievement goal constructs to each level. For example, in Elliot's (1999; 2005) hierarchical model of approach and avoidance motivation (detailed shortly) intrapersonal traits and preferences are likely to be relatively stable and may readily be modelled as a 'goal orientation.' Indeed, Elliot and Thrash (2002) would appear to have adopted this approach in modelling neuro-anatomical variations and personality variables as approach and avoidance 'temperaments' that influence the adoption of mastery, performance-approach and performance-avoidance goals (although their 2001 paper argues against this approach in relation to modelling performance and mastery orientations). In either case, a number of antecedent variables are collapsed to form a summary construct. However, there is some intuitive sense in having consistency of concepts between levels, particularly for coaches and practitioners attempting to convey or apply these influential psychological principles. Whether this is a satisfactory argument for maintaining this representational framework is yet to be determined.

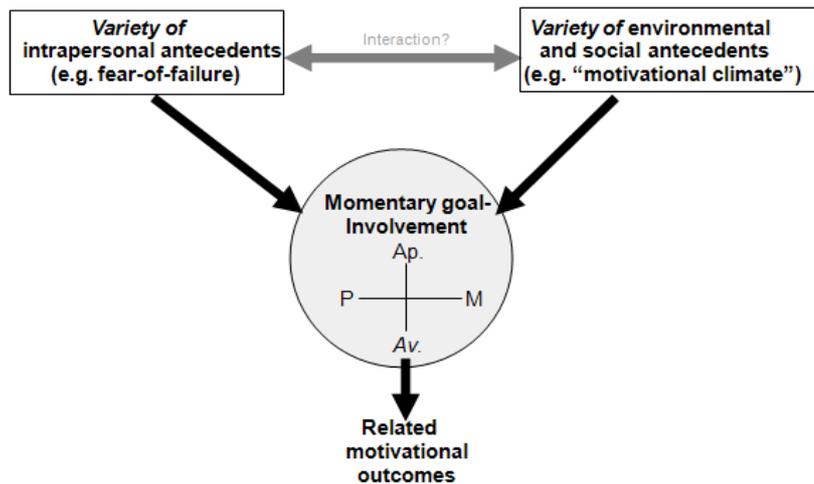


Figure 2. Elliot's (1999) alternative conceptualisation of achievement goal structures; the hierarchical model. Notably there is no 'goal orientation' concept, only antecedents. P = Performance/ego definition of competence, M = Mastery/task definition of competence, Ap. = Approach-valenced (seeking to demonstrate competence), Av. = Avoidance-valenced (seeking to avoid demonstrating incompetence). For further explanation of this goal framework see the following section.

Theoretical Predictions and Findings

Nicholls' (1984; 1989) dichotomous achievement goal theory dictates that individuals in a state of mastery involvement will display a positive and adaptive pattern of motivational responses; cognitive, affective and behavioural. These participants are predicted to positively engage in the achievement situation, demonstrating effort, persistence and choosing challenging tasks (Nicholls, 1984). Further, individuals with a high mastery orientation/disposition would also have positive beliefs about sport, for example, viewing effort and hard work are the main causes of success in sport (Duda & Nicholls, 1992; Duda & White, 1992; Roberts & Ommundsen, 1996). These individuals would also believe that the purpose of sport is to foster mastery, co-operation and social responsibility, which reduces the implications of failure to the self and therefore should facilitate increased enjoyment and satisfaction (Duda, Chi, Newton, Walling & Catley, 1995; Ntoumanis & Biddle, 1999). Further, individuals who are more predisposed towards mastery involvement view the opposition as co-operative in creating the chance for personal development and challenge, so will endorse relatively high moral values and frown upon cheating (Duda, 1992; 2001; Roberts, 2001; Roberts, Treasure & Kavussanu, 1996). In contrast, performance/ego oriented individuals should show the either opposite pattern or, in some cases, no consistent pattern.

Whilst correlational links between task/mastery versus ego/performance definitions of competence at the *climate* level and important associated variables are discussed shortly, research examining achievement goal *orientations* and goal *involvement* states demonstrates almost exactly the patterns predicted above, but given that these does not form the focus of this chapter (which focuses on environmental and social influences), orientations and involvement-states are kept separate from the current analysis. The interested reader is referred to reviews by Duda and Whitehead (1998) and Harwood, Spray and Keegan (2008).

Approach-Avoidance Achievement Goals

The distinction between approaching the desirable and avoiding the aversive has been a part of theorising in motivation since the inception of psychology as a scientific discipline (Elliot, 1999). Indeed, Nicholls' (1984) original writing also examined the notion that individuals in achievement settings can be

concerned with avoiding the demonstration of incompetence. Traditionally AGT has placed the concept of perceived competence in a position of vital importance, as described earlier, and Nicholls (1984) suggested that individuals with *low perceived competence* can belong to one of three different categories when placed in achievement situations: a) individuals committed to demonstrating competence *despite* perceptions of inadequacy [approach]; b) individuals committed to *avoiding demonstrating incompetence* [avoidance]; and c) individuals who are *not committed* to avoiding demonstrating low ability [amotivation?]. Note that in these definitions 'demonstrating' competence may mean either normatively (i.e., ego) *or* in a self-referenced (i.e., task) manner. It is only recently, however, that this assertion by Nicholls has been revisited. The goal of avoiding demonstrating incompetence is proposed to be adopted when the likelihood of demonstrating competence is undermined (Nicholls, 1984; p.332). However, it is possible that participants may begin a task with this goal in mind, without having to 'lose' the prospect of demonstrating competence first.

In addition, it is also notable that the constructs of perceived high-or-low ability were considered as functionally isomorphic with approach-versus-avoidance motivational tendencies by some theorists (Kukla, 1972; Meyer, 1987). Thus the moderating influence of perceived competence in Nicholls' (1989) achievement goal theory may have already been incorporating aspects of approach and avoidance tendencies in a convoluted manner, and Elliot (1994, 1997) asserted that this may have delayed progress in achievement goal theory by providing 'false positive' results regarding perceived competence – which has often been proposed as a mediator between goals and outcomes, rather than as a goal itself, in the form of the approach-avoidance distinction.

Whilst Nicholls (1984) had alluded to the avoidance of demonstrating incompetence, Dweck's (1986) conceptualisation (described earlier) also proposed that individuals possessing low perceived ability, *and* who view human attributes/skills as a fixed entities, are more likely to want to avoid negative judgments of competence and seek to gain positive judgments of their fixed and unchangeable ability. Dweck and Leggett (1988) described how children with 'entity' theories (in the domain of intelligence) were most likely to exhibit challenge-avoidant goals – choosing easy tasks where they could do well and thus avoid the inevitable mistakes on more difficult tasks. However, the concept of seeking to avoid demonstrating incompetence was largely ignored in the research that followed, which focused overwhelmingly on approach motivation (often termed 'achievement motivation'), examining the implications of seeking to *demonstrate competence* in task/mastery versus ego/performance terms (Duda, 2001; Duda & Hall, 2001). More recently, Elliot and colleagues (Elliot, 1997, 1999; Elliot & Church, 1997) have (re)introduced the concept of avoidance goals i.e., striving to avoid displaying inadequacy, chiefly in the *educational* achievement domain.

Elliot (1997, 1999) argued that inconsistent findings in the achievement goal literature concerning the motivational implications of ego/performance goals were, *in part*, a result of the failure to distinguish 'approach' and 'avoidance' forms of this goal definition ("in part" because he also cited the failure of AGT to focus more exclusively on competence, thus allowing social and self-presentational concerns to confuse matters, as well as a failure to distinguish between goals – in the form of involvement/adoption - and the numerous antecedents of goals – as opposed to 'orientations'). Moreover, Elliot argued the relevance of a mastery-avoidance goal in which the individual is concerned with, *and strives to avoid*, demonstrating incompetence in a self-referenced (e.g., deterioration relative to previous scores) or technical (poor technique) manner (Elliot 1999).

Elliot and Covington (2001) and Elliot and Thrash (2002) also illustrate the fundamental importance of the approach-avoidance distinction in the history of psychological study, and more specifically in the study of motivation and motivated behaviour. There is a compelling case that approach-based or 'hedonic' systems and avoidance-based or 'survival' systems operate simultaneously on numerous intrapersonal levels ranging from neurophysiological (Gray, 1990), emotional predisposition (Tellegen, 1985; Watson & Clark, 1993; Clark & Watson, 1999), general personality (e.g. neuroticism versus extroversion, McCrae & Costa, 1987; Costa & McCrae, 1992) and cognitive predispositions (Cacioppo *et al.*, 1997). Further, these bivariate systems at different cognitive and affective levels can be modelled together into a consistent two-factor model that predicts related motivational and affective outcomes across *different domains* (Elliot & Thrash, 2002; Gable, Reis & Elliot, 2003). Additionally this evaluative process appears to be supported by

neurological structures in the brain, independent from those that support perception and higher cognition (see Cacioppo *et al.*, 1996; Elliot & Covington, 2001). The evaluative processing that leads to approach or avoidance predispositions is purported to take place “in a matter of milliseconds” (Bargh & Chartrand, 1999, p.475). Consequently, the consideration of approach-avoidance motivation may well be important for the development of an achievement goal theory, but it is certainly important in any study of human motivation and motivated behaviour.

Elliot’s Concurrent Contribution – The Focus on Competence

Elliot and colleagues also argue that the achievement goal construct should focus solely on *competence*, the demonstration of it and the avoidance of demonstrating a lack of it (Elliot & Thrash, 2001). As such, valence and definition are the sole components of an (momentary/involvement type) achievement goal, whereas measures of goals that utilise Nicholls’ and Dweck’s conceptualisations go beyond the definition and valence of competence and extend to tap indices of self-evaluation and social status. For example, in measures such as the Task-Ego Orientations in Sport Questionnaire (TEOSQ – Duda & Nicholls, 1992) and Perceptions of Success Questionnaire (POSQ – Roberts & Balague, 1989; 1991; Treasure & Roberts, 1994), individuals are asked to indicate what makes them feel successful in general (inviting responses regarding more than just competence), or they are predisposed to a focus on how others judge their competence. This is also exemplified in the POSQ, which asks: “when playing sport, I feel successful when [I show other people I am the best / I am clearly superior]”, whilst the TEOSQ asks: “I feel most successful in sport when [I can do better than my friends / I’m the best].” Such wordings do not necessarily relate *exclusively* to competence as opposed to social concerns, as the two can be significantly inter-related (Skinner & Piek, 2001), i.e., demonstrating physical competence can be associated with increased popularity and status, and vice versa – and these item wordings do not discriminate between these issues. Hence, according to Elliot such self-worth and self-presentational concerns should not be included in the conceptualisation and measurement of a goal, because it becomes unclear whether these concerns impact upon motivational processes and outcomes and how they may combine with a (competence based) achievement goal. Such a refinement arguably makes it easier to reconcile AGT with SDT, as it would focus AGT into the consideration of competence needs, rather than (sometimes awkwardly) relating to all three of SDT’s psychological needs (competence, autonomy and relatedness).

Core Theoretical Predictions

Approach-avoidance considerations were initially incorporated into a hierarchical model of achievement goals in which multiple antecedents of goal striving and goal adoption (the lower tier of the hierarchy) combined to produce *three* types of momentary goal/involvement-state: *mastery* (approach) in which the concern is to demonstrate self-referenced competence, *performance-approach* in which the concern is to demonstrate competence relative to others, and *performance-avoidance* in which the concern is to avoid demonstrating incompetence relative to others - these formed the higher tier of the hierarchical model (Elliot, 1997; Elliot & Church, 1997). Subsequently, the mastery goal was also split into approach and avoidance forms, providing a full 2x2 crossing of approach and avoidance forms over performance and mastery goals (see Figure 3 - Elliot, 1999; Elliot & McGregor, 2001). This created four possible achievement goals (performance-approach, performance-avoidance, mastery-approach and mastery-avoidance) that were construed as “concrete cognitive representations that serve a directional function in motivation by guiding the individual toward or away from specific possible outcomes” (Elliot & Thrash, 2001, p.143). For example, a sport participant may be concerned that they will do poorly in relation to the other participants (performance-avoidance goal), or poorly in relation to a previous performance, or perhaps fail to achieve a desirable technique or skill (mastery-avoidance goal). The participant may well be

concerned with wanting to win an event or race (performance-approach goal) or simply to 'play well' from a technical perspective and improve on his or her own previous performances (mastery-approach goal).

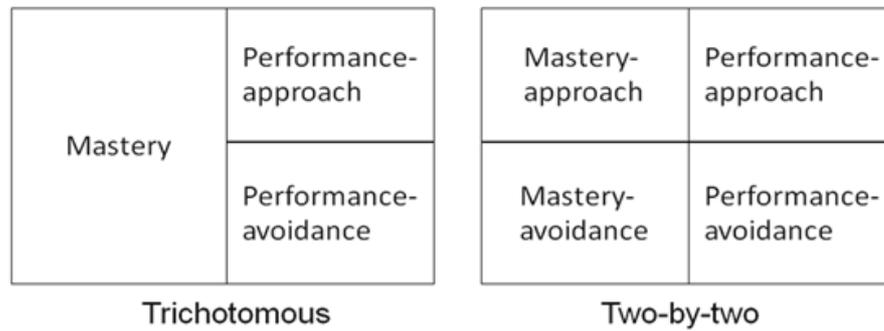


Figure 3. A representation of the trichotomous and 2x2 goal frameworks.

In Elliot and McGregor's (2001) 2x2 framework, a goal is neither an intrapersonal predisposition to adopt goals nor a socially emphasised desirable outcome, but instead a cognitive representation that serves to direct behaviour. Each of the four goals can be pursued for a host of different *reasons* (antecedents). These reasons provide the *energising force* for behaviour, whereas the goals themselves *channel* this energy toward or away from specific desirable and aversive possibilities respectively. Theoretically, the reasons for pursuing a goal and the goal itself interact, forming 'goal complexes' that determine motivational outcomes and processes (although the number of potential goal complex combinations is immense). Key antecedents/'reasons', can be intrapersonal - such as implicit theories of ability (cf. Dweck & Leggett, 1988), competence expectancies (Nicholls, 1989), need for achievement (Atkinson, 1957; McClelland, Atkinson, Clarke & Lowell, 1953), need for approval (Rogers, 1961; Hall & Lindzey, 1985), fear of failure (Atkinson, 1957), and perceived competence (i.e., *not* a moderator - Elliot & Church, 1997; Lopez, 1999) - as well as situational factors such as perceived motivational climate (cf. Ames, 1984b). Therefore, individuals may experience sport settings very differently depending on the goal(s) adopted and the intrapersonal and situational *reasons* for goal adoption (see Elliot, 1999).

An additional consideration is that, in Elliot's conceptualisation, it is possible for each of the four types of concern (i.e., goals) to be *simultaneously* salient to differing degrees. In this construction of the theory, achievement goals are considered neither orthogonal (i.e., Nicholls' goal orientations) nor bipolar (i.e., Dweck's state goals). Individuals can pursue different goals at the same time. In support of this, positive associations may be found empirically among all four goal involvement states (see Conroy, Elliot & Hofer, 2003).

Both the trichotomous and 2x2 frameworks facilitate the testing of predictions in terms of both antecedents of the four goals and their achievement-related consequences despite the fact that the numerous individual and environmental factors potentially underpinning achievement goal pursuit will impact on processes and outcomes in diverse ways. This is one of the benefits of moving from cognitive theories to social-cognitive theories as described earlier. Theoretically, mastery-approach goals are underpinned by success-oriented factors such as need-for-achievement and incremental beliefs and are thus predicted to bring about generally positive outcomes, particularly in terms of positive affect and self-determination experienced in sport. Performance-avoidance goals, in contrast, are rooted in failure-oriented antecedents such as fear-of-failure and low self-esteem. These are thought to lead to a host of negative processes and outcomes such as high state anxiety, lower self-determination, and impaired performance. Performance-approach goals are complex given that they can potentially be underpinned by factors that orient an athlete to success or failure. For example, a sports participant pursuing performance-approach goals underpinned by a strong fear-of-failure may work hard and persist on a short-term basis, but is likely to experience greater anxiety and lower self-determination than another participant pursuing performance-approach goals underpinned by a strong need-for-achievement and high competence

expectancy. Finally, mastery-avoidance goals are likely to be a product of fear-of-failure, incremental beliefs, low perceptions of competence, perfectionism and situational cues that highlight self and task improvement but also the possibility of failure rather than success (Elliot, 1999).

The consequences of pursuing the above-listed goals will depend on their antecedent/reasons profile. Mastery-avoidance goals underpinned by fear-of-failure may lead to more negative consequences than if underpinned by incremental beliefs or perfectionism. In general, it was postulated that the motivational impact of adopting mastery-avoidance goals will be less positive than that of mastery-approach goals but more positive than that of performance-avoidance goals (Elliot, 1999; Elliot & McGregor, 2001). Empirical findings to date have largely supported the proposed relationships between goal-states, antecedents and consequences (Elliot, 2005) although the conceptual overhaul of achievement goals that has accompanied the introduction of approach and avoidance goals has slowed down empirical proceedings while new theoretical aspects are debated and modified research methods/paradigms are introduced to accommodate the examination of proposed antecedent-goal-consequence relationships.

On occasion, researchers have touched upon ways in which approach-avoidance goals can be conceptualised at the socio-environmental level. Barkoukis *et al.* (2007) used the Learning and Performance Orientations in Physical Education Classes Questionnaire (LAPOPECQ - a dichotomous measure of perceived motivational climate; Papaioannou, 1994) to predict trichotomous goal-adoptions and found that the subscale 'worry about mistakes' (a performance-climate subscale) was a positive predictor of both mastery- and performance-avoidance goals. Church, Elliot and Gable (2001) also studies motivational climate in college classes, gain using the trichotomous model of approach-avoidance goals, and found that interesting material/style (mastery), emphasis on evaluation and assignment scores (mastery), and perceived harsh evaluation (performance-avoidance) were aspects of the environment that could be associated with the trichotomous framework. Overall, however, in the years since these ideas were first proposed, relatively little research has been conducted to establish the ways that approach and avoidance goals can be promoted/stimulated in the social context.

