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The Development and Activation of Achievement Goals Within Tennis: II. A Player, Parent, and Coach Intervention

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This study acts as a follow-up to a previous investigation into the development and activation of achievement goals within young tennis players (Harwood & Swain, 2001). The project investigated the effects of a season-long player, parent, and coach intervention program on goal involvement responses, self-regulation, competition cognitions, and goal orientations of three junior tennis players. First, each player reported goal involvement, self-regulation, self-efficacy, and perceptions of threat and challenge prior to three ego-involving match situations. Aligned with a matched control participant, each treatment player, with their parents and coach, engaged in educational sessions and cognitive-motivational tasks over a three-month competition and training period. Postintervention, positive directional changes were reported in all players except the control participant. This study reinforces to applied researchers and practitioners the importance and practicability of social-cognitive and task-based interventions designed to facilitate optimal, motivational, and psychological states in high pressure competitive situations.

One of the practical strengths of utilizing an achievement goal approach (Nicholls, 1989) to sport motivation is the genuine belief that adaptive motivational responses can be developed and activated within performers provided that one has a confident knowledge of the determinants of those responses. However, despite such an inviting association between theory and practice, the amount of published research on field-based interventions designed to effect change in achievement

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goals and associated cognitions has been sparse. Therein lies the purpose of the final study in this two-part series (see Harwood & Swain, 2001).

Intervention research within achievement goal theory has typically focused on manipulating the motivational climate, owing a great deal to Ames' (1992) application of Epstein's (1989) TARGET (i.e., task, authority, recognition, grouping, evaluation, and time) teaching principles within an educational context. By employing each of principles, TARGET helps practitioners and coaches create a task (or ego!) involving achievement environment. Specifically, it offers task or ego involving behavioral choices to coaches and teachers via the style in which they organize tasks; the extent to which authority and power in decision making is shared with children; how children are grouped, evaluated, and rewarded in self-referent or normative manners; and the time period specified for activity-related achievements.

However, of the limited number of published studies within sport, few interventions have actually targeted changes in achievement goal orientations or goal involvement responses as specific dependent variables. Positive changes in perceptions of the motivational climate (i.e., higher task involving conditions) and/or associated cognitive (e.g., perceived competence), affective (e.g., enjoyment), and motivational (e.g., intrinsic motivation) responses have generally been the objectives of some successful interventions (see Goudas, Biddle, Fox, & Underwood, 1995; Theeboom, DeKnop & Weiss, 1995).

In the context of higher level competitive sport, Burton's (1989) multimethod investigation into the cognitive-motivational effects of a five month goal setting training program (GST) represents one of the more ecologically-valid interventions designed around contemporary motivation theory. The general findings of the project were favorable to the GST intervention with GST swimmers reporting higher task orientation and lower ego orientation than non-GST swimmers on Ewing's (1981) Achievement Orientation Questionnaire. However, one of the major limitations of the project was the absence of true baseline measures, rendering any assessment of actual change in the dependent variables (i.e., cognitions, goal orientation) impossible to calculate.

Burton's (1989) study moved beyond the effects of teaching style on motivational responses (Goudas et al., 1995) by embracing a greater number of social components (e.g., coaches, teammates) comprising the *in vivo* motivational climate (Ames, 1992; Newton, Duda & Yin, 2000). The first study in this series (Harwood & Swain, 2001) explored the determinants of achievement goals and supported the role of coaches, parents, and peers in the development and activation of task and ego goals in young athletes. These agents appear to influence the meaning of achievement to the achiever by the behavioral cues, values, reward systems, expectations, and beliefs that they convey to the individual. Brustad's work (1988, 1992) reinforces how these individuals possess the social fuel to ignite different conceptions of achievement within others, and this notion has been empirically supported by a number of studies (e.g., Chaumeton & Duda, 1988; Duda & Hom, 1993; Ebbeck & Becker, 1994; Harwood & Swain, 1998). Nevertheless, despite the need to consider reshaping the behaviors of significant others within a field-based intervention, one has to draw from the child and adolescent behavior therapy literature (e.g., Gambrill, 1977; Ollendick, 1986) to cite examples of how such social behavior modification has been used to facilitate behavioral change in young people.

Harwood and Swain (2001) showed how the key themes underlying the development and activation of achievement goals within elite junior tennis players were both individual and social-environmental in nature. These themes form the backbone to the current study. From this data, Table 1 presents three categories of criteria that may be useful in guiding the development of antecedent-driven intervention programs. Such programs may be targeted at both the activation of optimal goal involvement responses in competition and practice situations and the longer term formation of optimal goal orientation profiles (Fox, Goudas, Biddle, Duda, & Armstrong, 1994; Hodge & Petlichkoff, 2000).

Category 1 represents *internal self-regulatory* criteria where the conception of achievement, particularly a task involved conception, depends upon the individual's cognitive-developmental maturity, knowledge, and experience of applying self-regulatory skills and strategies (e.g., process goal setting, self-referent

Table 1 Underlying Criteria to the Development and Activation of Achievement Goals (see Harwood & Swain, 2001)

Internal Self-Regulatory	Externally-Perceived	Externally-Imposed
<i>Representative Dimensions</i>		
Cognitive-developmental skills and experiences; match context	Motivational climate; Nature of the game	Nature of the game; Match context Motivational climate
<i>Specific Themes</i>		
Cognitive maturity/development	Perceptions of parents attitudes, belief and value systems	Reward structure of tennis and scoring systems
Understanding of performance vs outcome	Value structures of early coaching climates	Personal consequences of competitive outcomes
Nature and degree of competitive experiences within sport	Perceptions of coaches attitudes, belief and value systems	Social consequences of competition
Use of pre- and post-performance skills and strategies	Peer group values and perceptions of role models	Nature of tournament, event, or match
Development of conditioned response to perceptions of the relative ability levels of other players	Perceptions of power/reward structures within competitive tennis	Rating /standard of opposition
	Subcultural expectations and nature of social evaluation	Nature of coaching strategies and tasks imposed by coach

reviews; Zimmerman, 1989). Category 2 represents *externally perceived* influences where individuals' conceptions of achievement are swayed by their perceptions of others' achievement beliefs, attitudes, behaviors, and values (e.g., Duda & Hom, 1993). Finally, Category 3 represents *externally imposed* influences, where achievement goals appear to be activated and/or conditioned as a result of the context within which the player is repeatedly exposed (see Gernignon & Le Bars, 2000).

Using these categories to develop a fully integrated intervention, the scientist-practitioner should be able to apply intervention techniques designed to effect individually significant changes in achievement goal responses. However, defining what exactly is an *optimal achievement goal profile*, as achievement goal theory goes, is an area of significant conceptual and, perhaps, population-specific debate. Within the extant literature, most if not all theorists would support Joan Duda's statement that "we must do whatever is possible to ensure that a task orientation is robust" (Duda, 2001, p.163). A high task orientation has been positively associated with high levels of enjoyment (Hom, Duda, & Miller, 1993; Kim & Gill, 1997), intrinsic motivation (Duda, Chi, Newton, Walling, & Catley, 1995), and adaptive moral values/behaviors (Duda, Olson, & Templin, 1991; Dunn & Dunn, 1999). In contrast, support for an ego orientation has been empirically equivocal at best, particularly given its negative links to factors in the aforementioned studies.

Nevertheless, recent investigations incorporating a goal profiling methodology (for a discussion on analytical issues see Hodge & Petlichkoff, 2000) have somewhat suppressed the negative "spin" that has characterized an ego orientation (Cumming, Hall, Harwood, & Gammage, 2002; Hodge & Petlichkoff, 2000; Roberts, Treasure, & Kavusannu, 1996). Specifically, these studies have found that when a moderate to high ego orientation is combined with a corresponding level of task orientation (e.g., a hi-task/hi-ego goal profile), positive cognitive-motivational outcomes may be evident. For example, by employing cluster analysis, Hodge & Petlichkoff (2000) found that moderate task/high ego oriented rugby players reported the highest level of perceived ability compared to other clusters of players. Therefore, while some theorists might correctly argue for tempering levels of ego orientation on moral grounds (Duda, 2001; Dunn & Dunn, 1999), there is a body of empirical evidence, of pertinence to competitive sport populations, that supports the psychological benefits of being an athlete who combines high levels of task and ego orientation.

Harwood & Swain (2001), however, alert researchers to a further conceptual issue of interest. In-depth interviews revealed that the ego involvement experienced by some elite players was characterized by an underpinning need for normative social approval. This lay in contrast to adopting an ego involved goal merely as a function of the normative regulations of the sport. Equally, some players made the distinction between adopting a task involved goal for purely self-directed reasons (e.g., success = personal improvement) versus defining success by how much they were able to socially approve themselves to others by self-referent improvement (e.g., success = showing others how much I have improved). The measurement of social approval-oriented task and ego involvement states (Maehr & Nicholls, 1980; Urdan & Maehr, 1995), alongside the more traditional forms, may be critical to explore from a conceptual perspective. Based on self-determination research alone (Deci & Ryan, 1985), if social approval goal states reflect externally-regulated motivation, then achievement goal theorists might argue for the maladaptive

repercussions of such states, particularly social approval ego involvement. None of these issues have been explored from a cross-sectional or idiographic perspective.

Taking these points together, the present study had five key aims. A primary aim was to operationalize the underpinning determinants of achievement goals (i.e., categories 1, 2, and 3) into proactive intervention strategies for youth sport. A second aim was to determine whether a multidimensional intervention program would effect positive changes in players' task and ego involvement profiles in response to highly ego involving competition scenarios. Specifically, this incorporated the goal of enhancing levels of precompetition self-directed task involvement in participants while reducing levels of social approval goal involvement, ego involvement in particular.

A third objective was to determine if such an intervention would enhance the self-regulation (Zimmerman, 1989) of participants by elevating the meaning they placed on achievements in the performance components of their sport and the degree to which they self-assessed achievements in these components for feedback purposes.

A fourth aim, prompted by Burton's (1989) investigation, was to determine whether the intervention would have positive effects on players' competitive cognitions (i.e., increased self-efficacy, perceptions of lower threat and higher challenge) within such ego involving competition scenarios. This was important to study given the rather negative links that have been empirically documented between ego orientation and stress-related responses in sport (e.g., Hall & Kerr, 1997; Ntoumanis & Biddle, 1998).

The final purpose of the study was to examine changes in task and ego goal orientation pre and post intervention. Note, however, that due to the length of the study and as the current measures of dispositional goal orientation (i.e., Task and Ego Orientation in Sport Questionnaire, TEOSQ; Duda & Nicholls, 1992) do not account for multiple submotives (i.e., social approval) within the task and ego subscales, no hypotheses were set with respect to the effects of the intervention on these dispositional goals.

From a methodological standpoint, no published intervention study to date appears to have examined intraindividual changes in achievement goal involvement responses. Prapavessis, Grove, McNair, and Gable (1992) have called for more research that targets individual differences as opposed to cross-sectional comparisons when working with high level performers. Consequently, with a study that lent itself to a more idiographic approach, the investigation combined individual case studies with multiple baseline design features (Hersen & Barlow, 1976; Hrycaiko & Martin, 1996) and cross-case analyses.

Method

Initial Participant Selection

The participant selection process initially involved identifying adolescent players, in receipt of individual coaching and dependent on parental support, who would be competing regularly on the summer tournament circuit. Eleven "tennis families" (i.e., player, parent, coach) living within reasonable proximity to the investigators (i.e., the same county in Great Britain) satisfied these criteria and were willing to take part in the participant selection process.

Final Participant Selection

The selection process incorporated an assessment of each player's precompetition task and ego involvement responses when facing a rival opponent in a match of perceived importance at the junior county championships. Each player also completed the TEOSQ (Duda & Nicholls, 1992) as a reliable and valid measure of dispositional task and ego orientation.

Based primarily on players' goal involvement responses, as that was the primary variable of interest in the study, four players (3 treatment participants and 1 control participant) were selected for the study proper. Using Harwood and Swain's (1998) three single item measure of goal involvement, each of these players had reported higher levels of ego involvement compared to task involvement and a strong dominant preference for winning regardless of personal standards of play. These responses suggested a low task/high ego involvement profile prior to an ego involving match situation. Note that while a more study-specific measure of goal involvement would be developed to test the efficacy of the intervention, the Harwood & Swain (1998) measure distinguished the four participants from the remaining seven players at this selection stage. The four participants ranged in task orientation from 3.85 to 4.57 and ego orientation from 3.16 to 4.16 suggesting moderate-to-high task and ego orientations (Duda & Whitehead, 1998).

Participant Demographics

The four participants (with pseudonyms applied), Darren (age 15), Joan (age 16), Maureen (age 15), and Mary (age 15) were each ranked within the top 5 in the county and had competed at national junior championship level. Each had entered seven tournaments throughout the July and August tennis circuit period. They lived in separate areas within the county, employed different coaches, and, while competing in a similar number of tournaments, followed different tournament programs except the closed county championships. They each saw their individual coach approximately twice per week in a training phase and on a 10-day or fortnightly basis during tournament weeks in which parents played the more active role as supporters/observers.

Instrumentation

The Profile of Goal Involvement Questionnaire (PGIQ). The measurement of baseline precompetition goal involvement responses was a delicate conceptual issue given the limited research that has attempted to measure goal involvement (e.g., Hall & Kerr, 1997; Harwood & Swain, 1998; Williams, 1998). Altering the stem of the TEOSQ to turn a psychometrically valid goal orientation measure into a situational goal involvement measure (Hall & Kerr, 1997; Williams, 1998) has received criticism on the grounds that the items do not sufficiently capture situational specificity (see Harwood, in press; Harwood, Hardy, & Swain, 2000). Equally, the assessment of goal involvement via single item measures (Harwood & Swain, 1998) is crude and somewhat ill-reflective of the complexity of the construct when exploring changes at an intraindividual level. Accounting for the need to conceptually progress the measurement of goal involvement, the PGIQ reflects a first move toward a more comprehensive measurement of goal involvement in a competition context.