Social Goals

Whilst Nicholls' (1984, 1989) most recognised formulations of AGT focused on task and ego goals, his work prior to (Maehr & Nicholls, 1980), and following (Jarvinen & Nicholls, 1996) his most seminal work discussed ways of conceptualising competence other than the task and ego conceptions. For example, even in achievement contexts such as sport, an individual could strive to have a good relationship with others or to be accepted by others. Maehr and Nicholls (1980) included a social approval goal orientation in addition to task and ego goal orientations in their original theoretical framework. They suggested that a social approval goal orientation emphasises the desire for acceptance by significant others (in this case, through conformity to norms while displaying maximal effort). However, this social approval goal was largely ignored in the research that followed. Urdan and Maehr (1995) called for the resurrection of social goal orientations and highlighted their importance in achievement behaviour; suggesting a wide range of social goal orientations reflecting the wide variety of potential social bonds. These goal orientations included social welfare (i.e., to benefit the larger society by becoming a productive member), social responsibility (i.e., to be conscientious), and social affiliation (i.e., to feel a sense of belonging). Stuntz and Weiss (2003) claimed that there is a multitude of conceptually and meaningfully distinct types of social relationship, and so there must be a corresponding variety of potential social goals. On the basis of this, they also suggest that the 'social approval orientation' originally included in AGT only partially addressed the desire to maintain positive social relationships, even before it was largely ignored during ensuing period of research that focused on task and ego goals.

Social goals are most frequently specified in relation to peer relationships, which can be broadly divided into two categories: friendship/affiliation and peer acceptance/group membership (Allen, 2003; 2006; Bukowski & Hoza, 1989). Friendship/affiliation describes a close, mutual dyadic relationship between two individuals, while peer acceptance/group membership refers to a group-level construct of acceptance or liking by the peer group. Specifically in the sporting domain, positive team interactions, friendship and social support from peers have been linked to sport enjoyment, motivation, expectations of

success, and future participation intentions (e.g., Scanlan, Carpenter, Lobel, & Simons, 1993; Weiss & Smith, 2002). Proponents of social goals research argue that task and ego goal orientations alone are insufficient to explain achievement behaviours in sport, because task and ego goals by definition cannot include the range of social definitions of success in achievement situations (Urdañ & Maehr, 1995; Weiss & Ferrer-Caja, 2002) – especially if Elliot's suggestions are applied regarding the strict restriction of task and ego goals to issues of competence, as distinct from self-presentational and social concerns.

Allen (2006) has reported that friendships and group memberships are key motivating factors in sport, whilst Ullrich-French and Smith (2006) noted that the quality of friendship and peer acceptance also influenced motivational variables such as enjoyment and perceived competence. Allen (2003) validated a questionnaire that modelled social competence (an indication of effectiveness in interactions with other people - Howes & James, 2002) in a notably similar way to the dichotomous achievement goals, with social affiliation goals (familiarity, attachment, mutual benefit) contrasting with social status goals (e.g. How many friends do I have? How many people think I'm good?). This may prove an interesting framework in which to examine 'social competence' given the recent suggestion to re-focus achievement goals onto the concept of competence.

The consideration of social goals is certainly important when considering how key social protagonists are able to influence athlete motivation, and the exclusion of social considerations in this context as not-relating-to-competence (i.e., Roberts, 2001) could prove a costly oversight. There is indirect support for such a conceptualisation in the research presented by Wentzel (2005) examining peer influences on motivation (chiefly in the academic context). Wentzel describes how peer group membership (e.g. as a 'popular', a 'jock' or a 'goth') - which may be analogised to holding social status - carried no relationships with academic achievements or personal characteristics (in the same way that performance 'orientations' often produce equivocal results in relation to important outcome variables - Wentzel & Caldwell, 1997). Indeed, those with the highest 'status' orientations/memberships (e.g. the 'populars') were often described as having undesirable personal characteristics such as being exclusionary, discriminatory and lacking pro-social skills (Parkhurst & Hopmeyer, 1998). In contrast, simply having an affiliated dyadic friendship at school, in line with social affiliation goals, was linked with numerous positive outcomes including self-confidence, sociability, independence, altruism and decreased aggression (Wentzel, Barry & Caldwell, 2004), as well as improved grades and test scores (Berndt & Keefe, 1995; Wentzel, *et al.*, 2004) and increased engagement in school activities (Berndt & Keefe, 1995; Ladd, 1990). This finding may mirror the many positive outcomes linked with mastery orientations/involvement states.

In a recent sport-based study Stuntz and Weiss (2003) found that social goals could be more influential than achievement goals in predicting unsportsmanlike play. Thus firstly, social competence should certainly not be excluded from achievement goal research, especially when considering motivational climates which are heavily socially determined. Secondly, it is perhaps worth entertaining the idea that 'social competence' might operate in a similar fashion to task/sport competence, with a mastery (affiliation) definition and a performance (status) definition. At the very least, the analysis of qualitative data should not exclude social influences on motivation (as is sometimes recommended e.g. Elliot, 1997; 1999) but rather categorise them separately. Nicholls (1984) omitted social approval goals from his conceptualisation on the grounds that 'social goals' was a motivational topic in its own right and blending them with task or ego goals could confound our understanding of motivation (Nicholls, Cheung, Lauer, & Patashnick, 1989). However, it may be the case, particularly when studying socially induced motivational states, that the study of social goals is essential in order to produce a more complete understanding of sport motivation, and this is increasingly the case in sport (Harwood *et al.*, 2008).

ACHIEVEMENT GOAL CLIMATES

The study of what was termed *situational factors* has formed an important strand of AGT, with the most notable contribution arising from Carole Ames' initial work (also integral at the Illinois seminar series during the 70s). This section will begin with an overview of Ames' own research before moving onto a broad discussion of the literature on *motivational climate* – the construct that emerged from Ames' work. Subsequently, a number of future directions for motivational climate research are proposed.

Ames' Approach

Whilst the initial work on motivational climate is credited to Ames and her colleagues (Ames, Ames & Felker, 1977; Ames, 1984a), her early work did not draw on AGT per se but examined the influences of the environment (rewards structures, incentives) on motivational processes (e.g., attributions following success and failure). Ames *et al.* (1977) examined the behaviours of 40 sixth-grade boys following success and failure in competitive and non-competitive situations. Boys were placed in matched-ability pairs and assigned to either fail or succeed. Under competitive conditions, only the 'winner' received a reward but under non-competitive conditions both could choose a prize for participating. Competitive conditions led to significant increases in self-punitive behaviours following failure (rating self as lower ability and undeserving of reward) but 'ego-enhancing' behaviours were shown following success (rating self as higher ability and deserving of rewards). No differences in attribution were found in the non-competitive condition. In a later study, Ames (1984a) created a 'competitive' goal structure by testing children in pairs against each other, and 'individualistic' goal structure by testing children on their own and encouraging them to improve their scores. The outcome (high versus low success) was manipulated by changing the number of solvable puzzles a child was given. Following testing, children were asked questions about what they were thinking during the tasks. In the competitive condition, children tended to link their own *ability* to the outcomes, whereas, in the individualistic condition, children attributed outcomes (success/failure) to *effort*. Further, the individualistic condition led children to 'self-instruct' (e.g. "I need to take my time over this", "I'm going to think carefully about this") more than the competitive condition. In Ames' own words these children "behaved much like Diener and Dweck's (1980) mastery-oriented children and reflected what Nicholls has called task involvement." (p.485). These differences in behaviour as a function of *situational conditions* (cf. goal/reward structures) suggested that differing reward structures influence the salience of various informational sources in self-evaluations of ability, the affective impact of success and failure and subsequent perceptions of ability.

From here, Ames (1984b) defined qualitatively different 'motivational systems' in children, which bore a more than passing resemblance to the conceptualisations of task and ego involvement. Although not directly grounded in achievement goal theory, the competitive and individualistic conditions (as well as cooperative goal structures that formed her work) are closely analogised to what were later termed 'performance involving' (i.e., ego) and 'mastery involving' (e.g., task) climates, respectively.

Ames and Archer (1988) and Ames (1992a) continued investigating these performance-versus-mastery involving classroom environments proposing that situational cues, chiefly controlled by the teacher, will influence the salience of different achievement goals. In non-classroom settings, significant others and important social agents were proposed to determine goal salience by the nature of their "instructional demands" (1992a; p.262). Further, Ames (1992b) asserted that the subjective meaning, or individual's perception of the motivational environment was the critical factor in predicting subsequent achievement goals and patterns of behaviour. This body of literature aided researchers in defining two types of motivational climate: a *mastery climate* where the criteria for evaluation are self-referenced and people are viewed as competent when they have made progress, accomplished a task or learned something new; or a *performance climate* where the criteria for evaluation are heavily other-referenced and the emphasis is upon outperforming others and, notably, *making as few mistakes as possible* (Blumenfeld, 1992).

Based on Epstein (1989), Ames (1992a) then described specific classroom structures that were likely to invoke 'mastery' or 'performance' climates; these six achievement structures were 'task' (design of

tasks), 'authority' (location of decision-making), 'recognition' (distribution of rewards), 'grouping' (manner and frequency of grouping), 'evaluation' (standards for performance) and 'time' (pace of learning). The initial letters of the six structures create the acronym TARGET – and using each structure, a performance or mastery climate could be emphasised by the teacher or other salient social agents. A task-climate would include collaborative tasks, democratic leadership, recognition for effort/improvement, mixed ability groupings, private and individual evaluation, and sufficient time for everyone to learn. An ego-climate would include competitive tasks, autocratic leadership, recognition of normative ability, segregation by ability, normative and public evaluation, and time for only the more advanced students to complete a task. In most coaching environments, however, the above behaviours are likely to occur interchangeably depending on the circumstances (Keegan *et al.*, 2009; 2010).

Manipulations of Situational Goal Structures in Sport

Through manipulating the criteria derived from the TARGET framework, early research attempted to create environmental conditions that would foster mastery or performance involvement in participants. Examples of these studies included Duda and Chi (1989; basketball), Marsh and Peart (1988; aerobics classes), Lloyd and Fox (1992; fitness classes) and Theeboom De Knop and Weiss (1995; children's martial arts classes). All four of these studies supported theoretically specified links between 'climate' and participants' behaviours or cognitions. In Lloyd and Fox's (1992) six-week study, low-performance oriented participants in the performance-involving climate became more performance-oriented over the course of the study and high-performance oriented participants in the mastery climate became less performance-oriented. This is one of very few studies demonstrating an influence of climate upon goal orientation. Such a theoretical link between climate and orientation has been suggested on a number of occasions (Treasure & Roberts, 1995; Duda, 1992; 1993; Nicholls, 1989) but experimental investigations of sufficient length have been scarce. More recently, studies by Smith, Smoll and Cumming (2007; 2009) have demonstrated reductions in anxiety and changes in goal-orientation in relation to perceptions of the motivational climate.

Whilst notable for their field-based, experimental designs, several difficulties exist that undermine the interpretation of these experimental studies in relation to Nicholls' assertions concerning the interactional nature of achievement striving (e.g. Figure 5.4.1). Firstly, in some cases no account was taken of the independent effect of participants' goal orientations on motivational outcomes, and so limited insight can be gained into the relative influence of dispositional and situational characteristics on mastery and performance involvement. Secondly, no measure was taken of participants' *perceptions* of the climate, perhaps misguidedly assuming that the climate manipulation was uniformly interpreted and applied by participants within each condition. Further, no measures of mastery and performance involvement were taken to determine degrees of situational change in achievement goals. Nevertheless, such studies laid down a marker for the testing of achievement goal theory in true-to-life settings and it is unfortunate that this line of research has stuttered slightly in the intervening period (instead focusing on participants' perception of the motivational climate). This design gave way to what has since become the most dominant means of assessing 'situational factors' in achievement goal theory – the measurement of *perceived* motivational climate.

Perceived Motivational Climate in Sport and Physical Education

Following Ames' (1992b) assertion that the perception of the motivational environment was critical, a number of questionnaires emerged to assess the perceived situational and contextual goal emphases in sport and physical education settings. These included: the Learning and Performance Orientations in Physical Education Classes Questionnaire (LAPOPECQ – Papaioannou, 1994; 1995; 1997), the Physical Education Class Climate Scale (PECCS – Goudas & Biddle, 1994), L'Echelle de Perception du Climat Motivational (EPCM - Biddle, Cury, Goudas, Sarrazin, Famose, & Durand, 1995), the Perceived Motivational Climate in Sport Questionnaire (PMSCQ - Seifriz, Duda & Chi, 1992), PMCSQ-2 (Newton & Duda, 1993) and the Motivational Climate Scale for Youth Sports (MCSYS - Smith, Cumming &

Smoll, 2008). These questionnaires, their strengths, weaknesses and associated findings are reviewed in Harwood *et al.* (2008) and Duda and Whitehead (1998). However, in succinctly summarising the sub-factors of these scales: i) effort; ii) learning/skill-improvement; iii) perceived important role; iv) cooperative learning; and v) 'mistakes-are-part-of-learning' are all key themes of a mastery climate; whereas: i) interpersonal comparison (and rivalry); ii) punishment/fear of mistakes; iii) unequal treatment of players; and iv) 'achieving-without-effort' are consistent themes of performance climates. Notionally, any individual leading or participating in sporting activities can influence the motivational climate by differentially emphasising the above themes and it is immediately clear that coaches/teachers, parents and peers are important social protagonists of such climates.

Whilst the development of these questionnaires has contributed significantly to our understanding of the role played by perceptions of contextual influences on motivation, the measurement of motivational climate remains controversial. In addition to what is presented here, Duda and Whitehead (1998) provide a comprehensive summary and critique of the different measures of perceived motivational climate, their origins and properties, and the conceptual appropriateness of certain scales. Ideas for advancements in measurement and other methodological issues will follow shortly. First, however, it is important to summarise what has been learned from the research that has employed these scales (cf. Ntoumanis & Biddle, 1999).

Correlates of Perceived Motivational Climate

In a similar vein to research investigating dispositional goal orientations (Duda & Nicholls, 1992), interest has been equally high in the motivational, affective and behavioural *correlates* of perceived mastery/performance climates in sport and PE. An overview of this research is presented below. Correlates are listed using Roman numerals.

I. Beliefs about causes of sporting success: According to theory, a task/mastery emphasis will be linked to belief that *effort* is necessary for success while an ego/performance emphasis will link to beliefs that success stems from greater (i) *ability* (finite and unchangeable), and possibly (ii) deception or 'gamesmanship.'

The evidence available supports both of these links between perceived climate and sport participants' beliefs about causes of success (Seifriz, Duda & Chi, 1992; Treasure & Roberts, 1998; 2001; Newton & Duda, 1995; Carpenter & Morgan, 1999) although *causality* cannot be established from such correlational data. However, the implications are still important, as participants in a (perceived) performance climate are likely to believe that their potential to succeed is limited by ability (this is believed to both undermine their motivation to continue following failures, and promote the use of deception or foul-play in order to succeed) as increasing effort is not believed to increase the chances of succeeding (see earlier sections). Conversely, participants in (perceived) mastery climates are likely to ascribe failure to a lack of effort and try harder. There is no link between mastery climate and deception beliefs, so these sport performers are unlikely to resort to deception when faced with failure. Thus, arguments for *creating* climates high in task/mastery cues are supported by the existing evidence.

II. Beliefs about the purpose of sport: Sport is regularly cited as an eminent vehicle for the learning of life skills and adaptive coping strategies. However, the evidence available suggests that this perception is only likely when a mastery climate is perceived by participants (Ommundsen & Roberts, 1999; Ommundsen, Roberts & Kavusannu, 1998) as only mastery climates link to the belief that sport serves the purpose of improving and challenging ourselves. Performance climates, on the other hand, appear to link to the belief that sport is for the enhancement of social status. Thus, *if* children are encouraged to participate in sport in order to become 'better people', *then* the current evidence specifies that a mastery climate should be prominent so that participation does not become an exercise in linking an (apparently unchangeable) ability-level to social status.

- III. Positive affect – enjoyment, intrinsic interest and satisfaction:** Theoretically, a focus on task/mastery should promote challenge and autonomy, and cause sport participation to be seen as the end in itself (intrinsic motivation and enjoyment), whilst a focus on ego/performance should promote the idea that the activity is a means-to-an-end: the demonstration of superior ability. This should create pressure and tension and reduce positive affect. The evidence, to date, shows a clear link between perceptions of mastery climates and positive affect in sport participants – meaning that (perceived) mastery climates tend to be more enjoyable, involving and interesting (Balague, Duda & Crespo, 1999; Dorobantu & Biddle, 1997; Kavussanu & Roberts, 1996; Liukkonen, Telama & Biddle, 1998; Newton, Duda & Yin, 2000; Parish & Treasure, 2003; Treasure & Roberts, 2001; Whitehead, Andrée & Lee, 2004). The proposed negative relationship between perceived performance climate and positive affect is only supported in some of the studies (Balaguer *et al.*, 1999; Liukkonen *et al.*, 1998; Parish & Treasure, 2003; Treasure & Roberts, 2001; Whitehead *et al.*, 2004), meaning that performance climates are unlikely to promote positive experiences for sport participants, and may even reduce enjoyment. This discrepancy in findings concerning perceived performance climates may be caused by the failure of current measures to differentiate between the approach and avoidance aspects of climate; i.e., a climate emphasising winning and success may be more adaptive than one emphasising avoiding loss or deselection.
- IV. Negative affect – pressure, tension, anxiety, distress and worry:** The majority of studies examining this correlate suggest that a perceived mastery climate *either* does not relate to negative affective experiences for participants (Escarti & Gutierrez, 2001; Ntoumanis & Biddle, 1998a; b), *or* that a mastery emphasis *reduces* negative affect (Newton *et al.*, 2000; Papaioannou & Kouli, 1999; Pensgaard & Roberts, 2000; Walling, Duda & Chi, 1993). In contrast all the above-listed studies also reported a positive association between perceptions of a performance climate and anxiety, worry, distress, and dissatisfaction with the team. Hence, when participants perceive performance climates, they are usually prone to experience negative feelings, while those perceiving a mastery climate are usually not. On current evidence, therefore, one could argue that the creation of a mastery climate by important social agents should lead to less negative affect than a strong performance (comparative, win-at-all costs) climate.
- V. Perceived competence:** A number of studies (Balaguer, Duda, Atienza & Mayo, 2002; Balaguer, Duda & Crespo, 1999; Digelidis, Papaioannou, Laparidis, & Christodoulidis, 2003; Escarti & Gutierrez, 2001; Goudas & Biddle, 1994; Kavussanu & Roberts, 1996; Liukkonen, Telama & Biddle, 1998; Ommundsen & Roberts, 1999; Sarrazin, Vallerand, Guillet, Pelletier & Cury, 2002; Standage, Duda & Ntoumanis, 2003a; b) have all supported the theoretically positive link between a perceived mastery climate and perceived competence, whereas no association emerged in ten of these studies between a perceived performance climate and perceived competence. Cury, Da Fonseca, Rufo & Sarrazin (2002) – using the PECCS - reported a negative association between perceived performance climate and perceived competence, as did Sarrazin *et al.* (2002). The central conclusion that can be drawn from this research is that perceptions of a mastery climate appear to link strongly with participants' perceived competence which is not the case for perceptions of a performance climate. In fact, in some cases a perceived performance climate is linked with lower perceptions of competence.
- VI. Adoption of learning versus competitive strategies:** Roberts and Treasure (1992) suggest that a task/mastery emphasis promotes internal standards of comparison and striving for improvement leading participants to seeking challenging tasks, persist and participate more in training. Conversely, an ego/performance emphasis promotes interpersonal comparisons, which are relatively unstable outcomes and therefore result in the use of *varied learning strategies* (e.g. no association). Gano-Overway and Ewing (2004), Yoo (1999), Xiang and Lee (2002), and Magyar and Feltz (2003); Ntoumanis, Biddle and Haddock (1999), Ommundsen and Roberts (2001), Ommundsen, Roberts and Kavussanu (1998) and Treasure and Roberts (2001) have reported that sport participants who perceive a mastery climate use more adaptive strategies and learning strategies while playing and training. No link between perceived performance climate and strategy use existed in the majority of these studies. Negative associations with performance climates

include Magyar and Feltz (2003), who found that a perceived performance climate *reduced* the tendency of participants to confidently accept tuition from their coach, and Ryska, Yin and Boyd (1999), who found a link between perceived performance climates and self-reported self-handicapping (avoiding difficult tasks). Ntoumanis, Biddle and Haddock (1999) reported that participants reporting a performance climate also indicated a tendency towards avoidance and emotional-focused (venting, anger) methods of coping as opposed to solution focused coping and seeking social support, which occurred in a perceived mastery climate.