In developing the PGIQ for this study, a pool of items was generated representing the two forms of task involvement and two forms of ego involvement noted earlier (i.e., the functional/self-directed form and the social approval oriented form of each goal). The item structure of the TEOSQ, the Perceptions of Success Questionnaire (POSQ; Roberts, Treasure, & Balague, 1998) and the ego and social orientation dimension of the Motivational Orientation Scales (Nicholls, Patashnick & Nolen, 1985) were considered when developing the pool. However, while ensuring the integration of self-referent (task) and normative (ego) features, the main emphasis was placed on developing statements with maximum relevance to the competition context. Within the content and face validity process, the items were presented to six professional tennis coaches, four U-18 junior players, and a research colleague. Each of these individuals were asked to correctly assign each item statement to one of the four categories of goal involvement and also to provide commentary on the content and phrasing of the items. This process led to a 12-item measure comprising three item statements per category of goal involvement. These are presented in Table 2 and labeled Self-directed task involvement (SDT), Self-directed ego involvement (SDE), Social approval task involvement (SAT), and Social approval ego involvement (SAE).

Scoring the PGIQ. Completion and scoring of the PGIQ was a further conceptual concern. Measures of goal orientation yield a score for the independent or orthogonal *level* or quantity of each socialized disposition. However, in terms of measuring goal involvement states prior to competition, it is perhaps the *strength* or dominance of each goal perspective relative to each other, as opposed to simply the levels independent of each other, that is most salient (Harwood & Swain, 1998). While the jury is still out on how, when, or if goal involvement is orthogonal (Harwood et al., 2000; Treasure, Duda, Hall, Roberts, Ames & Maehr, 2001;

Table 2 Item Composition of the Profile of Goal Involvement Questionnaire (PGIQ)

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1. Proving to yourself that you can beat the opponent (SDE)
 2. Mastering a shot/stroke that you have been working on (SDT)
 3. Reinforcing to other people that your game skills are superior to your opponent's (SAE)
 4. Showing others how you get the best out of yourself (SAT)
 5. Playing to a level which reflects personal improvements in your game (SDT)
 6. Showing other people your ability to win the match (SAE)
 7. Putting in a performance that is better than your opponent's (SDE)
 8. Proving to other people how well you solve problems in the match (SAT)
 9. Making progress in the execution of your skills (SDT)
 10. Proving to others that you are better than your opponent (SAE)
 11. Showing a higher level of skill than your opponent (SDE)
 12. Proving to others how hard you work to play well (SAT)
-

Key: SDE = Self-directed ego; SDT= Self-directed task; SAE = Social approval ego; SAT = Social approval task

Harwood & Hardy, 2001), ascertaining the relative prominence of task and ego involvement held by the players would facilitate an awareness of what goals occupied the forefront of the players' minds at that point in time. After all, it is this goal(s) that may influence subsequent or immediate thought and behavior patterns in competition.

Therefore, in order to prevent response data that reflected level but could not distinguish strength of activation, a ranking system was employed. Each player was asked to consider the importance of achieving each goal item for the specific match in question. To do this, players placed a total of three items from the pool of twelve into 4 categories of importance from *most important* to *least important* to achieve. They then ranked each item from 1 to 3 in each of these *most to least important* categories allowing an overall list of rankings from 1-12 to be produced. Points were then allocated to each rank in an inverse manner so that the goal ranked No. 1 (i.e., the most important item of the most important category) received twelve points and the goal ranked No. 12 (i.e., the least important item of the least important category) received one point. Accordingly, the points for social approval and self-directed task and ego involvement states are then added to determine the relative strength of each goal reported by the player for that match. The maximum score for any of the four types of goal involvement is thirty three (i.e., 12, 11, 10) while the minimum score is six (i.e., 3, 2, 1). This system produces a four category goal involvement profile reflecting the quality of the players' motivational state for that match. As a pilot test, the PGIQ was administered to the three U-16 county juniors prior to a local match. Completion took between five to seven minutes.

Components of Tennis Performance Questionnaire (CTPQ). In order to assess the quality of self-regulation operating in a match context, a questionnaire was designed to measure two relevant factors: first, the degree of meaning that players placed on self-referent achievements in the key component skills of tennis prior to the match and second, the extent to which players self-assessed their achievements in each of these components as part of the self-feedback cycle. The first author and three senior professional coaches from the Lawn Tennis Association (LTA) identified three main skills within the technical, physical, tactical, and mental components of performance (see Table 3). Nine U-18 county players then confirmed these skills as fundamental characteristics of each performance component.

Table 3 Skills Comprising the Components of Tennis Performance Questionnaire (CTPQ)

Technical	Tactical	Physical	Mental
Groundstrokes	Attacking short balls	Speed/Agility	Concentration during and between points
Volleys	Defensive play	Stamina	Positive thoughts about performance
Serve	Counterattacking play	Power	Goal setting before points

As a measure of self-regulation associated with each component, two questions were asked of the player with respect to each specific skill in the upcoming match. First, how much did achieving a sense of success and satisfaction in that particular skill actually *mean* to the player in the next match. Second, to what extent would the player personally *assess* the quality of that skill in the upcoming match. Assessment in this context meant how much the player would think about the quality of that skill between points/changeovers and/or reflect on the skill after the match.

Responses for each component skill were conveyed via a 10-point Likert format ranging from (1) *no meaning whatsoever* to (10) *of great meaning to me* for the meaning scale and from (1) *not at all* to (10) *very much so* for the assessment scale. The full questionnaire was piloted to four 15-year-old junior national players one hour prior to their matches at a regional tournament. The completion process lasted between eight to eleven minutes, and each player reported that they clearly understood the questions and agreed with skills identified.

The level of self-regulation for each component (i.e., technical self-regulation) is calculated by averaging the combined meaning and assessment scores for each skill (e.g., ground stroke + volley + serve self-regulation) within the component. To provide an overall composite score for self-regulation, the simple calculation follows:

$$\text{Technical self-regulation} + \text{Tactical self-regulation} + \text{Physical self-regulation} + \text{Mental self-regulation} / 4 = \text{Overall self-regulation.}$$

Self-Efficacy. Guided by Burton's (1989) investigation, a two-item measure of match-specific self-efficacy (Bandura, 1977) was devised for the purposes of the study. Measured on a 10-point Likert scale ranging from (1) *not at all* to (10) *very much so*, the first item question read "To what extent do you expect to beat the opponent and win the match?" The second question, measured on a similar scale ranging from 10% to 100%, read "From 10-100%, how much confidence do you possess in your performance abilities to win this match and beat this opponent?" The percentage indicated from this second question was divided by ten and the two responses were subsequently averaged to represent the player's self-efficacy with respect to the specific behavior of winning.

Perceptions of Threat and Challenge. Two single item questions focused on cognitive appraisals of threat and challenge (Lazarus & Folkman, 1984) for the upcoming match. The degree of perceived challenge was assessed by asking "In being completely honest, how much do you view this match and the opponent as an enjoyable and exciting challenge?" The extent of perceived threat was represented by the question, "In being completely honest, how much do you view the match and the opponent as a threat to your self-esteem?"

The amounts of challenge and threat perceived by the player were assessed via a scale ranging from (1) *not at all* to (10) *very much so*. Note that each of the individual item assessments for these competitive cognitions (i.e., self-efficacy, challenge, and threat) were presented nonsequentially and in different orders for each participant in order to control for order effects. Likewise, note that 10-point scales were applied to reflect the practical characteristics of performance profiling (Butler & Hardy, 1992) that monitors individual change within a 10 point scale.

Study Design and Procedure

This investigation combined case study reporting for the intervention outcomes with features of a pre-post A/B multiple-baseline across-participants design for examining changes in levels of self-regulation and competitive cognitions. We acknowledge that the structure of this study and particular nature of this field-based question did not lend themselves to satisfying the full requirements of normal A/B designs (Hayes, Barlow, & Nelson-Gray, 1999). Further, one should recognize that the length of the season did not permit the introduction of the intervention to be staggered across the treatment players. However, it was felt that the introduction of a matched control participant, despite the treatment players acting as their own controls, would further strengthen the design as a verifier of the integrity of such a novel intervention during a specific competition period. It would also allow any unexpected and positive directional changes in the control participant to be examined in a critical manner (e.g., Hanton & Jones, 1999).

Stage 1: Preintervention Baseline Assessments. A controlled procedure for assessing changes in achievement goals and competitive cognitions was adopted by the authors. Specifically, pre and postintervention levels of these variables were derived from each player's response to three similar match situations. In order to challenge the intervention, each match situation had to contain typically ego involving and potentially stressful properties (e.g., high public evaluation and expectation, rival opposition, ranking consequences, latter stages of important events, etc.). It was therefore important to ensure that postintervention reassessments of each player applied the same ego involving match situations. From a playing knowledge of the game, the first author recognized that it would be impossible to reassess players before three live matches with properties of equivalent objectivity and significance to the preintervention matches. To control for this problem, a covert simulation of each match context was operationalized in the pre and postintervention phases. As applied by Kazdin (1973), covert simulation or modeling requires the player through the use of verbalized imagery and prompts to induce a precompetition state of mind, which registers the tennis-environmental context, significant others, meaning of the event, and opponent just prior to match play. The utilization of scripted stimulus propositions (Lang, 1979) is critical in bringing a tournament situation to life more effectively than vignettes or scenario setting (Duda, Olson, & Templin, 1991). While the authors note that this method of eliciting precompetition responses is by no means as ecologically valid as administration at tournament sites, it allowed the authors to experimentally control the specific properties of each match presented to the player.¹

Each player completed the following process alone with the first author, one match context per week for three weeks. Players were asked to covertly simulate three match contexts with similarly ego involving criteria up to the point where they imagined walking onto court against the opponent. At this point, they were asked to rate how important the match was to them on a scale of (1) *not at all important* to (10) *extremely important*. This acted as a manipulation check for the procedure. They then completed the PGIQ, the CTPQ, and competition cognition questions with respect to that specific upcoming match. The first match context involved playing a slightly lower ranked player in semi-finals of a British junior ranking event with prize money on offer. The second match context involved playing as a favored seed in the quarter finals of the county championships. The third match context was the last round of qualifying for a place in the main draw of the

national championships. Three matches were chosen in order to establish the presence of sufficiently stable baseline responses to the criterion variables measured by a Likert scale format (i.e., to determine that the quality of self-regulation and competition cognitions did not differ extensively in response to three similar matches). In terms of the PGIQ, goal involvement responses were averaged across the three matches to provide an indication of the strongest and weakest motivational states. Covert simulation was timed on each occasion (range = 7 to 10 minutes) and the scripted stimulus propositions were recorded for use in exactly the same manner for the three reassessments.

Stage 2: The Player, Parent, and Coach-Oriented Intervention. The qualitative findings of Harwood and Swain (2001) were translated into a coordinated series of player, parent, and coach intervention techniques. The system applied by the first author (i.e., educator) was coined the "competitive performance" program and included techniques (a) to enhance both the personal meaning and assessment of self-referent achievements within matches, (b) to understand and rationalize the ego involving nature of tennis, (c) to enhance the frequency of task involving behavior of significant others within key contexts comprising the motivational climate, and (d) to reframe individual perceptions and expectations of certain match situations.

Initial Educational Sessions. At the outset of the intervention, each player individually received four 90-minute educational sessions and each set of parents and personal coach separately received two 90 minute sessions over a 3-week period prior to the July/August summer circuit.

Session 1 for all units focused on understanding the motives and reasons behind playing tennis, facilitated by pertinent player quotes from Harwood and Swain (2001) that reflected optimal and debilitating motivational profiles. These were discussed and rated in terms of their merits to short and long term success. For parents and coaches, the consequences of different achievement goal profiles were explored, followed by an identification of the factors contributing to the development and activation of task and ego involvement. Applied examples emphasized to parents and coaches the role played by their verbal and visual behaviors as well as the passive or active nature of their contributions. The principles of TARGET (Ames, 1992; Epstein, 1989) were explained in a way that highlighted this role. In their second session, players were introduced to the Competitive Performance Mentality (CPM), a motivational approach to competition, devised by the first author, that was based on the belief that in any match the player only faces two personal challenges: (a) the self-challenge—to maximize, improve, and/or maintain current standards of personal skills in each area of tennis performance and (b) the game challenge—to use the self-challenge to competitively overcome the test/opponent set by the game of tennis on that day.

Adoption of a CPM reflected a goal involvement profile of both high *self-directed* task and ego involvement and a decreased emphasis on social approval goal involvement. Discussions with each player focused on the self challenge being the core foundation to personal success and how tennis challenges the player to be competitive through the tests and rules that it sets. It is a challenge, however, that is naturally imposed on the self by the game, and not a challenge that rests on proving self-worth to significant others (i.e., social approval). It was reinforced to players that both challenges were independent but it was critical to review and appraise the self-challenge first. It was affirmed that players who possessed a CPM

simply focused on meeting the two challenges every match they entered whatever the nature of the situation or opposition.

Session 3 focused on how the motivational climate and social structure of tennis can damage a CPM. Problems associated with normative personal expectations, social expectations, and social approval were openly discussed as the educator introduced ego involving factors and illustrative quotes from players within the Harwood and Swain (2001) investigation. Insights from the match context dimension were applied practically by showing each player how their perception of different matches and opponents can inhibit the quality of attention placed upon the self challenge.

With this in mind, the educator devised a psychological tool to help players desensitize the motivational effects of the climate and match contexts. The acronym RESISTANCE represented the 10 factors in competitive tennis that could disrupt the motivational focus of a CPM and activate a distinct high ego/low task profile of goal involvement. If players possessed RESISTANCE, then they would buffer themselves against the potentially negative effects of these multiple factors. The acronym with some examples of accompanying phrases presented to players is depicted in Table 4. Space precludes a full description of RESISTANCE here, but details of the restructuring and role playing work employed by players, coaches, and parents are available from the first author.