VII. Goal orientations: A number of studies have supported a link between perceptions of climate and participants' own respective goal orientations (e.g., Digelidis *et al.*, 2003; Standage *et al.*, 2003; Williams, 1998; Xiang & Lee, 2002). In establishing the direction of this link (i.e., goal orientation-biases-perception vs. climate-influences-goal orientation) we can draw from *intervention* studies that have been conducted. Lloyd and Fox (1992) and Todorovich and Curtner-Smith (2002) are two examples of studies where changing the climate has been shown to influence participants' goal orientations over time. However, it is certainly plausible that within a given situation or sporting context, a participant's goal orientation/disposition may cognitively bias their selection and perceptions of motivational cues in the climate. In other words, individuals may be more sensitive to cues or behaviours that correspond to their own goal orientations. For example, a high performance/low mastery oriented athlete may seek out any behaviours of a coach that relate to winning, social evaluation and public recognition even if such behaviours do not accurately represent the behaviours, or intended messages of the coach (or parent, or peers). Indeed, this athlete may report a 'high performance/low mastery' climate when the coach may be intending to offer numerous mastery cues that the athlete simply ignores or fails to process. Further research is still required to carefully investigate such issues (Duda, 2001), although a cluster of recent studies demonstrated very low within-class agreement regarding perceptions of the motivational climate (Cumming, Smith, Smoll & Grossbard, 2007; Papaioannou, Marsh & Theodorakis, 2004; Morgan, Sproule, Weigand & Carpenter, 2005), meaning the 'objective' climate may bear little or no relation to what is subjectively perceived. In the immediate here and-now, orientation is likely to bias climate perception, but in the longer term it seems that climates can influence orientations which may prove significant in the applied arena (Duda, 1993).

VIII. Moral development: Theory suggests that a mastery approach links to concern over effort and improvement so opponents are seen as allies in testing and improving skill, meaning foul play and cheating is considered amoral and unsportsmanlike. In contrast, theory suggests a performance climate emphasises winning at all costs and so foul-play/cheating are considered acceptable means to this end - promoting the use of foul play, deception and rule-breaking (Duda *et al.*, 1991; Ommundsen, Roberts, Lemyre & Treasure, 2003). The current evidence is coherent with achievement goal theory and consistent with parallel research into goal orientations, reviewed by Harwood *et al.*, (2008); revealing a strong body of evidence that supports the link between perceived mastery climate and higher moral standards in sport (respect for the rules, officials and opposition; avoiding cheating or intentionally injurious behaviours). Ommundsen, Roberts, Lemyre and Treasure (2003), Fry and Newton (2003), Gano-Overway, Guivernau, Magyar, Waldron and Ewing (2005), Boixadós, Cruz, Torregrosa and Valiente (2004) and Miller, Roberts and Ommundsen (2004) all reported a link between perceived mastery climate and positive moral beliefs and standards. Similarly, Ommundsen, Roberts, Lemyre and Treasure (2003), Fry and Newton (2003), Kavussanu, Roberts and Ntoumanis (2002), Boixadós, Cruz, Torregrosa and Valiente (2004) and Miller, Roberts, Ommundsen (2004) reported a link between a perceived performance climate and lower moral standards.

IX. Motor learning/development: An under-explored yet valuable line of research has tentatively illustrated how the creation of mastery climates (e.g., using the TARGET framework) results in enhanced motor learning, relative to performance climates and 'traditional' methods (Theeboom, De Knop & Weiss, 1995; Valentini & Rudisill, 2004a; b). Although not explicitly suggested in the theory, Papaioannou and Kouli (1999) discuss this finding in terms how reduced confidence and increased anxiety attributable to performance climates *should* reduce motor learning and

performance through cognitive distraction and inappropriate muscle tension. Alternatively, a task climate enhances the potential for motor learning through optimal learning strategies, positive experiences, higher persistence (Whitehead *et al.*, 2004) as well as higher perceived competence.

X. *Flow experiences*: Jackson and Roberts (1992) found that participants with a high task orientation tended to experience flow states more often (i.e., effortless excellent, being 'in the zone'). Similarly, Kowal and Fortier (2000) found that participants who perceived a mastery climate also reported increased experiences of flow, whereas a perceived performance climate showed no relationship to the reporting of flow.

Summary of Motivational Climate Research

In summarising the above findings, there appears to be a strong case that the perception of an environment emphasising/promoting mastery conceptions is likely to produce numerous adaptive and desirable consequences for the participation and development of sports performers. In contrast, when participants perceive performance climates there seem to be less frequently positive or adaptive motivational patterns displayed. In fact perceived performance climates are often correlated with undesirable beliefs and patterns of behaviour. It is imperative that future research establishes the direction of causality in these relationships, in order to determine whether the creation of climates high in mastery cues (for example) leads to the perception of a mastery climate and the numerous associated positive motivational consequences listed above, or whether participants' own orientations and preferences influence what they perceive, rendering the objectively observable behaviours of coaches, parents and peers almost irrelevant, in quite a lonely and solipsistic state-of-affairs which might be labelled cognitive-cognitive, as opposed to social-cognitive. The most likely answer to this question would appear, intuitively, to be a complex interaction of personal traits with objectively observable behaviours in determining participants' perceptions, and subsequent motivational outcomes.

Key Conceptual Issues

Key Social Agents in Influencing Motivation

There is a growing requirement to understand which social agents significantly influence the athlete's motivation at different stages of the athletic career. From the previous summary of questionnaires that measure perceived motivational climate, it is possible to identify coaches/teachers, parents (mother/father) and peers as common determinants of motivational climate. Other influences identified to date also include National Governing Body reward structures and 'sporting heroes' (Carr & Weigand, 2001). It is also important to establish whether national governing bodies, selection/development policies and wider social cultures can affect a sporting motivational climate (Harwood & Swain, 2001) and if they do, how much? And is this knowledge helpful?

Given the potential and identified limitations of some of the above climate scales in isolation, the following sections look more closely at how: i) instructors (coach/teacher), ii) parents and iii) peers can influence motivation by synthesising findings both from sport and PE and also more mainstream social psychology. These social agents are singled out because their immediacy and salience to sport participants is likely to be greater, and therefore they are likely to have the strongest influences on motivation and other related outcomes.

The Instructor – Coaches and Teachers

Much of the research examining motivational climate has done so at a relatively general level (e.g. 'outcome-without-effort orientation' in the LAPOPECQ – it is not clear which social agents determine this). However, overall it is possible to assert that the instructor can: i) differentially emphasise learning and personal mastery (e.g. LAPOPECQ, PECCS) versus normative performance (e.g. PMCSQ-2, EPCM);

ii) induce fear of mistakes (e.g. EPCM, PMCSQ-2) or alternatively convey that mistakes are part of learning (e.g. PMCSQ-2); and additionally coaches/instructors can iii) treat the normatively more able players preferentially (e.g. PMCSQ-2) as opposed to involving every player and making them feel valued (e.g. PMCSQ-2). Instructors can also: iv) contribute to an intra-team rivalry and competition for places (e.g. PMCSQ-2) or alternatively promote co-operative learning (e.g. PMCSQ-2). There is also evidence that coaches/instructors can influence perceived motivational climate by: v) conveying the belief that success is a result of ability and not effort (e.g. LAPOPECQ) or promoting effort and hard work as the route to excellence (e.g. PMCSQ, PMCSQ-2). The Motivational Climate Scale for Youth Sport replicated this pattern but does not contain discrete subscales, in order to facilitate comprehension by young athletes (Smith *et al.*, 2007)

Firstly, not all of the observed instructor influences on motivational climate relate directly to the idea of competence. For example, unequal recognition and success from ability/effort beliefs are, arguably, indirectly linked to an individual's achievement-goal state, in the same way that antecedent variables are linked to goal states in Elliot and Church's (1997) hierarchical model. Thus, it is important to establish whether instructors' influences on participants' definition and valence of competence should be the sole focus of questionnaires assessing perceived motivational climate, or whether an antecedents approach should be taken in line with Elliot and colleagues' recommendations.

Secondly, while the contrasting themes listed may represent a strong synthesis of concepts from the existing research, it is important to establish *how* these themes/ideas are presented and interpreted; through behaviours displayed, beliefs and values conveyed, or by affective responses to situations; in order for future intervention work to be effective. To this end, items within each of the listed scales contain stems such as "on this team the coach gets mad when...", which would be considered an affective response; "on this team coach believes...", which would be considered a (conveyed) belief/value; and "on this team the coach takes failing students out of drills/the coach helps players improve their skills", which qualify as demonstrable behaviours that influence motivational climate. Thus, the separate consideration of affective responses, beliefs and values conveyed and behaviours demonstrated is important within each climate subscale, not least because an absence of one or the other mechanism (e.g. behaviour without affect or belief) is unlikely to be as effective.

Parents

The favoured scale concerning parents' contributions to motivational climate is the PIMCQ-2 (White, 1996; 1998; White, Duda & Hart, 1992), which measures 'learning/enjoyment climate', 'worry conducive climate' and 'success without effort climate' and *can* be applied to both the father and the mother (e.g. Carr & Weigand, 2001; White, 1998). Immediately it is apparent that there is not such a richness of subscales as with instructors, where it is possible to dichotomise different subscales into performance-versus-mastery emphases. Additionally, conceptual and empirical weaknesses exist with this scale (Duda & Hall, 2001), suggesting that any findings from it should be interpreted cautiously. Further, on reflection, the items of the scale are often difficult to classify into mechanisms (behaviours, beliefs or affective style), for example; "my mother makes me worry about failing" – is this a behaviour, belief of affective style? Given the tremendous influence of parents in children's development and socialisation, it may also be necessary to consider influences beyond the performance situation (training/competing).

Pomerantz, Grolnick and Price (2005) are relatively thorough in their review of what parents can do to influence their children's definitions of, and orientations towards, competence and motivation (albeit not specifically addressing sport). Behaviourally, they suggest parents should be involved in their children's pursuits in order to promote learning, foster closeness/relatedness with the child and reinforce self-esteem by communicating belief in the child by investment, and also that the activity is valued. Several studies have now suggested that parental involvement in academic pursuits leads to enhanced academic achievement (Keith *et al.*, 1993; Pomerantz & Eaton, 2001; Senechal & LeFevre, 2002). Pomerantz *et al.* also recommend that parents provide a structure for learning/improvement for the child, by offering guidance, expectations and specific feedback – basically providing assistance in a manner that facilitates children's skill acquisition; this could be termed 'competence support' (Grolnick, 2003). This support is also linked to heightened achievement and task engagement, even in very young children (Hokoda &

Fincham, 1995; Winsler, Diaz, McCarty, Atencio & Chabay, 1999). It is also a beneficial behaviour to promote autonomy in child as opposed to controlling them (Grolnick, 2003) which tends to involve attending whilst not controlling, allowing exploration and mistakes, and encouraging children to generate their own strategies for novel/difficult tasks. In contrast, controlling behaviours include commands, directives, instructions and perhaps punishments (including the withdrawal of affection) which reduce autonomy. Autonomy support is also linked to increased task engagement (Kelley, Brownell & Campbell, 2000), increased perceived competence (Grolnick, Ryan & Deci, 1991) and graded achievement (Hess & McDevitt, 1984). Additionally, parents can emphasise and reinforce effort and hard work, or take a more 'entity-based' approach (cf. Diener & Dweck, 1978; 1980), conveying the belief that skill and ability are fixed attributes and unchangeable. This aspect is reconcilable with parental 'learning climates' and 'success without effort' climates found in existing climate scales. The reinforcement of effort over stable ability has been linked to increased perceived competence (Kamins & Dweck, 1999), subsequent mastery orientations (Hokonda & Fincham, 1995) and the child's own incremental/entity beliefs (Kempner & Pomerantz, 2003).

In terms of beliefs and values, there is evidence that parents who believe their children to be competent encourage more optimal outcomes in the child, although there is a caveat here in that the parental appraisal of competence depends heavily on the child's actual ability and additionally, inaccurate parental beliefs are seen as patronising (Miller, Manhal & Mee, 1991; Peet, Powell & O'Donnell, 1997). It is however, important for parents to value the particular achievement activity (school, sport) as this provides additional incentive for the child to seek competence in this domain (Pomerantz *et al.*, 2005). In terms of affective style, it appears that children who have secure bonds with the parents (thus meeting the need for relatedness) are more able to then seek competence and autonomy in achievement domains (Allen, Marsh, McFarland, McElhaney & Land, 2002). Hence, creating and maintaining a secure attachment to a child (cf. Ainsworth *et al.*, 1978) and also keeping this attachment relatively independent of achievement activities (e.g. love is not dependent on success) is optimal for children's development. This deeper understanding of how parents can influence children's motivation may be important when interpreting interview data and conceptualising climate on the basis of questionnaire subscales.

Fredricks and Eccles (2005; p.4) proposed three main mechanism by which parents may influence their child's participation in sport: "(a) by being a role model either as a coach or by participating in athletics themselves; (b) by interpreting their children's experience and giving them messages about their athletic ability and the value of participating in sport; and (c) by providing emotional support and positive athletic experiences for their children's involvement in sport." In particular, parents' ratings of their child's sporting ability significantly correlate with changes in the child's attitude to sport as they grow older (Fredricks & Eccles, 2002), and parents' beliefs in relation to gender roles in sport also associated with self-rated competence and value-beliefs of children (Fredricks & Eccles, 2002). Whilst this research represents an important contribution to our understanding of whether, and in what respects, parent attitudes influence athlete motivation, it would still be difficult to offer parents advice on how best to act around their athletes, or how to endorse certain key values. The understanding of specific behaviours, the contexts they occur in, and their subsequent impact/influence remains a missing link in this body of research. It would seem that to increase understanding in this area, researcher need to 'unpack' such conclusions as "One possible explanation is that parents convey these beliefs to their child *through both subtle and more overt messages* about their children's abilities and the value the parents themselves attach to their children's participation" (Fredricks & Eccles, 2005; p.22 – italics added). What are these subtle/overt messages? How are they conveyed? Where and when does this happen? Are the outcomes consistent or does it depend on other considerations?

Recent qualitative studies have examined the roles of parents in more detail, identifying such behaviours as additional coaching/instruction, feedback and commentary, emotional responses and emotional intensity, autonomy support, controlling behaviours, maintaining focus, social support (Gould, Lauer, Rolo, Jannes & Pennisi, 2008; Holt, Black, Tamminen, Mandigo & Fox, 2008; Holt, Tamminen, Black, Mandigo & Fox, 2009) and the 'conditionality' of support - whether parents emphasise a return for their 'investment' or assure the athlete that their support is unconditional (Gould *et al.*, 2008; see also Assor, Roth & Deci, 2004). These developments represent an initial response to the above questions, but

there remains a requirement to study athletes outside the 17-25 university/collegiate (i.e., specialisers) population, and likewise it would arguably be very helpful if such findings could be synthesised and understood jointly, as opposed to being conducted in relation to different phenomena and with different emphases (e.g., social support, defining parental influences, testing/expanding SDT etc.). By carrying out qualitative research with a specific focus on motivation, researchers may contribute significantly to the motivational literature as well as the above-described research examining the ways that parents may influence their child's overall involvement in sport.

Peers – Team-Mates and Classmates

In contrast to coach-athlete and parent-athlete influences, peer relationships are more numerous and therefore more multifaceted. On the one hand, team-mates and competitors can influence how a player defines and seeks competence. On the other, players also participate in sport in order to establish and build friendships and seek social validation. In terms of task/sport competence, existing questionnaires can be cited showing how team/class-mates can differentially endorse success-as-learning versus success-as-outperforming-others involvement (e.g. LAPOPECQ, PECCS), and important roles versus neglect and avoidance (PMCSQ-2 – note that these subscales may relate more to social competence than sport/task competence). In terms of 'social competence', Smith (1999; 2003) has shown that performers often participate in order to spend time with their best friend and the quality of relationships often influences motivation (participation, persistence) independently of task/sport competence. When studying social-environmental influences on motivation, which are inherently influenced by key social agents, such considerations cannot be overlooked.

In a more holistic approach, Vazou *et al.* (2005) used qualitative methods to establish: i) improvement emphasis; ii) equality emphasis; iii) relatedness support; iv) concern over mistakes (or lack of); v) co-operation and teamwork; vi) success-from-effort emphasis; vii) intra-team competition; viii) success-from-ability emphasis; ix) autonomy support; x) evaluations/assessments of competence; and xi) intra-team conflict as the key dimensions of a sporting motivational climate with adolescent children from various sports and levels. These different aspects of peer climate all relate in some way to task/sport competence, 'social competence' or both. For example, the 'success-from-effort/ability' dimensions reported clearly related to sporting competence, whereas relatedness support and co-operation/teamwork dimensions may relate more significantly to building either the number or quality of social relationships.