The parents and coaches' second session focused on defining the CPM and the concept of RESISTANCE in order to brief them fully on what education the players had received. It was important for these significant others to recognize the importance of role modeling the CPM and transmitting RESISTANCE-related as opposed to non-RESISTANCE values and behaviors

In their final educational session, each player was introduced to the series of personal tasks required of them in order to achieve the objectives of the intervention. Based on the qualitative findings (Harwood & Swain, 2001), these included a prematch performance routine checklist; a competitive performance goal review sheet; a competitive performance match report and headline; and a competitive performance percentage, which allowed players to calculate a personal score for the match based on their personal match preparation and the degree of self-challenge and game challenge achieved. Each player was also asked to keep a personal training log book of what they had practiced and achieved in personal training

Table 4 RESISTANCE

R ating	– “It’s not the rating or ranking that produces the performance.”
E steem	– “Separate the person from the outcome.”
S eeding	– “Matches aren’t played on paper, they are played on tennis courts.”
I mportance	– “Any match is just as important as any other match.”
S core	– “It’s not about what score you beat her, she beat her, or she beat you.”
T eam	– “The most effective teammate plays like the player who gained selection.”
A udience	– “An audience’s main desire is to witness a player trying their best.”
N o justice	– “One bad line call or net cord does not win or lose a match.”
C omparison	– “Never base achievements solely on comparisons with others.”
E ndorsements	– “High fashion and designer labels never won a tennis match.”

sessions with respect to technical, tactical, physical, and mental skills. All of these prematch, postmatch, and training tasks were designed around the principles of the CPM.

The Competitive Performance Parent. Following educational sessions, each parent engaged in three main tasks throughout the intervention as a means of developing a more active task involving role and contributing to a more optimal motivational climate. First, aided by a booklet of ideal motivational comments to use in different contexts (e.g., prematch, in the car, postmatch, at home, etc.), parents kept a verbal behavior log book on the frequency of competitive performance statements/questions that they made to the player (e.g., How was your self-challenge in today's match? Did you feel you improved? Did you compete hard for the game challenge?). Second, each parent learned a simple match analysis and charting strategy that would provide useful performance-related feedback to the player. Finally, each parent was educated in how to lead a postmatch discussion session with the player. All of these tasks involved both parents accepting that any single parent more actively involved in his/her child's game tended to lead the analysis and discussion tasks.

The Competitive Performance Coach. Coaches followed the same education program to parents and subsequently regulated themselves in the following manners in order to act in synergy with behavior consistent with self-directed task involving principles. First, in their sessions with each player, they incorporated TARGET-based (Ames, 1992) principles and adopted the verbal behaviors consistent with parents. Second, they spent ten minutes at the start of each session discussing and checking the players' training logbooks on each performance component. Finally, in order to work on what had been learned through summer match play, each coach initiated a September "trainer" plan where skills targeted for improvement from the players' match review sheets became the focus of resulting sessions.

The Competitive Performance Triangle. The player, parents, and coach were not isolated units in the intervention, and action was taken to create an interactive triangular structure (Hellstedt, 1987). To maximize the development of an overall competitive performance motivational climate, contracts were designed, agreed to, and signed by each party on the behavioral expectations that each had of the others (Weathers & Liberman, 1975). Second, the triangle was encouraged to meet as a committee, with the player acting as chairperson, in order to review progress at least twice during the tournament circuit period.

The Role of the Educator. The extensiveness of the intervention in advancing the social cognitions, behavior, and beliefs of a whole social unit required a coordinator and administrator of activities. Following his role as educator prior to the intervention, the first author adopted three further roles. First, he familiarized each player and parent with their pre and postmatch routines by role modeling the full process himself as a player in a local senior tennis event. Second, he provided tournament check-ups and social support to both players and parents by meeting each individual player at four different tournaments throughout the period. Finally, at the midpoint of the intervention, he provided players, parents, and coaches with specific feedback on individual log books and completed task sheets.

Stage 3: Postintervention Reassessments. Exactly three months of the intervention had passed when each player initiated the reassessment protocol by responding to the same three match contexts induced via covert simulation. This process carefully replicated preintervention conditions of completion in terms of

quality of simulation, timing, and environment in order to maximize experimental validity.

Stage 4: Social Validation. Following the third and final reassessment session, each of the participants (except the control participant), parents, and coaches completed closed and open item social validation questionnaires. As a typical and fundamental feature of single case design research, social validation represented the clinical (practical) assessment of intervention effects (Hrycaiko & Martin, 1996) derived from gaining comprehensive qualitative views of the internal experiences of players, parents, and coaches with respect to their participation in the intervention.

Results

Participant 1: Joan

Joan competed in 31 singles matches during the intervention phase. She received a total of 11 lessons with her coach during this period. Figure 1 presents her mean PGIQ responses to the three matches pre and postintervention. While self-directed ego involvement remained at a high level between phases, activation of self-directed task involvement appeared to be enhanced substantially. Most notably, levels of reported social approval ego involvement for these matches decreased considerably between phases. Social approval task involvement also remained low despite perhaps being forced to offset decreases in social approval ego goals due to the ranking system.

Figure 2 depicts Joan's self-regulation responses from the CTPQ representing the meaning that she gave to personal achievements in the components of tennis performance combined with her degree of self-referent skills assessment. Prior to the intervention, Joan reported higher prematch technical self-regulation for each of the three matches relative to other performance components (e.g., physical self-regulation). Postintervention Joan responded with consistently higher levels of physical, tactical, and mental self-regulation while consolidating her motivational focus on technical skills in each of the three matches.

Joan's pre and postintervention competition cognitions are represented in Figure 3 (this figure also includes her overall self-regulation responses to reflect

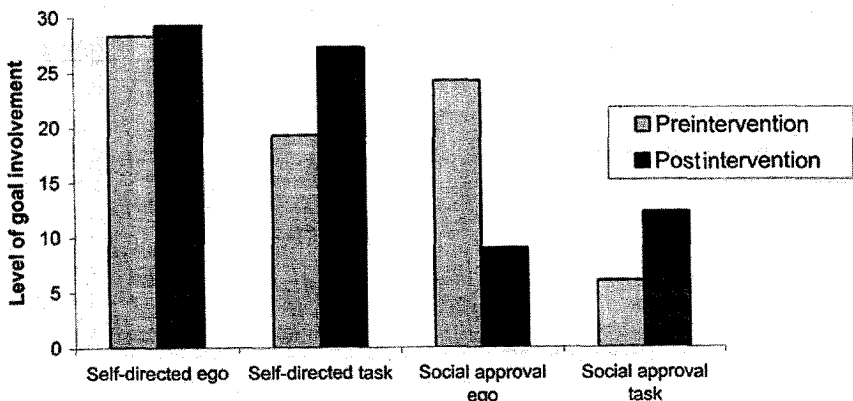


Figure 1 — Joan's profile of goal involvement.

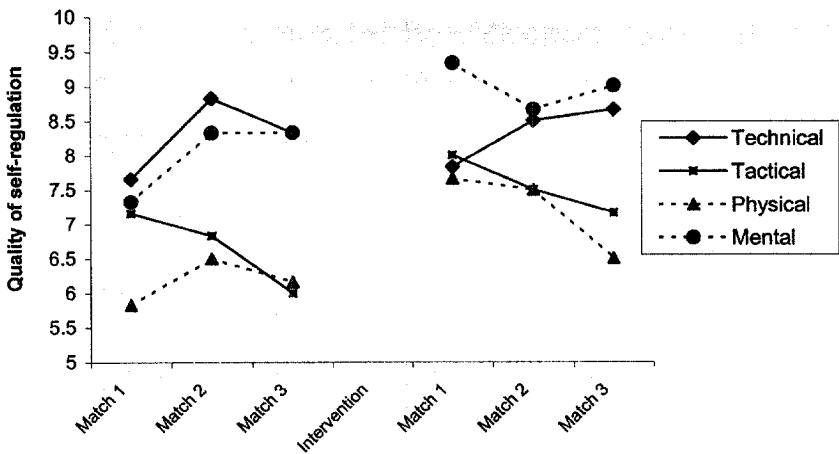


Figure 2 — Joan's self-regulation responses.

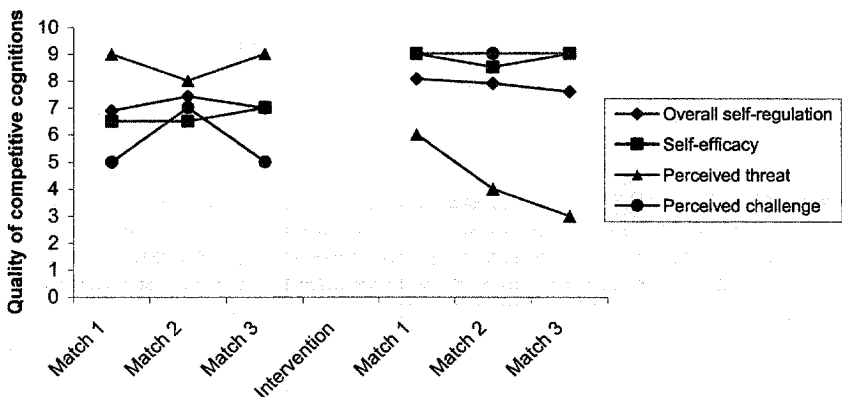


Figure 3 — Joan's competition cognitions and overall self-regulation.

the combined component responses in Figure 2). First, Joan's postintervention responses support a consistent and distinct increase in self-efficacy for each of the three matches. Further, Joan appraised each match as moderate in challenge but consistently high in threat to self-esteem prior to the intervention. However, after the program, a reversal in cognitive appraisal was evident in that perceptions of challenge had increased, alongside consistently reduced perceptions of threat. Finally, over this time period, Joan reported an increase in task orientation from 4.14 to 4.57 with a reduced ego orientation level of 2.33 from 3.16.

Participant 2: Maureen

Maureen competed in 32 singles matches over the course of the intervention and received 10 lessons from her coach. Maureen initiated the intervention with self-directed task and ego involvement prevailing as the most activated states of goal

involvement (see Figure 4). The intervention period appears to have consolidated and marginally enhanced these states with even less emphasis to social approval goals in each of the match contexts. Most notably, social approval ego goals are viewed as the least important to achieve.

Figure 5 shows that Maureen demonstrated stable but fairly modest degrees of self-regulation prior to the intervention. After the intervention, however, there appeared to be marked visual improvements in the reported value and self-reflective focus that she gave to her achievements in tactical, mental, and particularly, physical component skills (i.e., stamina, speed/agility, and power).

In tandem, Maureen also revealed an enhanced profile of precompetition cognitive responses following the intervention (see Figure 6). First, self-efficacy was consistently higher for each of three matches. Second, whereas prior to the intervention, matches were associated with similar levels of threat and challenge, a consistent pattern of decreased threat and increased challenge was noticeable in

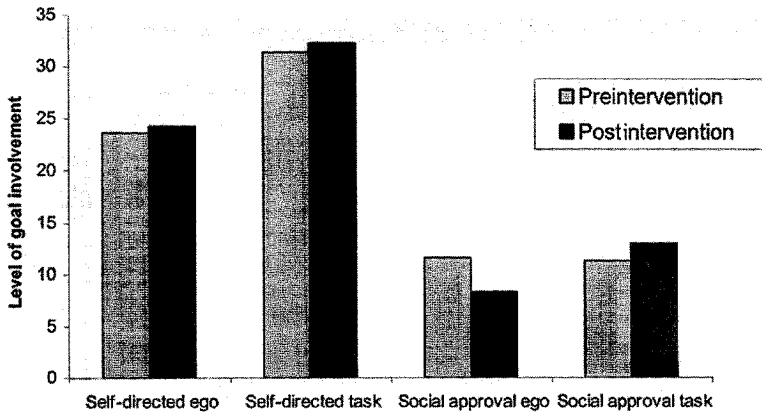


Figure 4 — Maureen's profile of goal involvement.

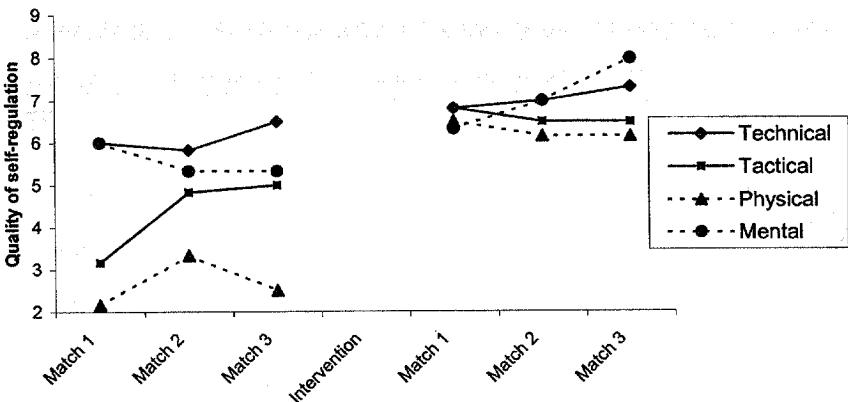


Figure 5 — Maureen's self-regulation responses.