Finally in this section, the factors influencing how players define (and seek to demonstrate) competence may interact quite significantly. For example, it may be difficult to make new friends on a team where a player is poor and the standard is high as team-mates may not wish to relate to a poor player. Likewise, a highly competitive player may not wish to persist long or foster relationships in a group where the sport is played chiefly for fun in the knowledge that none of the players are going to 'make-it.' Additionally, peers may gravitate towards a player who is normatively competent and successful (e.g. wishing to pick up hints and tips), leading to numerous but shallow friendships, whereas less able players may unite in their adversity and form one or two deeper, mutually beneficial friendships. It may also be necessary to examine the issues surrounding *quality of relationships* with certain social agents (e.g., how likely are we to be influenced by the behaviour or values of coaches/peers that we do not like). If a certain social agent is not valued by an athlete, then that agent's perceived mastery and/or performance involving behaviour may carry little or no motivation-related salience whatsoever. Hence, the argument for considering social aspects and the possibility of 'social competence' as a motivation in sporting contexts is strong. Whilst it has been raised in relation to peer-influences on motivation, this does not preclude its examination concerning coaches and parents, as this is particularly likely to be one factor that changes over the career of an athlete.

Level of Influence – Situation, Contexts and Socialisation

There remains an issue of whether climate measures are examining a specific situation (e.g. training, pre-competition) or the context of being 'in this team.' On the one hand, situational influences are

theorised to have the strongest influence on goal involvement (cf. Nicholls, 1984; 1989), but on the other hand the context is likely to be easier to measure (e.g. away from competitions/training venues, less interruption) and more stable over time, especially if researchers measure general perceptions of the motivational climate. Equally, it is possible that longer-term contextual considerations may also influence momentary motivation. The temptation to find a happy-medium may have led researchers to develop scales that (arguably) confound the separate analytical levels of situation and context together. However, from the point of view of conducting good research and promoting more informed applied practice, it is necessary to address this issue.

The conceptual difficulties surrounding analytical levels highlight the central question: 'what is a motivational climate?' According to Nicholls' (1984; 1989) theory, the concept should be restricted to situational influences, i.e., here immediate here-and-now. This would involve specific coaching and parenting behaviours and reactions in specific situations. However, as previously noted, many measures of motivational climate depart from this in two key areas: Firstly, they measure perceived motivational climate as opposed to specific and objectively observable situational indices, and secondly questionnaires tap the more abstract contextual level; with items asking "on this team/when I play sport, the coach gets mad when/the coach believes...." When playing regularly under the same coach then this may come to resemble the situational level that Nicholls' theory specifies. However, the additional consideration of parents and peers (and other extra-personal variables) reveals this confusion of analytical levels to be a significant problem. Suddenly, the situations where motivation can be influenced expands from the training pitch and match day (relatively specific situations) to include time at home, pre and post match discussions, time at school and even time travelling to and from events (the more general sport context). The influence of parents in particular is likely to be reduced at the situational level but vastly important in a more general context. Peers, on the other hand, may have significant influences in the specific performance situations and also more generally (e.g., at school as well). Hence, the social and environmental influences on motivation concern an ostensibly larger conceptual span than just training and competition. In the light of recent reviews (e.g. Harwood *et al.*, 2008) and a conceptual overhaul of achievement goal theory (e.g. Elliot, 1999), there is a growing argument for moving beyond Nicholls' original conceptualisation of situation-specific influences on goal involvement and seeking to examine what key social agents can do in relation to the broader sporting context in order to foster stronger motivation, persistence, and mastery-based definitions of competence. The counterargument to including socialisation in a climate model would be that longer term parental and peer influences contribute to an internalised goal-orientation (i.e. intrapersonal adoption tendency), such as fear-of-failure and need-for-achievement, and not situational goal climate (Wentzel, 1999). It is tremendously difficult to separate these without adequate research accompanied by theoretical debate and clarification.

Another possible solution to the difficult issues regarding which level-of-analysis is most suitable for measures of goal-climate is to take the approach that Elliot (1997, 1999) has introduced with reference to goal-orientation. Instead of conceptualising a goal-orientation as a relatively independent cognitive structure/schema, Elliot proposes multiple intrapersonal antecedents of goal-adoption. This may also be a beneficial approach to take with goal-climates. For example, the behaviours, beliefs and affective styles of coaches, parents and peers may not directly relate to a dichotomous goal-climate *per se*, but rather they may be interpersonal antecedents of goal adoption. It is certainly worth entertaining this prospect in the light of recent developments within AGT.

Approach vs. Avoidance Climates

It is important to reiterate that motivational climate research to date has been based upon Ames, Dweck and Nicholls' two-goal conceptualisations. The propensity of mastery and performance climates to invoke approach or avoidance goals has not been adequately studied. Nevertheless, while certain items on existing scales may correspond to some of Elliott's dimensions (e.g., mastery, performance, approach and avoidance), there is perhaps a need to conceptualise aspects of motivational climate in a manner that explicitly corresponds with the 2x2 approach-avoidance framework (Papaioannou, Milosis, Kosmidou, &

Tsigilis, 2007). Research that identifies the precise constituents of 2x2 (mastery/performance x approach/avoidance climates), could be expected to further our understanding of human motivation, particularly the construct of avoidance motivation that remains understudied within achievement goal theory (Spray & Keegan, 2005).

Developmental Considerations

Nicholls' (1989) research led to the proposition that around 11 years-of-age children become capable, for the first time, of being truly 'ego involved.' However, anecdotal reports, or even a quick trip to the park on a Sunday, would provide examples of children much younger than 11 exhibiting patterns of behaviours consistent with ego involvement (Fry, 2001; Fry & Duda, 1997). This is a tension that requires research attention to resolve it. If true ('Nichollsian') ego-involvement can only be experienced from eleven years of age then do the contents of the social environment matter much during this time; are children oblivious to competitive and pressurising cues below the age of 11? Alternatively, it is possible that the same cues and behaviours are noted by pre-11 and post-11 year old athletes, but they may be interpreted differently following 'differentiation'. In either case, identifying the specific motivationally relevant behaviours of key social agents would facilitate the subsequent study of their impact. This is arguably more informative than simply excluding athletes younger than 12, which has been the approach in much of the achievement goals research to date (e.g., Vazou, Ntoumanis & Duda, 2005 – although see Smith *et al.*, 2007 for a study using athletes below 12 years of age).

Perceived Motivational Climate

As described herein, the vast majority of research in this area has deployed questionnaires such as the Perceived Motivational Climate in Sport Questionnaire (-1: Seifriz, Duda & Chi, 1992; and -2: Newton, Duda & Yin, 2000), the LAPOPECQ (Papaioannou, 1994; 1995; 1997), the PECCS (Goudas & Biddle, 1994), and the EPCM (Biddle, Cury, Goudas, Sarrazin, Famose & Durand, 1995). All of these are measures of *perceived* motivational climate, in relation to dichotomous AGT (Nicholls, 1989). This is generally justified two ways. Justification X: (often unspoken) is the convenience of deploying two questionnaires to the same participant – one tapping their perceptions of the climate, and the other assessing a variable that is theoretically likely to be linked with climate perceptions (this justification is addressed below). Justification Y is that measuring perceived motivational climate is theoretically/empirically better than trying to take an objective measure of the motivational climate. One supporting argument (Y₁) is best voiced by Treasure, Duda, Hall, Roberts, Ames and Maehr (2001), in their 'rebuttal' of Harwood, Hardy and Swain (2000): "Ames (Ames, 1992a; 1992b; Ames & Archer 1988), Maehr (Maehr & Braskamp, 1986; Maehr & Midgley, 1991) and colleagues... ..have *repeatedly shown* that it is the subjective interpretation of the environment, or perceived motivational climate, that we must examine to understand the meaning of achievement endeavours" (p.319 – italics added). In order for this statement to be convincing, it is necessary to understand what is meant by "repeatedly shown." Has the case been conclusively demonstrated? Have subjective perceptions been shown to conclusively contribute more to our empirical understanding than the measurement (or manipulation) of situational indices?

Y₁ is, in fact, not supported by the papers quoted: a careful reading of the five papers cited reveals that three of them are reviews and book chapters specifying and reinforcing theoretical tenets (not research findings); these discuss but do not *demonstrate* the above claim. Rather, they are the authors' interpretations and conjectures speculating about the potential meaning of their own ongoing work (which is good, but it does not constitute a demonstration). The remaining two are indeed, original research papers, but they do not *demonstrate* the claim made in Y₁. Instead, it is simply assumed by their methodology (measuring the children's perceptions of climate) but there is no explicit comparison of 'perceived' versus 'actual' climate in terms of their predictive accuracy. What emerges is a point that has been repeatedly assumed (or at best, repeatedly argued) rather than "repeatedly shown." This should not be

taken as evidence that “subjective interpretations” are the only avenue for exploration in studying motivational climate.

A second supporting argument (Y_2) is the finding of Papaioannou (1994) that, despite sharing the same class environment, the variability in perceptions of motivational climate between pupils in the same class was even greater than the variability between classes. Hence, the subjective perception of the class environment must be more important than the objective class environment. Whilst initially quite convincing, it is worth noting that this finding was not the central outcome of the study but was instead picked up some time after publication. This reasoning also leads to a logical absurdity, that rather than training coaches to create motivating atmospheres, scientists and practitioners should simply instruct the athletes themselves to interpret any coach/parent/peer behaviours as optimally motivating (task/mastery/approach-oriented/friendly). On this foundation, supporting argument Y_3 is established: an array of studies supporting achievement goals by demonstrating that generalised perceptions of a task climate have invariably correlated with adaptive motivational outcomes, whilst perceptions of an ‘ego’ climate have either shown no correlation, or been associated with maladaptive motivational patterns. An example of this argument is as follows: [to question the importance of this research] “contradicts research from 14 studies, with a total sample of 4,484, showing a large effect [using meta-analysis techniques] for a mastery climate on positive psychological outcomes such as satisfaction, positive attitudes, and intrinsic motivation (Ntoumanis & Biddle, 1999). To reduce this effect to “small” would require 85 studies with zero effects!” (Biddle, Duda, Papaioannou & Harwood, 2001; p.466). And since this assertion, many more studies have been conducted adding weight to this case. This is a considerable and impressive body of evidence. However, the task of reducing this “large” effect to small/zero does not necessarily require 85 studies showing no result (which may never be published anyway as ‘no result’ studies are hardly ever submitted for publication). All that is required is a brief perusal of the literature on cognitive biases, such as social desirability bias (Crowne & Marlowe, 1960), confirmation bias (Wason, 1960; 1966), the lucid fallacy (Taleb, 2007), and the confabulation of Gazzaniga’s split brain patients (Gazzaniga, 1998) – amongst other effects. All of these observations suggest a tendency for participants to demonstrate an inherent need to appear logically consistent (both to themselves and others). Hence, there is just as much chance that participants filling in these questionnaires unconsciously try to produce a pattern of responses that is internally consistent (and perhaps partially based on a stereotype or a belief they hold, or worse still, the experimenter’s explanation/expectations). Whichever variable is being measured, the ‘code’ would not be especially difficult to crack as there are only usually two options - ‘competitive emphasis’ and/or ‘personal/effort emphasis’ – followed by a questionnaire assessing something ‘nice’ (enjoyment, intrinsic motivation, moral behaviour) and/or something ‘nasty’ (unhappiness, extrinsic motivation, rule-breaking/immoral behaviour). As such, answering the first few questions would make it almost impossible for the participant to appear inconsistent in answering the rest. If a respondent likes competition, their responses will reflect that, and if they loath competition, their responses will reflect that. Even if one is not cautioned by this problem, we can also consider the problem of the ‘selective perception’ bias, the tendency for personal preferences and expectations to affect perception (Hastorf & Cantril, 1954). In the light of this effect, it should not be surprising that the strongest and most consistent correlations are between achievement goal orientation, and perceptions of motivational climate (as reviewed in Harwood, Spray & Keegan, 2008 and Ntoumanis & Biddle, 1999). It is important to enquire how different the constructs are when measuring ‘goal orientation’ and ‘perceived goal climate.’ If two constructs are measured with remarkably similar questionnaire items, are frequently highly correlated, and appear to correlate with a highly similar constellation of other variables, how different are they? In measuring ‘perceived motivational climate’ how close are we *in reality* to measuring ‘achievement goal orientation’ and making inferences about coach/teacher behaviours that, in fact, are being “actively perceived” by the participants in a rather selective manner? To what extent was Papaioannou’s (1994) result simply a reflection of increased variability in the *orientations* of the children within each class? These cognitive biases appear to pose serious problems for both Y_2 and Y_3 .

Returning to Justification X, which might be labelled the ‘convenience’ justification for measuring perceived motivational climate, this too requires a degree of critical examination. Whilst pragmatic limitations are common in science, and absolutely should not become impediments to progress (Giacobbi,

Poczwardowski, & Hager, 2005), scientists must always critically assess the methods they deploy, and never resort to faithfully following the methodological specifications put forward by others (Feyerabend, 1975). As such, the contribution of research using measures of perceived motivational climate, as reviewed in Harwood *et al.* (2008), must be recognised as a significant contribution - not least as it has produced quite consistent findings highlighting the importance of perceived situational and contextual influences in determining athlete motivation. However, the reason for examining perceived subjective interpretations must be recognised as a pragmatic limitation, and not a theoretical imperative. As noted above, if treated as a theoretical imperative and taken to its logical extreme this approach would entail that there is no need to train coach and parents in order to optimise the athletic experience, but rather simply instruct the athlete to interpret all behaviours from these social agents as kind, helpful, positive and mastery-involving. Instead, it is worth considering whether the pragmatic limitation posed in studying a complex social and environmental context (which currently forces a retreat into measuring simplified and abstract subjective perceptions) may perhaps be addressed by using a 'bottom-up' approach, and examining the unique, combined and interactive influences of specific behaviours and exchanges in determining athletes' motivation. Difficult? Yes. Impossible? No.

As a result of this simultaneously dense, disparate, intimidating and yet sometimes uninformative literature (especially regarding pragmatic applied recommendations), a pressing need has been identified for research that: a) increases the applicability of the above-discussed theories (thus also increasing their testability); and b) allows scientists to make practical recommendations based on the extensive research and relatively consistent findings discussed here. To quote Harwood *et al.* (2008) on the matter, it constitutes "a research area that probably represents the most salient advances that we can make as academics" (p.185).

Recent Developments

In response to many of the above developments, criticisms, debates and questions, Keegan *et al.* (2009, 2010, in submission) conducted a series of qualitative studies with athletes at different stages of their careers. The first of these (Keegan *et al.*, 2009) qualitatively explored the motivational climate perceived by young athletes at the start of their participation in sport (termed *sampling*), whilst the subsequent two studies investigated the same phenomenon in middle-career (termed *specialising*) and elite athletes (termed *investment* or *mastery*) respectively. All three studies examined the ways in which athletes perceived their coaches, parents and peers could influence their motivation, positively or negatively. A key element of this series of investigations was that none of the above-described theories of motivational regulation (AGT, SDT, 2x2, social goals) were adopted in advance, but rather all were kept in mind: a kind of 'theoretical agnosticism' advocated by Henwood and Pidgeon (2003). This was contrasted against previous qualitative studies that had explicitly (or implicitly) adopted a single theory as their guiding principle. For example, Pensgaard and Roberts (2002) and Vazou *et al.* (2005) explicitly accept AGT *a priori*, as guiding the questions and analysis ("the motivational perspective adopted in this study [achievement goal theory] determined the variables and concepts focused upon, and it also guided the interpretation" – Pensgaard & Roberts, p.55), whilst Vazou *et al.* deductively coded raw data themes (quotes) into task and ego categories, *before* conducting a more conventional inductive content analysis within each category. This theory-led approach can also be argued to occur implicitly at times; for example, in Mallett and Hanrahan's (2004) qualitative study, financial reward was associated exclusively with an ego climate as a function of status and normative reward, when it could be argued that elite athletes need to be paid in order to give up work and train full time to develop their skills. Likewise, Krane *et al.* (1997) clustered 'training-through-injury' and issues surrounding body-shape and disordered eating under an ego-climate on the grounds that they are maladaptive behaviours, when (rightly or wrongly) they could be considered to contribute to improved task performance (e.g., judges scores) depending, perhaps, on the level of competition. To become 'theoretically agnostic,' processes of private reflection, group reflection, peer review and consensus validation were heavily utilised in order to challenge the influence of existing theories and preconceptions during the analysis. By removing the 'guiding' role of theories, the Keegan *et al.* studies

returned rich data reflecting the complexity of the social milieu; and whilst the interested onlooker may wish to 'cherry-pick' themes in relation to their favoured theory, the results took the form of a comprehensive list of highly specific (situational rather than contextual) motivationally impactful behaviours, as exhibited by the coaches, parents and peers of developing athletes.

In all three Keegan *et al.* studies, the influences of social agents were related to the specific roles they fulfil in relation to the athlete, which varied as the athletes progressed, developed and matured. The analysis indicated that the influences of coaches related most strongly to the manner in which they perform their roles of instruction and assessment, whereas parents' influences were most salient in terms of the way they support participation and learning. Both parents and coaches exerted influences through their leadership styles, affective responses and pre-performance behaviours. In support of this notion, within the *initiation/sampling* and *specialising* studies (2009 and 2010, respectively), the influences of coaches and parents were most similar where their roles converged, and differed most noticeably where their roles were different. In both these studies, peers influenced motivation through competitive behaviours, collaborative behaviours, evaluative communication and through their social relationships. These similarities between career-phases were interpreted in terms of the common characteristics between each: the key social agents, their relationships and the achievement contexts remain relatively consistent between the two career stages, with an increasing focus on skill development and fewer sports being the main differences (Côté & Hay, 2002a; b; Wylleman *et al.*, 2004). The study of elite athletes (Keegan *et al.*, in submission) suggested a markedly decreased influence from parents, whose role became becoming increasingly distal, and limited to emotional and moral support, whilst coaches and peers were reported to be focal influences. Themes of feedback/evaluation, and pre-performance motivating behaviours were common to all social agents (to a lesser extent with parents), whilst the coach-athlete and peer-athlete relationships appeared to be important in *both* moderating the motivational impact of behaviours *and* directly influencing motivation.

The most salient theme through all three studies in terms of promoting motivation was 'positivity' – which included any behaviours that incite approach-type motivation (e.g., building confidence, highlighting positive consequences), positive affect/emotion, friendship, collaboration, and, of course, praise. In contrast, behaviours which were associated with negativity were generally linked to undermining motivation. At the general level, behaviours invoking avoidance-type motivation (e.g., emphasising punishments and negative consequences, a fault-finding evaluative style), negative affect/emotion (such as anger or sadness), conflict, rivalry, and, of course, criticism, all seemed to be associated with an increased propensity for reduced motivation. Less prominent in the three studies, but certainly notable, were a cluster of ideas surrounding facilitation: making it possible for the athlete to practice, learn, improve, or achieve. This might include an autonomy-supportive leadership style, offering useful, relevant and overtly justified advice (at opportune moments), facilitating/encouraging practice, creating tasks/games that allow athletes of any ability level to engage and improve, providing transport, equipment and moral support, or collaborating with peers (for example, to help them learn a skill). There appeared to be a very fine line between this facilitative, autonomy supportive approach, and the giving of unsolicited instructions or opinions – which was sometimes described as being controlling, judgemental or disparaging, and thus undermining autonomy (even if the provider was convinced they are being helpful or has the best intentions). Coaches who exhibited a controlling leadership style, parents who became over-involved or who made their love/support contingent upon sporting success, and peers who refused to collaborate or who willingly cultivated links between normative ability and social popularity were all potentially linked with detrimental effects on athlete motivation, as they could be viewed as undermining the athlete's own need for autonomy. Finally, affiliation and close relationships were also almost invariably associated with adaptive motivation from athletes. The main exception to this appeared to be that when an athlete likes their coach/parent/peers, they sometimes wished to avoid "letting them down." However, for the main part, feelings of mutual closeness and commitment with one's coach, and experiences of friendship and group belonging amongst the peer group were frequently associated with positive motivational patterns.

There were other more subtle themes over-arching three studies: First, a complex interactivity between motivationally-relevant behaviours and their impact on motivation. The authors were quite emphatic in reporting that it was almost impossible to establish any direct and exclusive correspondence between the behaviour of a coach, parent or peer and the impact on athlete motivation. The influence of all motivationally-relevant behaviours from these key social agents seemed to be moderated by other factors

such as: a) the behaviours immediately preceding the event; b) co-occurring behaviours – i.e., ‘*it’s not what you said, it’s the way (or moment, or place) you said it*’; c) the consistency of the behaviour in relation to the person concerned and in comparison to others; d) the relationship between the athlete and protagonist; and e) other contextual or environmental variables (e.g., training vs. competition, stage-of-season). This could either be considered as unnecessarily complicated (in comparison to a simple dichotomous, trichotomous or four-goal model), or it could be viewed as a first step towards deconstruction of the motivational climate: which has been called for in studies such as Smith, Smoll and Cumming (2007), who commented on the need to “clarify relations between particular intervention elements and various outcome measures” (p. 54). Elliot (1999) also speculated: “it is also possible that some of the antecedent variables combine together to jointly and interactively predict achievement goal adoption” (p.176).

Conclusion

As a result of conducting the above studies, Keegan et al. (2010) coined the term *motivational atmosphere* in order to reflect the apparent supercomplexity of the social milieu in determining athlete motivation. For example, whilst climates can exist within an atmosphere, the atmosphere itself is much bigger and more complex than the climate, which meteorologically (and perhaps fittingly) is usually taken to mean the averaging out of weather conditions over a period of time. Research reflecting this complex interactivity is, on the basis of the preceding chapter, long overdue and, most importantly, methodological approaches now exist to facilitate such research. The findings of the Keegan et al. studies may also act as a foundation for future research, allowing new studies to progress by examining the situational level-of-generality at a moment-to-moment level, rather than relying on generalised perceptions (which, at best, represent the contextual level-of-generality and which arguably guarantee the finding of generic associations between variables). In order to more fully understand the specific behaviours (*and* sets of behaviours) from each social agent, *and* their potential combinations, *and* the specific moments in which these behaviours should occur, in relation to the way they impact upon motivation - then more research is undoubtedly necessary.

One very salient benefit of the new vein of research being suggested is that, by examining the situational influences on athlete motivation in detail, there is increased potential to decrease the conceptual distance between theory and practice. Where theoretical relationships are well understood and well supported, such research would return a relatively comprehensive list of the ways in which these theoretical ideas can be conveyed or emphasised by coaches, parents and peers. This would facilitate the provision of specific advice to key protagonists involved in the development of motivated athletes. Indeed, without increased relevance and immediacy, research into motivation may be in danger of being left out of coach education programmes (and coaches’ thoughts) entirely.

From an applied perspective, decreasing the conceptual distance between theory and practice would facilitate the following improvement to the advice which applied practitioners can offer (in *italics*): “Here is what [Theory A] says about motivating athletes. Here is some research supporting [Theory A]. *Here are some (carefully researched) pragmatic suggestions as to how you can implement this theory and research in your own practice [coaching/parenting].*” In addition, however, rather than prescribing a certain way of acting most of the time, the best advice that can be given in light of the ‘complex interactivity’ described in the Keegan *et al.* studies is for key social agents to keep in mind the following: what ‘good’ motivation looks like, how this varies in different circumstances, what actions and behaviours tend to precipitate ‘good motivation’, and how certain behaviours may take on a different light depending on recent, co-occurring and subsequent behaviours (perhaps these combinations might be termed *atmospheric complexes* – cf. Elliot, 1999). One of the most fruitful avenues for future research would be to try and begin understanding these complexities and interactions in the motivational atmosphere and the ways in which they combine to influence motivation. The literature is also beginning to recognise dual-roles for certain social agents, for example parent-coaches, sibling-team-mates, spouse-coaches etc. (Jowett & Meek, 2000). These may also offer interesting insights into the motivational atmosphere. If a single person is carrying out multiple roles in an athlete’s motivational atmosphere - competitive roles, training roles, evaluative roles and supporting social and emotional needs - how might this impact upon the athlete?

Provided that the basic findings of Keegan et al. are substantiated in the future (either by research evidence, critical debate, or both), then the most pressing avenue for further research is in trying to 'solve,' or at least understand, the enigma of the complex interactions that occur in shaping athletes' immediate motivation. Future studies may wish to examine: a) interactions between 'atmospheric' variables/themes; b) interactions between a behaviour and the athlete's own predispositions/personality (e.g., momentary and/or 'socialisation'); c) the specific impact of behaviours in context (for example, is a relationship a direct influence on motivation or does it moderate the way that certain behaviours are perceived? Or is it both?); and d) how important is consistency in a motivational atmosphere? For example, if a single derogatory comment is made against a background of general praise, facilitative coaching and a positive relationship, is it simply ignored or is it even more detrimental? What about a single derogatory comment against a background of consistent criticism? And under what circumstance might one of these 'frames-of-reference' change from generally positive to generally negative, or vice-versa? This research could take the form of quantitative experiments, perhaps chipping away at one variable at a time, or qualitative action research attempting to ascertain *what* can each key protagonist do, *when* (i.e., what circumstances), and *how* do they go about it (cf. Smith, 1989)?

It is perhaps worth noting that all the above-suggested ideas for studies focus on the situational level: on immediate behaviours and on collections of behaviours. This is a marked departure from the general tendency in motivational research to focus on the most abstract of contextual levels and/or general perceptions. One of the most fruitful aspects of the Keegan et al. studies was the methodological decision that, rather than building a model influenced by, and derived from, theoretically prescribed ideas (e.g., task and ego climates), it may well be possible to construct models reflecting 'real-life' situational occurrences and behaviours, which could even be observed quite objectively. This might also reduce the requirement to 'short-circuit' the process-of-discovery by exclusively assessing athletes' subjective perceptions (often at a very general level), using questionnaire items derived from quite abstract theoretical tenets. If, by examining the situational level without any *a priori* commitment to current models of motivational regulation, future research were to progress in a way that allows coaches, parents and peers alike to become reflectively aware of their impact on athlete motivation, then this would arguably constitute significant progress in the field of motivation research in sport.

References

- Adie, J., Duda, J.L., & Ntoumanis, N. (2008). Autonomy support, basic need satisfaction and the optimal functioning of adult male and female sport participants: A test of basic needs theory. *Motivation & Emotion*, 32, 189-199.
- Ainsworth, M.D.S., Blehar, M.C., Waters, E., & Wall, S. (1978). *Patterns of attachment: A psychological study of the strange situation*. Hillsdale, NJ: Erlbaum.
- Allen, J.B. (2003). Social motivation in youth sport. *Journal of Sport and Exercise Psychology*, 25, 551-567.
- Allen, J.B. (2006). The perceived belonging in sport scale: Examining validity. *Psychology of Sport and Exercise*, 7, 387-405.
- Allen, J.B. & Hodge, K. (2006). Fostering a learning environment: Coaches and the motivational climate. *International Journal of Sport Science and Coaching*, 1, 260-277.
- Allen, J.B., & Howe, B. (1998). Player ability, coach feedback and female adolescent athletes' perceived competence and satisfaction. *Journal of Sport and Exercise Psychology*, 20, 280-299.
- Allen, J.P., Marsh, P., McFarland, C., McElhaney, K.B., Land, D.J., Jodl, K.M., & Peck, S. (2002). Attachment and autonomy as predictors of the development of social skills and delinquency during mid-adolescence. *Journal of Consulting and Clinical Psychology*, 70, 56-66.
- Ames, C. A. (1984a). Achievement attributions and self instruction under competitive and individualistic goal structures. *Journal of Educational Psychology*, 76, 478-487.

- Ames, C. A. (1984b). Competitive, cooperative, and individual goal structures: A cognitive-motivational analysis. In R. Ames & C. Ames (Eds.), *Research on motivation in education: Student motivation* (pp. 177-207). New York: Academic Press.
- Ames, C. (1992a). Classrooms: Goals, structures, and student motivation. *Journal of Educational Psychology*, 84, 261-271.
- Ames, C. (1992b). Achievement goals, motivational climate, and motivational processes. In G.C. Roberts (Ed.) *Advances In Motivation in Sport and Exercise*. pp. 161-176. Champaign, IL: Human Kinetics.
- Ames, C. & Archer, J. (1988). Achievement goals in the classroom: Students' learning strategies and motivation processes. *Journal of Educational Psychology*, 80, 260-267.
- Ames, C. A., Ames, R., & Felker, D. (1977). Effects of competitive reward structure and valence of outcome on children's achievement attributions. *Journal of Educational Psychology*, 69, 1-8.
- Amorose, A.J., & Anderson-Butcher, D. (2007). Autonomy-supportive coaching and self-determined motivation in high school and college athletes: A test of self-determination theory. *Psychology of Sport and Exercise*, 8, 654-670.
- Amorose, A.J. & Horn, T.S. (2000). Intrinsic motivation: Relationships with collegiate athletes' gender, scholarship status, and perceptions of their coaches' behavior. *Journal of Sport and Exercise Psychology*, 22, 63-84.
- Amorose, A. J., & Horn, T. S. (2001). Pre- and post-season changes in intrinsic motivation of first year college athletes: Relationships with coaching behavior and scholarship status. *Journal of Applied Sport Psychology*, 13, 355-373
- Amorose, A.J., & Weiss, M.R. (1998). Coaching feedback as a source of information about perceptions of ability: A developmental examination. *Journal of Sport & Exercise Psychology*, 20, 395-420.
- Anderson, R., Manoogian, S.T., & Reznick, J.S. (1976). The undermining and enhancing of intrinsic motivation in preschool children. *Journal of Personality and Social Psychology*, 34, 915-922.
- Assor, A., Roth, G., & Deci, E.L. (2004). The emotional cost of parents' conditional regard: A self-determination theory analysis. *Journal of Personality*, 72, 47-88.
- Atkinson, J. (1957). Motivational determinants of risk-taking behaviour. *Psychological Review*, 64, 359-372.
- Atkinson, J. and Birch, D. (1970). *The dynamics of action*. John Wiley & Sons
- Atkinson, J., & Birch, D. (1978). *An introduction to motivation* (2nd ed.). Cincinnati: D. Van Nostrand Company
- Balaguer, I., Duda, J.L., & Crespo, M. (1999). Motivational climate and goal orientations as predictors of perceptions of improvement, satisfaction and coach ratings among tennis players. *Scandinavian Journal of Medicine and Science in Sport*, 9, 381-388.
- Balaguer, I., Duda, J.L., Atienza, F.L., Mayo, C. (2002). Situational and dispositional goals as predictors of perceptions of individual and team improvement, satisfaction and coach ratings among elite female handball teams. *Psychology of Sport and Exercise*, 3, 293-308.
- Bargh, J.A., Chartrand, T.L. (1999). The unbearable automaticity of being. *American Psychologist*, 54, 462-479.
- Barkoukis, V., Thøgersen-Ntoumani, C., Ntoumanis, N., & Nikitaras, N. (2007). Achievement goals in physical education: Examining the predictive ability of five different dimensions of motivational climate. *European Physical Education Review*, 13, 267-285.
- Berlyne, D.E. (1975). Behaviourism? Cognitive theory? Humanistic psychology? To Hull with them all. *Canadian Psychological Review*, 16, 69-80.
- Bernard, L.L. (1924). *Instinct: A study of social psychology*. New York: Holt.
- Berndt, T.J., & Keefe, K. (1995). Friends influence on adolescents adjustment to school. *Child Development*, 66, 1312-1329.
- Biddle, S., Cury, F., Goudas, M., Sarrazin, P., Famose, J.P. and Durand, M. (1995). Development of scales to measure perceived physical education class climate: A cross-national project. *British Journal of Educational Psychology*, 65, 341-358.
- Biddle, S. J. H., Duda, J. L., Papaioannou, A., & Harwood, C. (2001). Physical education, positivism, and optimistic claims from achievement goal theorists: A response to Pringle. *Quest*, 53, 457-470.

- Blank, P.D., Reis, H.T., & Jackson, L. (1984). The effects of verbal reinforcements on intrinsic motivation for sex-linked tasks. *Sex Roles*, 10, 369-387.
- Blumenfeld, P.C. (1992). Classroom learning and motivation – clarifying and expanding goal theory. *Journal of Educational Psychology*, 84, 272-281.
- Blanchard, C. M., Mask, L., Vallerand, R. J., De La Sablonniere, R., & Provencher, P. (2007). Reciprocal relationships between contextual and situational motivation in a sport setting. *Psychology of Sport and Exercise*, 8, 854-873.
- Boaz, A., Ashby, D., & Young, K. (2002). Systematic reviews: what have they got to offer evidence based policy and practice. ESRC UK Centre for evidence based policy and practice: working paper 2.
- Boixadós, M., Cruz, J., Torregrosa, M., & Valiente, L. (2004). Relationships among motivational climate, satisfaction, perceived ability and fair play attitudes in youth soccer players. *Journal of Applied Sport Psychology*, 16, 301-317.
- Bolles, R. C. (1975). *Theory of motivation* (2nd ed.). New York: Harper & Row.
- Brière, N.M., Vallerand, R.J., Blais, M.R., & Pelletier, L.G. (1995). Développement et validation d'une mesure de motivation intrinsèque, extrinsèque et d'amotivation en contexte sportif : L'Echelle de Motivation dans les Sports (EMS). *International Journal of Sport Psychology*, 26, 465-489.
- Bukowski, W. M., & Hoza, B. (1989). Popularity and friendship: Issues in theory, measurement, and outcome. In T. J. Berndt & G. W. Ladd (Eds.) *Peer relationships and child development* (pp. 15-45). New York: Wiley
- Cacioppo, J.T., von Hippel, W., & Ernst, J.M. (1997). Mapping cognitive structures and processes through verbal content: The thought-listing technique. *Journal of Consulting and Clinical Psychology*, 65, 928-940.
- Cacioppo, J.T., Crites, S.L., & Gardner, W.L. (1996). Attitudes to the right: Evaluative processing is associated with lateralised late positive event-related brain potentials. *Personality and Social Psychology Bulletin*, 22, 1205-1219.
- Carpenter, P. J., & Morgan, K. (1999). Motivational climate, personal goal perspectives, and cognitive and affective responses in physical education classes. *European Journal of Physical Education*, 4, 31-44.
- Carr, S., & Weigand, D.A. (2001). Parental, peer, teacher and sporting hero influence on the goal orientations of children in physical education. *European Physical Education Review*, 7, 305-328.
- Carstensen, L.L. (1993). Motivation for social contact across the lifespan. In J. Jacobs (Ed.) *Nebraska symposium on Motivation: Developmental Perspectives on Motivation* (Vol. 40, pp.209-254). Lincoln: University of Nebraska Press.
- Chatzisarantis, N. Biddle, S. Hagger, M. & Smith, B (2003). A path analytic meta-analysis of the perceived locus of causality in sport, physical education and physical activity contexts. *Journal of Sport and Exercise Psychology*, 25, 284-306.
- 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.
- Clark, L.A., & Watson, D. (1999). Personality, disorder, and personality disorder: Towards a more rational conceptualization. *Journal of Personality Disorders*, 13, 142-151.
- Clifford, M.M. (1988). Failure tolerance and academic risk-taking in ten-to twelve-year-old students. *British Journal of Educational Psychology*, 58, 15-27.
- Clifford, M.M. (1990). Students need challenge, not easy success. *Educational Leadership*, 48, 22-26.
- Coatsworth, J.D., & Conroy, D.E. (2009). The Effects of Autonomy-Supportive Coaching, Need Satisfaction, and Self-Perceptions on Initiative and Identity in Youth Swimmers. *Developmental Psychology*, 45, 320-328.
- Conroy, D. E., Elliot, A. J., & Hofer, S. M. (2003). A 2 X 2 achievement goals questionnaire for sport: Evidence for factorial invariance, temporal stability, and external validity. *Journal of Sport & Exercise Psychology*, 25, 456-476.
- Costa, P.T., & McCrae, R.R. (1992). "Four ways five factors are not basic": Reply. *Personality and Individual Differences*, 13, 861-865.