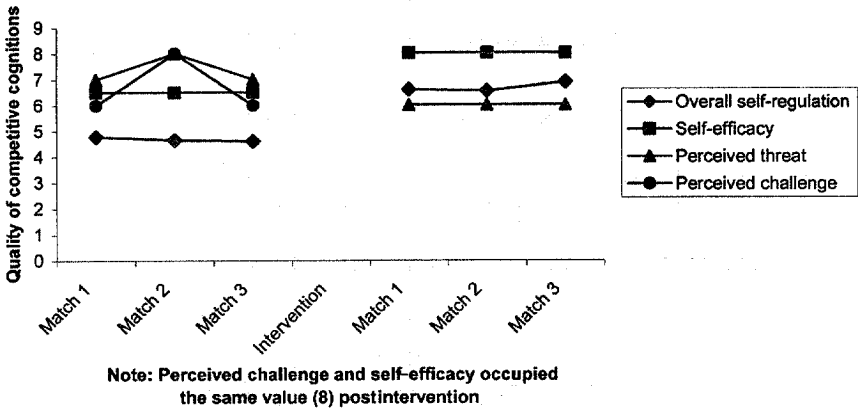


Figure 6 — Maureen's competition cognitions and overall self-regulation.

her postintervention responses. Finally, Maureen's task orientation increased marginally over the summer period from 4.42 to 4.57 with an equally marginal decrease in ego orientation from 3.33 to 3.16.

Participant 3: Darren

Darren competed in 38 singles matches and attended 11 lessons with the coach during the intervention time frame. Figure 7 shows how Darren's activation of self-directed task involvement has doubled in intensity and was the prevailing goal state within the player for each of his three matches postintervention. Self-directed ego involvement has decreased to a moderate level, while the activation of social approval ego involvement showed a measurable reduction to a level where both social approval goals were least significant to achieve in a competitive setting.

Figure 8 reveals concurrent similarities with Joan and Maureen in that Darren's technical self-regulation (i.e., emphasis on achievements in ground strokes, serve, and volley performance) was highest prior to the intervention. Given the limited value attached to other performance factors, Darren's preintervention profile depicts a player who perhaps placed an overemphasis on his technical prowess to the detriment of other skills. Visual inspection of the reassessment data supports the impact of the intervention in enhancing the self-regulation of tactical, physical, and particularly mental components of performance. Although these reported improvements still equate to modest overall scores, the positive directional change favors the effect of the intervention over that limited period of time.

Interestingly, Darren's precompetition cognitive responses, depicted in Figure 9, did not differ substantially from the preintervention baseline. Levels of self-efficacy were slightly higher across each match, while few changes emerged in this player's moderate level appraisals of the threat and challenge associated with his encounters. Finally, Darren's reported task orientation remained unchanged at the relatively high level of 4.42, while his ego orientation decreased from 4.16 to 3.50.

Participant 4: Mary

Mary, the control participant, competed in 28 tournament singles matches and received 13 lessons from her individual coach during the intervention time frame.

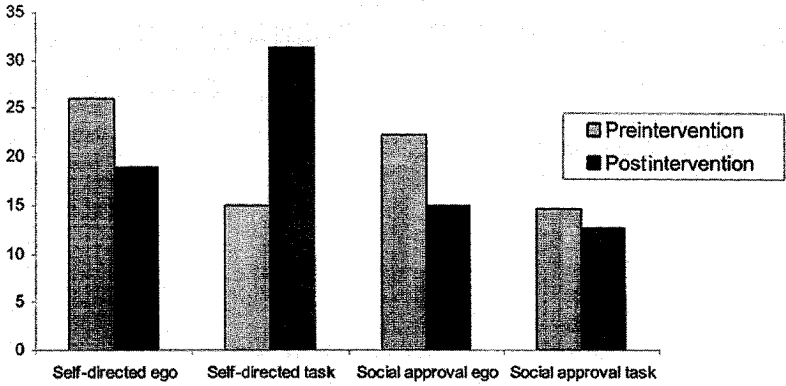


Figure 7 — Darren's profile of goal involvement.

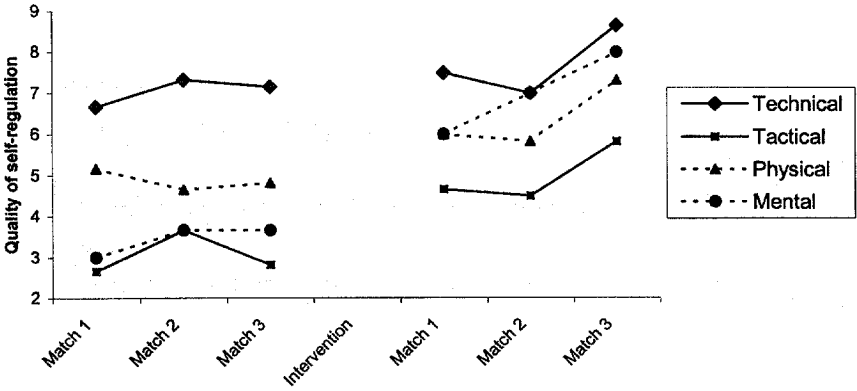


Figure 8 — Darren's self-regulation responses.

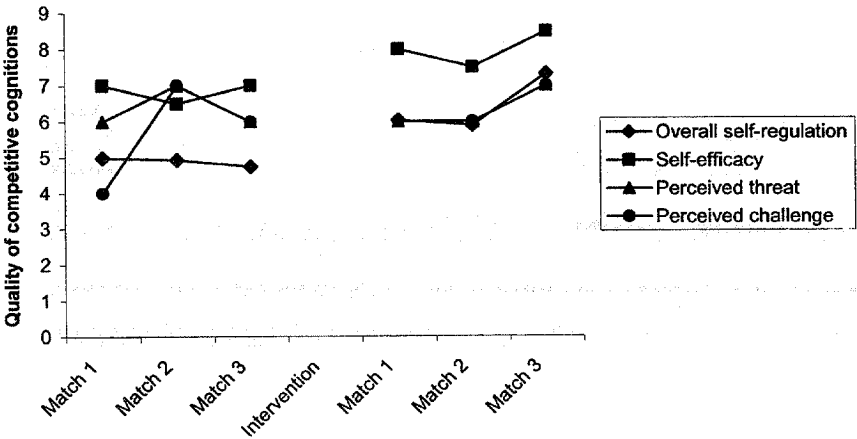


Figure 9 — Darren's competition cognitions and overall self-regulation.

Figure 10 demonstrates the lack of change in the nature of Mary's prematch goal involvement states. Self-directed ego involvement remained the predominant goal state prior to each match with secondary importance placed upon self-directed task involvement. The moderate attention paid to achieving ego goals for reasons associated with social approval remained unchanged, while virtually no importance or attention continued to be attached to social approval task goals.

Mary's responses to the CTPQ (see Figure 11) reflected moderate levels of self-regulation with attention more prominently focused on achievements in mental and technical skills. Her reassessment following three months of tournaments and training revealed very few differences in the levels of self-regulation pertaining to each performance component. Indeed, her order of priority in terms of achievements in these skills was exactly the same 28 competitive matches after her initial assessment.