- Côté, J., Baker, J., & Abernathy, B. (2003). From play to practice: A developmental framework for the acquisition of expertise in team sport. In J. Starkes and K.A. Ericsson (Eds.), *Expert performance in sports: Advances in research on sport expertise*, (pp. 89-113). Champaign, IL: Human Kinetics.
- Côté, J., & Hay, J. (2002a). Children's involvement in sport: A developmental perspective. In J.M. Silva & D.E. Stevens (Eds.) *Psychological foundations of sport* (pp. 484-502). Boston: Allyn & Bacon.
- Côté, J., & Hay, J. (2002b). Family influences on youth sport performance and participation. In Silva, J. & Stevens, D. (Eds.). *Psychological foundations of sports* (pp. 503-519). Boston, MA: Allyn and Bacon.
- Covington, M.V., & Omelich, C.L. (1979). It's best to be able and virtuous too: Student and teacher evaluative responses to successful effort. *Journal of Educational Psychology*, 71, 688-700.
- Cresswell, S.L., & Eklund, R.C. (2005). Motivation and burnout in professional rugby players. *Research Quarterly for Exercise and Sport*, 76, 370-376.
- Cresswell, S.L. & Eklund, R.C. (2005). Changes in athlete burnout and motivation over a 12-week league tournament. *Medicine and Science in Sports and Exercise*, 37, 1957-1966.
- Crowne, D.P., & Marlowe, D. (1960). A new scale of social desirability independent of psychopathology. *Journal of Consulting Psychology*, 24, 349-354.
- Csikszentmihalyi, M., & Csikszentmihalyi, I. (1988). *Optimal experiences: Psychological studies of flow in consciousness*. New York: Cambridge University Press.
- Csikszentmihalyi, M., Rathunde, K., & Whalen, S. (1993). *Talented teenagers: The roots of success and failure*. New York: Cambridge University Press.
- Cumming, S.P., Smith, R.E., Smoll, F.L., Standage, M., & Grossbard, J.R. (2008). Development and validation of the Achievement Goal Scale for Youth Sports. *Psychology of Sport and Exercise*, 9, 686-703.
- Cury, F., Da Fonseca, 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 Fonseca, D., & Rufo, M. (2002). The trichotomous achievement goal model and intrinsic motivation: A sequential mediational analysis. *Journal of Experimental Social Psychology*, 38, 473-481.
- DeCharms, R. (1968). *Personal causation*. New York: Academic Press.
- Deci, E. L. (1971). Effects of externally mediated rewards on intrinsic motivation. *Journal of Personality and Social Psychology*, 18, 105-115.
- Deci, E. L. (1975). *Intrinsic motivation*. New York: Plenum Publishing Co.
- Deci, E.L. (1995). Self determination theory and education. *Ceskoslovenska Psychologie*, 38, 420-426.
- Deci, E.L., Betley, G., Kahle, J., Abrams, L., & Porac, J. (1981). When trying to win: Competition and intrinsic motivation. *Personality and Social Psychology Bulletin*, 7, 79-83.
- Deci, E.L., Eghrari, H., Patrick, B.C., & Leone, D.R. (1994). Facilitating internalization: The self-determination theory perspective. *Journal of Personality*, 62, 119-142.
- Deci, E. L., Koestner, R., & Ryan, R. M. (1999). A meta-analytic review of experiments examining the effects of extrinsic rewards on intrinsic motivation. *Psychological Bulletin*, 125, 627-668.
- Deci, E. L., Koestner, R., & Ryan, R. M. (2001). Extrinsic rewards and intrinsic motivation in education: Reconsidered once again. *Review of Educational Research*, 71, 1-27.
- Deci, E.L., & Ryan, R.M. (1985). *Intrinsic motivation and self-determination in human behavior*. New York: Plenum.
- Deci, E. L., & Ryan, R. M. (1987). The support of autonomy and the control of behavior. In E. T. Higgins & A. W. Kruglanski (Eds.), *Motivational science: Social and personality perspectives* (pp. 128-145). Philadelphia, PA: Psychology Press.
- Deci, E. L., & Ryan, R. M. (1991). A motivational approach to self: Integration in personality. In R. Dienstbier (Ed.), *Nebraska symposium on motivation: Perspectives on motivation, vol. 38* (pp. 237-288). Lincoln, NE: University Of Nebraska Press.
- Deci, E. L., & Ryan, R. M. (1995). Human autonomy: the basis for true self-esteem. In M.Kerns (Ed.) *Efficacy, agency and self-esteem* (pp. 31-49). New York: Plenum Press.

- Deci, E.L., & Ryan, R.M. (2000). The "what" and "why" of goal pursuits: Human needs and the self-determination of behavior. *Psychological Enquiry*, 11, 227-268.
- Deci, E. L., Ryan, R. M., Gagné, M., Leone, D. R., Usunov, J., & Kornazheva, B. P. (2001). Need satisfaction, motivation, and well-being in the work organizations of a former Eastern Bloc country. *Personality and Social Psychology Bulletin*, 27, 930-942.
- Deci, E.L., Schwartz, A., Scheinman, L., & Ryan, R.M. (1981). An instrument to assess adult's orientations toward control versus autonomy in children: Reflections on intrinsic motivation and perceived competence. *Journal of Educational Psychology*, 73, 642-650.
- Deci, E.L., Spiegel, N.H., Ryan, R.M., Koestner, R., & Kauffman, M. (1982). Effects of performance standards on teaching styles: Behaviour of controlling teachers. *Journal of Educational Psychology*, 74, 852-859.
- Deci, E.L., Vallerand, R.J., Pelletier, L.G., & Ryan, R.M. (1991). Motivation and education: The self-determination perspective. *The Educational Psychologist*, 26, 325-346.
- Diener, C.I., & Dweck, C.S. (1978). Analysis of learned helplessness: Continuous changes in performance, strategy and achievement cognitions following failure. *Journal of Personality and Social Psychology*, 36, 451-462.
- Diener, C.I., & Dweck, C.S. (1980). An analysis of learned helplessness 2: The processing of success. *Journal of Personality and Social Psychology*, 39, 940-952.
- Digelidis, N., Papaioannou, A., Lapidis, K., & Christodoulidis, T. (2003). A one-year intervention in 7th grade physical education classes aiming to change motivational climate and attitudes towards exercise. *Psychology of Sport and Exercise*, 4, 195-210.
- Dollinger, S.J., & Thelen, M.H. (1978). Over-justification and children's intrinsic motivation: Comparative effects of four rewards. *Journal of Personality and Social Psychology*, 36, 1259-1269.
- Dorobantu, M., & Biddle, S.J.H. (1997). The influence of situational and individual goals on the intrinsic motivation of adolescents towards Physical Education. *The European Yearbook of Sport Psychology*, 1, 145-168.
- Duda, J.L. (1992). Motivation in sport settings: A goal perspective approach .In G.C. Roberts (Ed.), *Motivation, and Sport and Exercise* (pp.57-91). Champaign, Illinois: Human Kinetics.
- Duda, J.L. (1993). Goals: A social-cognitive approach to the study of achievement motivation in sport. In R. Singer, M. Murphey, & L.K. Tennant (Eds.), *Handbook of Research in Sport Psychology* (pp. 421-436). New York: Macmillan.
- 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. 129-183). Champaign: IL, Human Kinetics.
- Duda, J.L. & Chi, L. (1989). The effect of task- and ego-involving conditions on perceived competence and causal attributions in basketball. Communication to the *Association for the Advancement of Applied Sport Psychology*, University of Washington, Seattle, WA, September.
- 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., & Hall, H.K. (2001). Achievement goal theory in sport: Recent extensions and future directions. In R. Singer, H. Hausenblas, & C. Janelle (Eds.), *Handbook of sport psychology* (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, 290-299.
- Duda, J.L., Olson, L., & Templin, T. (1991). The relationship of task and ego orientation to sportsmanship attitudes and the perceived legitimacy of injurious acts. *Research Quarterly for Exercise and Sport*, 62, 79-87.
- Duda, J.L., & White, S.A. (1992). Goal orientations and beliefs about the causes of success among elite athletes. *The Sport Psychologist*, 6, 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 measures*, (pp. 21-48). Morgantown, WV: Fitness Information Technology.

- Dunlap, K. (1919). Are there any instincts? *Journal of Abnormal Psychology*, 14, 35-50.
- Dweck, C.S. (1975). The role of expectations and attributions in the alleviation of learned helplessness. *Journal of Personality and Social Psychology*, 31, 674-685.
- Dweck, C. S. (1986). Motivational processes affecting learning. *American Psychologist*, 41, 1040-1048.
- Dweck, C. S. (1999). *Self theories: Their role in motivation, personality, and development*. Philadelphia, PA: Psychology Press.
- Dweck, C. S., Chiu, C.-y., & Hong, Y.-y. (1995). Implicit theories and their role in judgments and reactions: A world from two perspectives. *Psychological Inquiry*, 6, 267-285.
- Dweck, C. S., & Leggett, E. L. (1988). A social-cognitive approach to motivation and personality. *Psychological Review*, 95, 256-273.
- Dwyer, J.J.M. (1995). Effect of perceived choice of music on exercise intrinsic motivation. *Health Values*, 19, 18-26.
- Eccles, J., Adler, T.F., Futterman, R., Goff, S.B., Kaczala, C.M., Meece, J.L. & Midgley, C. (1983). Expectations, values and academic behaviours. In J.T. Spence (Ed), *Achievement and Achievement Motivation*. (pp. 75-146). San Francisco: W.H. Freeman.
- Ekman, P. & Friesen, W. V. (1975). *Unmasking the face. A guide to recognizing emotions from facial clues*. Englewood Cliffs, New Jersey: Prentice-Hall.
- 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. L. Maehr & P. R. 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. Elliot and C. Dweck (Eds.) *Handbook of Competence Motivation*. (pp. 52-72) NY: 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., & McGregor, H. A. (2001). A 2 X 2 achievement goal framework. *Journal of Personality and Social Psychology*, 80, 501-519.
- Elliot, A. J., & Conroy, D. E. (2005). Beyond the dichotomous model of achievement goals in sport and exercise psychology. *Sport & Exercise Psychology Review*, 1, 17-25.
- Elliot, A. J., & Covington, M. V. (2001). Approach and avoidance motivation. *Educational Psychology Review*, 13, 73-92.
- Elliot, A.J., & Dweck, C.S. (2005). Competence and Motivation: Competence as the core of achievement motivation. In A.J. Elliot and C.S. Dweck (Eds.) *Handbook of Competence and Motivation*. New York: Guilford.
- Elliot, A. J., & Thrash, T. M. (2001). Achievement goals and the hierarchical model of achievement motivation. *Educational Psychology Review*, 13, 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.
- Epstein, J.L. (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.
- Escarti A., & Gutierrez, M. (2001). Influence of the Motivational Climate in Physical Education on the Intention to Practice Physical Activity or Sport. *European Journal of Sport Sciences*, 1, 1-12.
- Feyerabend, P.K. (1975). *Against method: Outline of an anarchistic theory of knowledge*. Humanities Press, London.
- Flink, C., Boggiano, A.K., & Barrett, M. (1990). Controlling teaching strategies: Undermining children's self-determination and performance. *Journal of Personality and Social Psychology*, 59, 916-924.

- Flowerday, T., & Schraw, G. (2003). Effect of choice on cognitive and affective engagement. *Journal of Educational Research*, 96, 207-215.
- Flowerday, T., Schraw, G. & Stevens, J. (2004). The role of choice and interest in reader engagement. *Journal of Experimental Education*, 72, 93-114.
- Frederick-Recascino, C. M., & Ryan, R. M. (1993). Differences in motivation for sport and exercise and their relations with participation and mental health. *Journal of Sport Behavior*, 16, 124-146.
- Fredricks, J.A., & Eccles, J.S. (2002). Children's competence and value beliefs from childhood through adolescence. *Developmental Psychology*, 38, 519-553.
- Fredricks, J.A., & Eccles, J.S. (2005). Family socialization, gender, and sport motivation and involvement." *Journal of Sport & Exercise Psychology*, 27, 3-31.
- Fry, M. D. (2001). The development of motivation in children. In G.C. Roberts (Ed.), *Advances in Motivation in Sport and Exercise*. Champaign, IL; Human Kinetics.
- Fry, M. D. & Duda, J. L. (1997). A developmental examination of children's understanding of effort and ability in the physical and academic domains. *Research Quarterly for Exercise and Sport*, 66, 331-344.
- Fry, M.D., & Newton, M. (2003). Application of achievement goal theory in an urban youth tennis setting. *Journal of Applied Sport Psychology*, 15, 50-66.
- Gable, S.L., Reis, H.T., & Elliot, A.J. (2003). Evidence for bivariate systems: An empirical test of appetition and aversion across domains. *Journal of Research in Personality*. 37, 349-372.
- Gagné, M., Ryan, R. M., & Bargman, K. (2003). Autonomy support and need satisfaction in the motivation and well-being of gymnasts. *Journal of Applied Sport Psychology*, 15, 372-390.
- Gano-Overway, L.A., & Ewing, M.E. (2004). A longitudinal perspective of the relationship between perceived motivational climate, goal orientations, and strategy use. *Research Quarterly for Exercise and Sport*, 75, 315-325.
- Gano-Overway, L.A., Guivernau, M., Magyar, T.M., Waldron, J.J., & Ewing, M.E. (2005). Achievement goal perspectives, perceptions of the motivational climate, and sportpersonship: Individual and team effects. *Psychology of Sport and Exercise*, 6, 215-232.
- Gazzaniga, M.S. (1998). *The Mind's Past*. Berkeley: University of California Press.
- Giacobbi, P.R., Poczwadowski, A., & Hager, P. (2005). A pragmatic research philosophy for applied sport psychology. *The Sport Psychologist*, 19, 1-31.
- Gillet, N., Berjot, S., & Gobance, L. (2009). A motivational model of performance in the sport domain. *European Journal of Sport Science*, 9, 151-158.
- Gottfried, A.E., Fleming, J.S., & Gottfried, A.W. (1994). Role of parental motivational practices in academic intrinsic motivation and achievement. *Journal of Educational Psychology*, 86, 104-113.
- Goudas, M. & Biddle, S. (1994). Perceived motivational climate and intrinsic motivation in school physical education classes. *European Journal of Psychology of Education*, 9, 241-250.
- Goudas, M., Biddle, S., Fox, K., & Underwood, M. (1995). It ain't what you do, it's the way that you do it! Teaching style affects children's motivation in track and field lessons. *The Sport Psychologist*, 9, 254-264.
- Gould, D., Lauer, L., Rolo, C., Jannes, C., & Pennisi, N. (2008). The role of parents in tennis success: Focus group interviews with junior coaches. *The Sport Psychologist*, 22, 18-37.
- Gray, J.A. (1990) Brain systems that mediate both emotion and cognition. *Cognition and Emotion*, 4, 269-288.
- Grolnick, W.S. (2003). *The psychology of parental control: How well-meant parenting backfires*. NJ: Erlbaum.
- Grolnick, W.S., Ryan R.M., & Deci, E.L. (1991). Inner resources for school achievement: Motivational mediators of children's perceptions of their parents. *Journal of Educational Psychology*, 83, 508-517.
- Guay, F., Vallerand, R.J., & Blanchard, C. (2000). On the assessment of situational intrinsic and extrinsic motivation: The situational Motivation Scales (SIMS). *Motivation and Emotion*, 24, 175-213.
- Guiffrida, D.A., Gouveia, A., Wall, A., & Seward, D.X. (2008). Development and validation of the Need for Relatedness at College Questionnaire (NRC-Q). *Journal of Diversity in Higher Education*, 1, 251-261.

- Hall, C., & Lindzey, G. (1985). *Introduction to Theories of Personality*. New York: John Wiley & Sons.
- Harwood, C.G., & 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.G., Hardy, L., & Swain, A.B. (2002). Achievement goals in sport: A critique of conceptual and measurement issues. *Journal of Sport & Exercise Psychology*, 22, 235 - 255.
- Harwood, C.G., Spray, C.M., & Keegan, R.J. (2008). Achievement goal theories in sport. In T. Horn (Ed.), *Advances in sport psychology* (3rd Edition). (pp. 157-185). Champaign, Illinois: Human Kinetics.
- Harwood, C.G., & Swain, A.B. (2001). The development and activation of achievement goals in tennis: 1. Understanding the underlying factors. *The Sports Psychologist*, 15, 319-341.
- Harter, S. (1978). Effectance motivation reconsidered: Toward a developmental model. *Human Development*, 21, 34-64.
- Harter, S. (1981). A new self-report scale of intrinsic versus extrinsic orientation in the classroom: motivational and informational components. *Developmental Psychology*, 17, 300-312.
- Hastorf, A., & Cantril, H. (1954). They saw a game: A case study. *Journal of Abnormal and Social Psychology*, 49, 129-134.
- Henderlong, J., & Lepper, M.R. (2002). The effect of praise on children's intrinsic motivation: A review and synthesis. *Psychological Bulletin*, 128, 774-795.
- Henwood, K.L. and Pidgeon, N.F. (2003). Grounded theory in psychological research. In P. Camic, L. Yardley and J.E. Rhodes (Eds.) *Qualitative Research in Psychology: Expanding Perspectives in Methodology and Design*. Washington DC: APA publications.
- Hess, R.D., & McDevitt, T.M. (1984). Some cognitive consequences of maternal intervention: A longitudinal study. *Child Development*, 55, 2017-2030.
- Heyman, G. D., Gee, C. L., & Giles, J. W. (2003). Preschool children's reasoning about ability. *Child Development*, 74, 516-534.
- Hodge, K., Lonsdale, C., & Ng, J. (2008). Burnout in elite rugby: Relationships with basic psychological needs fulfilment. *Journal of Sports Sciences*, 26, 835-844.
- Hokoda, A., & Fincham, F.D. (1995). Origins of children's helpless and mastery achievement patterns in the family. *Journal of Educational Psychology*, 87, 375-385.
- Hollebeak, J., & Amorose, A. J. (2005). Perceived coaching behaviors and college athletes' intrinsic motivation: A test of self-determination theory. *Journal of Applied Sport Psychology*, 17, 20-36.
- Holt, N. L., Black, D. E., Tamminen, K. A., Mandigo, J. L., & Fox, K. R. (2008). Levels of social complexity and dimensions of peer experience in youth sport. *Journal of Sport & Exercise Psychology*, 30, 411-43.
- Holt, N.L., Tamminen, K.A., Black, D.E., Mandigo, J.L. & Fox, K.R. (2009). Youth sport parenting styles and practices. *Journal of Sport & Exercise Psychology*, 31, 37-59.
- Holt, N. L., Tamminen, K. A., Black, D. E., Sehn, Z. L., & Wall, M. P. (2008). Parental involvement in competitive youth sport settings. *Psychology of Sport and Exercise*, 9, 663-685.
- Howes, C., & James, J. (2002). Children's social development within the context of childcare and early childhood education. In: P. Smith & C. Hart (Eds.) *Blackwell Handbook of Social Development*. (pp. 137-155). Blackwell; Oxford.
- Jackson, S.A & Roberts, G.C. (1992). Positive performance states of athletes: Toward a conceptual understanding of peak performance. *The Sport Psychologist*, 6, 156-171.
- Jourden, F.J., Bandura, A., & Banfield, J.T., (1991). The impact of conceptions of ability on self-regulatory factors and motor-skill acquisition. *Journal of Sport and Exercise Psychology*, 13, 213-226.
- Jowett, S. & Meek, G.A (2000). The coach-athlete relationship in married couples: An exploratory content analysis. *The Sport Psychologist*, 14, 157-175
- Kamins, M.L., & Dweck, C.S. (1999). Person versus process praise and criticism: Implications for contingent self worth and coping. *Developmental Psychology*, 35, 835-847.
- Kasser, V. G., & Ryan, R. M. (1999). The relation of psychological needs for autonomy and relatedness to vitality, well-being, and mortality in a nursing home. *Journal of Applied Social Psychology*, 29, 935-954.

- Kast, A., & Connor, K. (1988). Sex and age differences in response to informational and controlling feedback. *Personality and Social Psychology Bulletin*, 14, 514-523.
- 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, 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.
- Keller, J., & Bless, H. (2008). Flow and regulatory compatibility: An experimental approach to the flow model of intrinsic motivation. *Personality and Social Psychology Bulletin*, 34, 196-209.
- Keegan, R.J., Harwood, C.G., Spray, C.M., & Lavallee, D.E. (2009). A qualitative investigation exploring the motivational climate in early-career sports participants: Coach, parent and peer influences on sport motivation. *Psychology of Sport and Exercise*, 10, 361-372.
- Keegan, R.J., Spray, C.M., Harwood, C.G., & Lavallee, D.E. (2010). The 'motivational atmosphere' in youth sport: Coach, parent and peer influences on motivation in specializing sport participants. *Journal of Applied Sport Psychology*, 22, 87-105.
- Keegan, R.J., Spray, C.M., Harwood, C.G., & Lavallee, D.E. (in submission). A qualitative investigation of the broader motivational climate in elite sport participants: What (and who) makes elite performers tick?
- Keith, T.Z., Keith, P.B., Troutman, C.G., Bickley, P.G., Trivette, P.S., & Singh, K. (1993). Does parent involvement affect eighth-grade students' achievement? Structural analysis of national development. *School Psychology Review*, 22, 474-496.
- Kelley, S.A., Brownell, C.A., & Campbell, S.B. (2000). Mastery motivation and self-evaluative affect in toddlers: Longitudinal relations with maternal behavior. *School Psychology Review*, 29, 1061-1071.
- Kempner, S., & Pomerantz, E.M. (2003). Mothers' use of praise in their everyday interactions with their children: The moderating role of children's gender. *Paper presented at the Society for Research on Child Development*, Tampa, FL.
- Koestner, R., Ryan, R.M., Bernieri, F., & Holt, K. (1984). Setting limits on children's behaviour: The differential effects of controlling versus informational styles on intrinsic motivation and creativity. *Journal of Personality*, 52, 233-248.
- Kowal, J., Fortier, M.S. (2000). Testing relationships from the hierarchical model of intrinsic and extrinsic motivation using flow as a motivational consequence. *Research Quarterly for Exercise and Sport*, 71, 171-181.
- Krane, V., Greenleaf, C.A., & Snow, J. (1997). Reaching for gold and the price of glory: A motivational case study of an elite gymnast. *The Sport Psychologist*, 11, 53-71.
- Kukla, A. (1972). Foundations of an attributional theory of performance, *Psychological Review*, 79, 454-470.
- Ladd, G.W. (1990). Having Friends, Keeping Friends, Making Friends and Being Liked by Peers in the Classroom: Predictors of Children's Early School Adjustment. *Child Development*, 61, 1081-1100.
- Lazarus, R.S. (1966). *Psychological stress and the coping process*. New York; McGraw-Hill
- Lemyre, P.-N., Treasure, D.C., & Roberts, G.C. (2006). Influence of variability in motivation and affect on elite athlete burnout. *Journal of Sport and Exercise Psychology*, 28, 32-48.
- 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.
- Liukkonen, J., Telama, R., & Biddle, S.J.H. (1998). Enjoyment in youth sport: A goal perspectives approach. *European Yearbook of Sport Psychology*, 2, 55-75.
- Locke, E.A., & Latham, G.P. (1984). *Goal setting: A motivational technique that works!* Englewood Cliffs, NJ: Prentice Hall.
- Locke, E.A., & Latham, G.P. (1990). *A theory of goal setting and task performance*. Englewood Cliffs, NJ: Prentice Hall.

- Lopez, D.F. (1999). Social cognitive influences on self regulated learning: The impact of action-control beliefs and academic goals on achievement related outcomes. *Learning and Individual Differences*, 11, 301-319.
- Maehr, M.L. (1984). Meaning and motivation: toward a theory of personal investment. In R. Ames and C. Ames (Eds.) *Research on motivation in education (Volume 1): student motivation*. San Diego: Academic Press, Inc.
- Maehr, M.L., & Braskamp, L.A. (1986). *The motivation factor: A theory of personal investment*. Lexington, MA: Lexington Books.
- Maehr, M.L., & Midgley, C. (1991). Enhancing student motivation: A schoolwide approach. *Educational Psychologist*, 26, 399-427.
- Maehr, M. L., & Nicholls, J.G. (1980). Culture and achievement motivation: A second look. In N. Warren (Ed.), *Studies in cross-cultural psychology: Vol. 3*, (pp. 221-267). New York: Academic Press.
- Mageau, G.A., & Vallerand, R.J. (2003). The coach-athlete relationship: A motivational model. *Journal of Sport Sciences*, 21, 883-904.
- Magyar, T.M., & Feltz, D.L. (2003). The influence of dispositional and situational tendencies on adolescent girls' sport confidence sources. *Psychology of Sport and Exercise*, 4, 175-190.
- Mallet, C.J., & Hanrahan, S.J. (2004). Elite athletes: why does the 'fire' burn so brightly? *Psychology of Sport and Exercise*, 5, 183-200.
- Markland, D., & Hardy, L. (1997). On the factorial and construct validity of the Intrinsic Motivation Inventory: Conceptual and operational concerns. *Research Quarterly for Exercise & Sport*, 60, 48-58.
- Markland, D., & Vansteenkiste, M. (2008). Self-determination theory and motivational interviewing in exercise. In M. S. Hagger & N. L. D. Chatzisarantis (Eds.), *Intrinsic motivation and self-determination in exercise and sport* (pp. 87-100). Champaign, IL: Human Kinetics.
- Marsh, H.W. & Peart, N.D. (1988). Competitive and cooperative physical fitness training programs for girls: Effects on physical fitness and multidimensional self concepts. *Journal of Sport and Exercise Psychology*, 10, 390-407.
- Maslow, A.H. (1954). *Motivation and Personality*. New York: Harper & Row.
- Mayer, J. D., Faber, M., & Xu, X. (2007). Seventy-five years of motivation measures (1930-2005): A descriptive analysis. *Motivation and Emotion*, 31, 83-103.
- Mayo, R.J. (1977). The development and construct validation of a measure of intrinsic motivation. *Dissertation Abstracts International*, 37, 5417B.
- McAuley, E., Duncan, T., & Tammen, V. V. (1989). Psychometric properties of the intrinsic motivation inventory in a competitive sport setting: A confirmatory factor analysis. *Research Quarterly for Exercise and Sport*, 60, 48-58
- McClelland, D.C., Atkinson, J.W., Clarke, R.A., & Lowell, E.L. (1953). *The achievement motive*. New York: Appleton-Century-Crofts.
- McCrae, R.R., & Costa, P.T. (1987). Validation of the five-factor model of personality across instruments and observers. *Journal of Personality and Social Psychology*, 52, 81-90.
- McDougall, W. (1926). *Introduction to social psychology*. Boston: Luce and Co.
- Meyer, W. (1987). Perceived ability and achievement related behavior. In F. Halisch & J. Kuhl (Eds.) *Motivation, intention and volition* (pp 72-86) New York: Springer-Verlag.
- Miller, S.A., Manhal, M., & Mee, L.L. (1991). Parental beliefs, parental accuracy, and children's cognitive performance: A search for causal relations. *Developmental Psychology*, 37, 863-874.
- Miller, B.W., Roberts, G.C., & Ommundsen, Y. (2004). Effect of motivational climate on sportspersonship among competitive youth male and female football players. *Scandinavian Journal of Medicine and Science in Sport*, 14, 193-202.
- Mischel, W. (1968). *Personality and assessment*. New York: Wiley
- Moller, A.C., Deci, E.L., & Ryan, R.M. (2006). Choice and ego-depletion: The moderating role of autonomy. *Personality and Social Psychology Bulletin*, 32, 1024-1036.
- Morgan, K., Sproule, J., Weigand, D., & Carpenter, P. (2005). A computer-based observational assessment of the teaching behaviours that influence motivational climate in Physical Education. *Physical Education and Sport Pedagogy*, 10, 83-105.

- Mueller, C. M., & Dweck, C. S. (1998). Praise for intelligence can undermine children's motivation and performance. *Journal of Personality and Social Psychology*, 75, 33-52.
- Murray, H. A. (1938). *Explorations in personality*. New York: Oxford University Press.
- Newby, T.J., (1991). Classroom motivation; Strategies of first-year teachers. *Journal of Educational Psychology*, 83, 195-200.
- Newton, M. & Duda, J.L. (1993). Elite adolescent athletes achievement goals and beliefs concerning success in tennis. *Journal of Sport and Exercise Psychology*, 15, 437-448.
- Newton, M. & Duda, J.L. (1995). Relations of goal orientations and expectations on multidimensional state anxiety. *Perceptual and Motor Skills*, 81, 1107-1112.
- Newton, M., Duda, J.L., & Yin, Z.N. (2000). Examination of the psychometric properties of the Perceived Motivational Climate in Sport Questionnaire-2 in a sample of female athletes. *Journal of Sports Sciences*, 18, 275-290.
- Nicholls, J. G. (1979). Quality and equality in intellectual development: The role of motivation in education. *American Psychologist*, 34, 1071-1084.
- 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., Cheung, P. C., Lauer, J., & Patashnick, M. (1989). Individual differences in academic motivation: Perceived ability, goals, beliefs, and values. *Learning & Individual Differences*, 1, 63-84.
- 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. (1984). 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.
- Niiya, Y., Crocker, J., & Bartmess, E.N. (2004). From vulnerability to resilience - Learning orientations buffer contingent self-esteem from failure. *Psychological Science*, 15, 801-805.
- Ntoumanis, N. (2005). A prospective study of participation in optional school physical education using a self-determination theory framework. *Journal of Educational Psychology*, 97, 444-453.
- Ntoumanis, N., and Biddle, S.J.H. (1998a). The relationship of coping and its perceived effectiveness to positive and negative affect in sport. *Personality and Individual Differences*, 24, 773-788.
- Ntoumanis, N. & Biddle, S. (1998b). The relationship between competitive anxiety, achievement goals, and motivational climates. *Research Quarterly for Exercise and Sport*, 69, 176-187.
- Ntoumanis, N., & Biddle, S. (1999). A review of motivational climate in physical activity. *Journal of Sports Sciences*, 17, 643-665.
- Ntoumanis, N., Biddle, S. J. H., & Haddock, G. (1999). The mediating role of coping strategies on the relationship between achievement motivation and affect in sport. *Anxiety, Stress, and Coping*, 12, 299-327.
- Ntoumanis, N., & Vazou, S. (2005). Peer motivational climate in youth sport: Measurement development and validation. *Journal of Sport & Exercise Psychology*, 27, 432-455.
- Ommundsen, Y., & Roberts, G.C. (1999). Effect of motivational climate profiles on motivational indices in team sport. *Scandinavian Journal of Medicine and Science in Sport*, 9, 389-397.
- Ommundsen, Y., Roberts, G.C., & Kavussanu, M. (1998). Perceived motivational climate and cognitive and affective correlates among Norwegian athletes. *Journal of Sport Sciences*, 16, 153-164.
- Ommundsen, Y., Roberts, G.C., Lemyre, P.N., & Treasure, D. (2003). Perceived motivational climate in male youth soccer: relations to social-moral functioning, sportpersonship and team norm perceptions. *Psychology of Sport and Exercise*, 4, 397-413.
- Pajares, F. & Miller, M.D. (1994). Role of self efficacy and self-concept beliefs in mathematical problem solving – A path analysis. *Journal of Educational Psychology*, 86, 193-203.
- Parish, L.E., & Treasure, D.C. (2003). Physical activity and situational motivation in physical education: Influence of the motivational climate and perceived ability. *Research Quarterly for Exercise and Sport*, 74, 173-182.

- Parkhurst, J.T., & Hopmeyer, A. (1998). Sociometric popularity and peer-perceived popularity: Two distinct dimensions of peer status. *Journal of Early Adolescence*, 18(2), 125-144.
- Papaioannou, A. (1994). The development of a questionnaire to measure achievement orientations in Physical Education. *Research Quarterly for Exercise and Sport*, 65, 11-20
- Papaioannou, A. (1995). Differential perceptual and motivational patterns when different goals are adopted. *Journal of Sport and Exercise Psychology*, 17, 18-34.
- Papaioannou, A. (1997). Perceptions of motivational climate, perceived competence, and motivation of students of varying ages and sport experience. *Perceptual and Motor Skills*, 85, 419-430.
- Papaioannou, A. (1998). Students' perceptions of the physical education class environment for boys and girls and the perceived motivational climate. *Research Quarterly for Exercise and Sport*, 69, 267-275.
- 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., Marsh, H.W., & Theodorakis, Y. (2004). A multi-level approach to motivational climate in physical education and sport settings: An individual or group level construct? *Journal of Sport and Exercise Psychology*, 26, 90-118.
- Papaioannou, A., Milosis, D., Kosmidou, E., & Tsigilis, N. (2007). Motivational climate and achievement goals at the situational level of generality. *Journal of Applied Sport Psychology*, 19, 38-66.
- Patall, E.A., Cooper, H., & Robinson, J.C. (2008). The effects of choice on intrinsic motivation and related outcomes: A meta-analysis of research findings. *Psychological Bulletin*, 134, 270-300.
- Peet, S.H., Powell, D.R., O'Donnell, B.K. (1997). Mother-teacher congruence in perceptions of the child's competence and school engagement: Links to academic achievement. *Journal of Applied Developmental Psychology*, 18, 373-393.
- Pelletier, L. G., Fortier, M. S., Vallerand, R. J., Tuson, K. M., & Brière, N. M. (1995). Toward a new measure of intrinsic motivation, extrinsic motivation, and amotivation in sports: The sport motivation scale (SMS). *Journal of Sport and Exercise Psychology*, 17, 35-53.
- Pensgaard, A.M., & Roberts, G.C. (2000). The relationship between motivational climate, perceived ability and sources of distress among elite athletes. *Journal of Sport Sciences*, 18, 191-200.
- 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, 54-59.
- Pittman, T.S., Davey, M.E., Alafat, K.A., Wetherill, K.V., & Kramer, N.A. (1980). Informational versus controlling verbal rewards. *Personality and Social Psychology Bulletin*, 6, 228-233.
- Pomerantz, E.M., Grolnick, W.S., & Price, C.E. (2005). The role of parents in how children approach achievement: A dynamic process perspective. In A.J. Elliot and C.S. Dweck (Eds.) *Handbook of Competence and Motivation*. (pp. 202-221). Guildford Press, NY: Spring Street.
- Pomerantz, E.M., & Eaton, M.M. (2001). Maternal intrusive support in the academic context: Transactional socialization processes. *Developmental Psychology*, 37, 174-186.
- Pringle, R. (2000). Physical education, positivism, and optimistic claims from achievement goal theorists. *Quest*, 52, 18-31.
- Reeve, J. (2009). *Understanding motivation and emotion*. (5th Edition). New York: John Wiley & Sons.
- Reeve, J., Bolt, E., & Cai, Y. (1999). Autonomy-supportive teachers: How they teach and motivate students. *Journal of Educational Psychology*, 91, 537-548.
- Reeve, J., Jang, H., Hardre, P., & Omura, M. (2002). Providing a rationale in an autonomy-supportive way as a strategy to motivate others during an uninteresting activity. *Motivation and Emotion*, 26, 183-207.
- Reeve, J., & Jang, H. (2006). What teachers say and do to support students' autonomy during learning activities. *Journal of Educational Psychology*, 98, 209-218.
- Reeve, J., Nix, G., & Hamm, D. (2003). Testing models of the experience of self-determination in intrinsic motivation and the conundrum of choice. *Journal of Educational Psychology*, 95, 375-392.
- Reeve, J., Jang, H., Hardre, P., & Omura, M. (2002). Providing a rationale in an autonomy supportive way as a strategy to motivate others during an uninteresting activity. *Motivation & Emotion*, 26, 183-207.
- Reinboth, M., & Duda, J. L. (2006). Perceived motivational climate, need satisfaction and indices of well-being in team sports: A longitudinal perspective. *Psychology of Sport and Exercise*, 7, 269-286.

- Reinboth, M., Duda, J.L., & Ntoumanis, N. (2004). Dimensions of coaching behavior, need satisfaction, and the psychological and physical welfare of young athletes. *Motivation and Emotion*, 28, 297-313.
- Roberts, G.C. (1992). *Motivation in Sport and Exercise*. Champaign, IL: Human Kinetics.
- Roberts, G.C. (1993). Understanding and enhancing the motivation and achievement of children. In R. N. Singer, M. Murphey, & L. K. Tennant (Eds.) *Handbook of research on sport psychology* (pp. 405-420). New York: Macmillan.
- 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 Sport and Exercise*. (pp. 1-50) Champaign, IL; Human Kinetics.
- Roberts, G.C., & Balague, G. (1989). *The development of a social-cognitive scale of motivation*. Paper presented at the Seventh World Congress of Sport Psychology. Singapore.
- Roberts, G.C., & Balague, G. (1991). The development and validation of the Perception of Success Questionnaire. Paper presented at the *FEPSAC Congress*. Cologne: Germany.
- 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*, 2, 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. *The Sport Psychologist*, 10, 398-408.
- Rogers, C.R. (1961). *On Becoming a Person: A therapist's view of psychotherapy*. London: Constable.
- Rousson, V., Gasser, T., & Seifert, B. (2002). Assessing intra-rater, inter-rater and test-retest reliability of continuous measurements. *Statistical Medicine*, 21, 3431-3446.
- Ryan, R.M. (1982). Control and information in the interpersonal sphere: An extension of cognitive evaluation theory. *Journal of Personality and Social Psychology*, 43, 450-461.
- Ryan, R. M. (1993). Agency and organization: Intrinsic motivation, autonomy, and the self in psychological development. In R. Dienstbier & J. E. Jacobs (Eds.), *Nebraska Symposium on Motivation: Vol. 40. Developmental Perspectives on Motivation* (pp. 1-56). Lincoln: University of Nebraska.
- Ryan, R. M., & Connell, J. P. (1989). Perceived locus of causality and internalization. *Journal of Personality and Social Psychology*, 57, 749-761.
- Ryan, R. M., & Deci, E. L. (2002). An overview of self-determination theory. In E. L. Deci & R. M. Ryan (Eds.), *Handbook of self-determination research* (pp. 3-33). Rochester, NY: University of Rochester Press.
- Ryan, R. M., & Deci, E. L. (2008). Active human nature: Self-determination theory and the promotion and maintenance of sport, exercise, and health. In M. S. Hagger & N. L. D. Chatzisarantis (Eds.), *Intrinsic motivation and self-determination in exercise and sport* (pp. 1-19). Champaign, IL: Human Kinetics.
- Ryan, R.M., Mims, V., & Koestner, R. (1983). Relation of reward contingency and interpersonal context to intrinsic motivation: A reward and test using cognitive evaluation theory. *Journal of Personality and Social Psychology*, 45, 736-750.
- Ryska, T.A., Yin, Z., & Boyd, M. (1999). The role of dispositional goal orientation and team climate on situational self-handicapping among young athletes. *Journal of Sport Behavior*, 22, 410-425.
- Sansone, C., Wiebe, D. J., & Morgan, C. (1999). Self-regulating interest: The moderating role of hardiness and conscientiousness. *Journal of Personality*, 61, 701-733.
- Sansone, C., Weir, C., Harpster, L., & Morgan, C. (1992). Once a boring task always a boring task?: Interest as a self-regulatory mechanism. *Journal of Personality and Social Psychology*, 63, 379-390.
- Sarrazin, P., Vallerand, R., Guillet, E., Pelletier, L., & Cury, F. (2002). Motivation and dropout in female handballers: a 21-month prospective study. *European Journal of Sport Psychology*, 32, 395-418.
- Scanlan, T.K., Carpenter, P.J., Lobel, M., & Simons, J.P. (1993). Sources of enjoyment for youth sport athletes. *Pediatric Exercise Science*, 5, 275-28.

- Schunk, D.H. (1991). Self-efficacy and academic motivation. *Educational Psychologist*, 26, 207-231.
- Seifriz, J.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 & Exercise Psychology*, 14, 375-391.
- Seligman, M.E.P. (1975). *Helplessness: On depression, development and death*. San Francisco: W.H. Freeman.
- Senechal, M., & LeFevre, J. (2002). Parental involvement in the development of children's reading skills: A five year longitudinal study. *Child Development*, 73, 445-460.
- Skinner, B.F. (1953). *Science and Human Behavior*. New York: Macmillan.
- Skinner, R.A., & Piek, J.P. (2001). Psychosocial implications of poor motor coordination in children and adolescents. *Human Movement Science*, 20, 73-94.
- Smith, A.L. (1999). Perceptions of peer relationships and physical activity participation in early adolescence. *Journal of Sport and Exercise Psychology*, 21, 329-350.
- Smith, R.E. (1989). Applied sport psychology in an age of accountability. *Journal of Applied Sport Psychology*, 1, 166-180.
- Smith, A.L. (2003). Peer relationships in physical activity contexts: a road less travelled in youth sport and exercise psychology research. *Psychology of Sport and Exercise*, 4, 25-39.
- Smith, R.E., Cumming, S.P., & Smoll, F.L. (2008). Measurement of motivational climate in youth sports: The Motivational Climate Scale for Youth Sports. *Journal of Applied Sport Psychology*, 11, 116-136.
- Smith, R.E., Smoll, F.L., & Cumming, S.P. (2007). Effects of a motivational climate intervention for coaches on young athletes' sport performance anxiety. *Journal of Sport and Exercise Psychology*, 29, 39-59.
- Smith, R.E., Smoll, F.L., & Cumming, S.P. (2009). Motivational climate and changes in young athletes' achievement goal orientations. *Motivation and Emotion*, 3, 173-183.
- Smith, A.L., Ullrich-French, S., Walker, E. & Hurley, K.S. (2006). Peer relationship profiles and motivation in youth sport. *Journal of Sport & Exercise Psychology*, 28, 362-382.
- Soenens, B., Vansteenkiste, M., Duriez, B., Luyten, P., & Goossens, L. (2005). Maladaptive perfectionistic self-representations: The mediational link between psychosocial control and adjustment. *Personality and Individual Differences*, 28, 487-498.
- Spray, C.M., & Keegan, R.J. (2005). Beyond the dichotomous model of achievement goals in sport and exercise psychology: Comment on Elliot and Conroy (2005). *Sport and Exercise Psychology Review*, 1, 2005, 47-49.
- Standage, M., Duda, J.L., & Ntoumanis, N. (2003a). Predicting motivational regulations in physical education: the interplay between dispositional goal orientations, motivational climate and perceived competence. *Journal of Sport Sciences*, 21, 631-647.
- Standage, M., Duda, J.L., & Ntoumanis, N. (2003b). A model of contextual motivation in physical education: Using constructs from self-determination and achievement goal theories to predict physical activity intentions. *Journal of Educational Psychology*, 95(1) 97-110.
- Stuntz, C.P., & Weiss, M.R. (2003). Influence of social goal orientations and peers on unsportsmanlike play. *Research Quarterly for Exercise and Sport*, 74, 421-435.
- Taleb, N. (2007). *The Black Swan: The Impact of the Highly Improbable*. New York: Random House.
- Tauer, J. M., & Harackiewicz, J. M. (2004). The effects of cooperation and competition on intrinsic motivation and performance. *Journal of Personality and Social Psychology*, 86, 849-861.
- Taylor, I., & Ntoumanis, N. (2007). Teacher motivational strategies and student self-determination in physical education. *Journal of Educational Psychology*, 99, 747-760.
- Tellegen, A. (1985) Structure of mood and personality and their relevance to assessing anxiety, with an emphasis on self-report. In A. H. Tuma and J. D. Maser (eds.) *Anxiety and the Anxiety Disorders* (pp. 681-706). Hillsdale, NJ: Lawrence Erlbaum.
- 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.
- Tolman, E.C. (1932). *Purposive Behavior in Animals and Men*. New York: Appleton-Century-Crofts.

- Todorovich, J. R., & Curtner-Smith, M. D. (2002). Influence of the motivational climate in physical education on sixth grade pupils' goal orientations. *European Physical Education Review*, 8, 119-138.
- Treasure, D.C., Duda, J.L., Hall, H.K., Roberts, G.C., Ames, C., & Maehr, M.L. (2001). Clarifying misconceptions and misrepresentations in achievement goal research in sport: A response to Harwood, Hardy, and Swain. *Journal of Sport and Exercise Psychology*, 23, 317-329.
- Treasure, D.C., Lemyre, N., Kuczka, K.K., & Standage, M. (2008). Motivation in elite sport: A self-determination perspective. In M.S. Hagger & N. Chatzisarantis (Eds.) *Self-Determination Theory in Exercise and Sport*. (pp 153-166) Champaign, IL: Human Kinetics.
- Treasure, D., & Roberts, G.C. (1995). Achievement goals, motivational climate and achievement strategies and behaviour in sport. *International Journal of Sport Psychology*, 26, 64-80.
- Treasure, D., & 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., & 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.
- Ullrich-French, S. & Smith, A.L. (2006). Perceptions of relationships with parents and peers in youth sport: Independent and combined prediction of motivational outcomes. *Psychology of Sport and Exercise*, 7, 193-214.
- Urdan, T., & Maehr, M. L. (1995). Beyond a two-goal theory of motivation: A case for social goals. *Review of Educational Research*, 65, 213-244.
- Valentini, N.C., & Rudisill, M.E. (2004a). An inclusive mastery climate intervention and the motor skill development of children with and without disabilities. *Adapted Physical Activity Quarterly*, 21, 330-347.
- Valentini, N.C., & Rudisill, M.E. (2004b). Motivational climate, motor-skill development, and perceived competence: Two studies of developmentally delayed kindergarten children. *Journal of Teaching in Physical Education*, 23, 216-234.
- Vallerand, R.J. (1993). La motivation intrinsèque et extrinsèque en context naturel. Implications pour les secteurs de l'éducation, du travail, des relations interpersonnelles et des loisirs [Intrinsic and extrinsic motivation in natural setting: Implications for education, work, interpersonal relationships and leisure.] In R.J. Vallerand and E.E. Thill (Eds.) *Introduction à la psychologie de la motivation*. (pp. 533-581). Laval (Quebec): Edition Etudes Vivantes.
- Vallerand, R.J. (1997). Toward a hierarchical model of intrinsic and extrinsic motivation. In M. Zanna (Ed.) *Advances in Experimental Social Psychology*, 271-360. New York: Academic Press.
- Vallerand, R. J. (2007). Intrinsic and extrinsic motivation in sport and physical activity: A review and a look at the future. In G. Tenenbaum, & E. Eklund (Eds.), *Handbook of sport psychology* (3rd ed., pp. 49-83). New York: John Wiley.
- Vallerand, R.J., & Fortier, M.S. (1998). Measures of intrinsic and extrinsic motivation in sport and physical activity: A review and critique. In J. Duda (Ed.) *Advances in Sport and Exercise Psychology Measurement*. (pp. 83-100) Morgantown WV: Fitness Information Technology.
- Vallerand, R. J., Gauvin, L. I., & Halliwell, W. R. (1986). Negative effects of competition on children's intrinsic motivation. *Journal of Social Psychology*, 126, 649-657.
- Vallerand, R. J., Pelletier, L. G., Blais, M. R., Briere, N. M., Senecal, C., & Vallières, E. F. (1992). The academic motivation scale: A measure of intrinsic, extrinsic, and amotivation in education. *Educational and Psychological Measurement*, 52, 1003-1017.
- Vallerand, R. J., Pelletier, L. G., Blais, M. R., Briere, N. M., Senecal, C., & Vallières, E. F. (1993). On the assessment of intrinsic, extrinsic, and amotivation in education: Evidence on the concurrent and construct validity of the academic motivation scale. *Educational & Psychological Measurement*, 53, 159-172.
- Vallerand, R. J., & Reid, G. (1984). On the causal effects of perceived competence on intrinsic motivation: A test of cognitive evaluation theory. *Journal of Sport Psychology*, 6, 94-102.

- Vallerand, R.J., & Thill, E.E. (1993). Introduction au concept du motivation [Introduction to the concept of motivation]. In R.J. Vallerand and E.E. Thill (Eds.) *Introduction à la psychologie de la motivation*. (pp. 3-39). Laval (Quebec): Edition Etudes Vivantes.
- Vansteenkiste, M., Soenens, B., & Lens, W. (2008). Intrinsic versus extrinsic goal promotion in sport and exercise: Understanding their differential impact on performance and persistence. In M. S. Hagger and N. Chatzisarantis (Eds.) *Self-determination theory in exercise and sport*. Human Kinetics.
- Vazou, S., Ntoumanis, N., & Duda J.L. (2005). Peer motivational climate in youth sport: A qualitative inquiry. *Psychology of Sport & Exercise*, 6, 497-516.
- 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.
- Wason, P.C. (1960). On the failure to eliminate hypotheses in a conceptual task. *Quarterly Journal of Experimental Psychology*, 12, 129-140.
- Wason, P. C. (1966). Reasoning. In B. M. Foss (Ed.) *New horizons in psychology*. Harmondsworth: Penguin.
- Watson, J. B. (1913). Psychology as the behaviorist views it. *Psychological Review*, 20, 158-177.
- Watson, D., & Clark, L.A. (1993). Behavioral disinhibition versus constraint: A dispositional perspective. In D. M. Wegner & J. W. Pennebaker (Eds.), *Handbook of mental control* (pp. 506-527). New York: Prentice-Hall
- Weinberg, R., & Ragan, J. (1979). Effects of competition, success failure and sex on intrinsic motivation. *Research Quarterly in Exercise and Sport*, 50, 505-510.
- Weiner, B. (1979). A theory of motivation for some classroom experiences. *Journal of Educational Psychology*, 71, 3-25.
- Weiner, B. (1985). An attributional theory of achievement motivation and emotion. *Psychological Review*, 92, 548-573.
- Weiner, B. (1986). *An attributional theory of motivation and emotion*. New York: Springer-Verlag.
- Weiner, B. (1990). History of motivational research in education. *Journal of Educational Psychology*, 82, 616-622.
- Weiner, B. (1995). Judgments of responsibility: A foundation for a theory of social conduct. New York: Guilford
- Weiss, M.R., & Amorose, A.J. (2008). Motivational orientations and sport behaviour. In T.S. Horn (Ed.), *Advances in sport psychology* (2nd ed., pp. 115-156). Champaign, IL: Human Kinetics.
- Weiss, M.R., Bredemeier, B.J., & Shewchuk, R.M. (1985). An intrinsic/extrinsic motivation scale for the youth sport setting: a confirmatory factor analysis. *Journal of Sport Psychology*, 7, 75-91.
- Weiss, M.R., & Smith, A.L. (2002). Friendship quality in youth sport: Relationship to age, gender, and motivation variables. *Journal of Sport & Exercise Psychology*, 24, 420-437
- Weiss, M.R., Smith, A.L., & Theeboom, M. (1996). "That's what friends are for": Children's and teenagers' perceptions of peer relationships in the sport domain. *Journal of Sport & Exercise Psychology*, 18, 347-379.
- Weiss, M.R., & Ferrer-Caja, E. (2002). Motivational orientations and sport behavior. In T.S. Horn (Ed.), *Advances in sport psychology* (2nd ed., pp. 101-183). Champaign, IL: Human Kinetics.
- Wentzel, K. R. (1993). Social and academic goals at school: Motivation and achievement in early adolescence. *Journal of Early Adolescence*, 13, 4-20.
- Wentzel, K.R. (1999). Social-motivational processes and interpersonal relationships: Implications for understanding motivation at school. *Journal of Educational Psychology* 91, 76-97.
- Wentzel, K.R. (2005). Peer relationships, motivation, and academic performance at school. . In A.J. Elliot and C.S. Dweck (Eds.) *Handbook of Competence and Motivation*. (pp. 279-297). Guildford Press, NY: Spring Street.
- Wentzel, K. R., Barry, C. M., & Caldwell, K. A. (2004). Friendships in middle school: Influences on motivation and school adjustment. *Journal of Educational Psychology*, 96, 195-203.
- Wentzel, K.R., & Caldwell, K. (1997). Friendships, peer acceptance, and group membership: Relations to academic achievement in middle school. *Child Development*, 68, 1198-1209.

- Wheeler, L., Reis, H.T., & Nezlek, J. (1983). Loneliness, social interaction and sex roles. *Journal of Personality and Social Psychology*, 45, 943-953.
- White, R.W. (1959). Motivation reconsidered: The concept of competence. *Psychological Review*, 66, 297-333.
- White, S.A. (1996). Goal orientation and perceptions of the motivational climate initiated by parents. *Pediatric Exercise Science*, 8, 122- 129.
- White, S.A. (1998). Adolescent goal profiles, perceptions of the parent initiated motivational climate and competitive trait anxiety. *The Sport Psychologist*, 12, 16-28.
- White, S.A., Duda, J.L. & Hart, S. (1992). An exploratory examination of the parent-initiated motivational climate questionnaire. *Perceptual and Motor Skills*, 75, 875- 880.
- Whitehead, J. Andrée, K. V., & Lee, M. J. (2004). Achievement perspectives and perceived ability: How far do interactions generalise in youth sport? *Psychology of Sport and Exercise*, 5, 291-317.
- Wilko, A.M. (2004). *Influence of coaching behaviours and motivational climate on female adolescent athletes' psychosocial responses*. Unpublished master's thesis, University of West Virginia, Charlottesville.
- Williams, L. (1998). Contextual influences and goal perspectives among female youth sport participants. *Research Quarterly for Exercise & Sport*, 69, 47-57.
- Wilson, P. M, Rodgers, W.M, Hall, C.R, & Gammage, K.L. (2003). Do autonomous exercise regulations underpin different types of exercise imagery? *Journal of Applied Sport Psychology*, 15, 294-306.
- 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 & Sport*, 69, 47-57.
- Winsler, A., Diaz, R.M., McCarthy, E.M., Atencio, D.J., & Chabay, L.A. (1999). Mother-child interaction, private speech, and task performance in preschool children with behavior problems. *Journal of Psychology and Psychiatry and Allied Disciplines*, 40, 891-904.
- Wylleman, P., Alfermann, D., Lavallee, D. (2004). Career transitions in sport: European perspectives. *Psychology of Sport and Exercise*, 5, 7-20.
- Wylleman, P., De Knop, P., Ewing, M., & Cumming, S. (2000). Transitions in youth sport: a developmental perspective on parental involvement. In D. Lavallee, & P. Wylleman (Eds.), *Career transitions in sport: International perspectives* (pp. 143–160). Morgantown, WV: Fitness Information Technology.
- Xiang, P., & Lee, A. (2002). Achievement goals, perceived motivational climate, and students' self-reported mastery behaviours. *Research Quarterly for Exercise and Sport*, 73, 58-65.
- Yoo, J. (1999). Motivational-behavioral correlates of goal orientation and perceived motivational climate in physical education contexts. *Perceptual and Motor Skills*, 89, 262-274.
- Zuckerman, M., Porac, J., Lathin, D., Smith, R., & Deci, E.L. (1978). On the importance of self-determination for intrinsically motivated behaviour. *Personality and Social Psychology Bulletin*, 4, 443-446.