Figure 12 reveals how little Mary's precompetition cognitions changed over the course of the season. Neither did self-efficacy levels for the same opponent three months later noticeably alter, nor did this player's perceptions of threat and challenge differ from appraisals of each match being measurably more threatening than challenging. Overall, Mary did not cognitively or motivationally change in any way over the period of time when changes were apparent within intervention

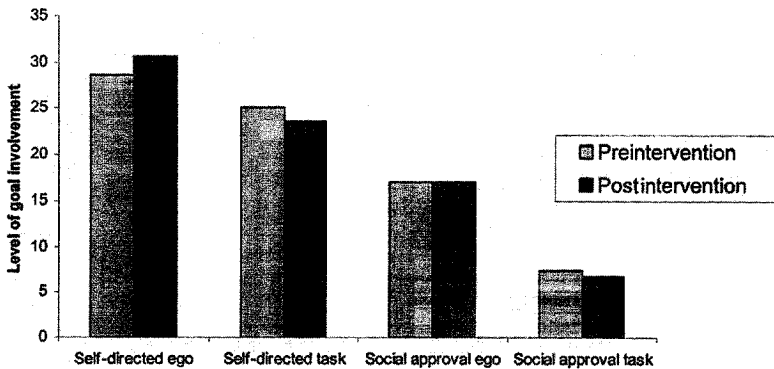


Figure 10 — Mary's profile of goal involvement.

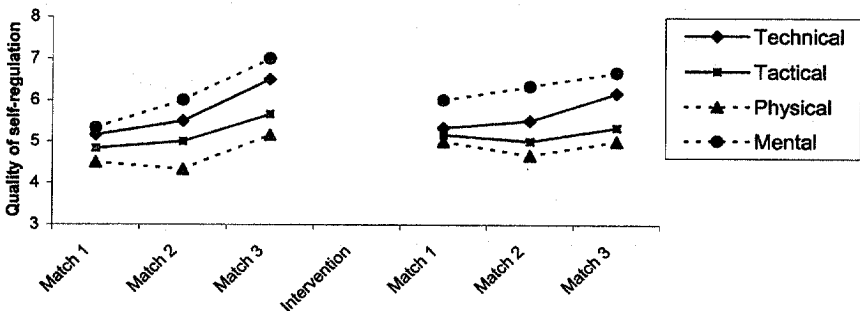


Figure 11 — Mary's self-regulation responses.

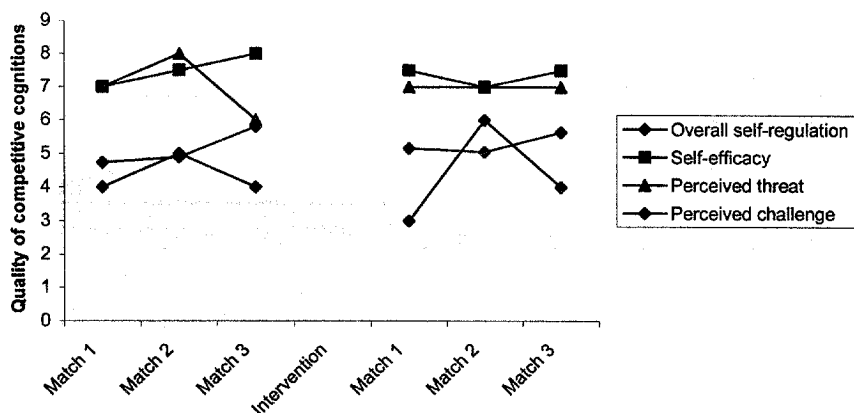


Figure 12 — Mary's competition cognitions and overall self-regulation.

participants. Even with respect to her dispositional goal orientation, Mary's task orientation decreased marginally from 3.85 to 3.71 with ego orientation unchanged at 3.33.

Qualitative Responses to Social Validation

The qualitative responses of players, coaches, and parents did a great deal to socially corroborate the cognitive-motivational changes that were apparent within the participants' overall postintervention profiles. While the social validation process in its entirety represented an extensive range of closed and open-ended questions, this section drives home the key responses made by each unit. First, all three players felt that the support they received from parents, coaches, and the educator was positive to their improvement. Additionally, all players felt that their performance had significantly improved:

My whole mental approach to both tennis practices and especially matches has completely changed. I feel that RESISTANCE especially helped me when playing certain players. It enabled me to enjoy each match more.

Concentrating on certain areas of my game (performance goals) has helped reduce pressure from certain matches. I know this because when I do concentrate on these areas it works!

Further, each player felt that the meaning and value they placed on personal performance and winning in matches had changed as a result of the project.

Before, I assessed my performance based upon outcome and did not go "on court" with any aims. I have changed because I have discovered the meaning of performance and realized that the result alone is much less important.

The importance of winning has not changed much, but the meaning has. After matches, I do not judge my performance on the outcome but on my performance. Putting in a good performance and winning would mean most to me.

I went on court thinking that it is important to win the match, but most importantly, that I had to put in a good self-challenge. Even if you don't win the match, but you perform well, then you should be satisfied with your tennis.

Of pertinence methodologically, all three players validated the covert simulation procedures. They indicated that they were able to imagine themselves in the three competitive situations, that their imagery helped them create a situational mindset of a similar nature to a live setting, and that each match situation was very typical of pressure situations that players face in competitive tennis.

Finally, when asked about which component of the intervention most aided their development of a CPM (i.e., high self-directed task/ego involvement), all three players selected the educational file on the Competitive Performance Mentality/RESISTANCE and the Competitive Performance match review sheets. Joan and Maureen additionally selected the Competitive Performance match reports, Competitive Performance percentages, and the training log book. Maureen also gained benefit from the parent match analysis and flow charts. One player summarized the use of these intervention techniques:

RESISTANCE was extremely helpful because before I was very much affected by the person I was playing, their rating, the tournament etc. The performance review sheet could be taken onto court and I really tried to follow my aims. Competitive match reports helped me self-analyze my match and give me ideas for the next matches. Personal scores (i.e., percentage) made me strive to improve my score and therefore performance. The performance factor files (i.e., training log) were useful to me to read through at later dates and made me remember useful advice I would otherwise forget.

In terms of parental responses to the intervention, Maureen's parents articulated the following:

Positive tennis values can be strengthened by giving them a measurable and definable structure within which to operate. Players helped to develop a structure can begin to take greater responsibility for their own game. Each player has the opportunity to achieve or improve on their own personal goals and doing this enhances a sense of self-respect that makes them stronger both as people and players.

All parents made positive comments about how their relationship with their son/daughter had changed during the project. These are perhaps best reflected again by Maureen's mother:

We work with more consensus because there is a framework within which we come together to talk about tennis. We feel that as parents, we know more clearly what we can usefully do and also what we can't. The areas that seemed to be sensitive for a player to talk about seem to be much easier and can be talked about more openly. Even if we can't exactly define our roles, our roles seem to be evolving more clearly and in a way that we all feel more comfortable with.

In terms of identifying which aspects of the project were most relevant to their role as tennis parents, Joan's family responded, "The examples of the right statements to make and questions to ask in different situations was very helpful to us. It allowed

us to discuss matches much more constructively with our daughter.” Darren’s parents replied, “The match analysis system—because we were able to see clearly the match performance. This in turn showed a clear picture of our son’s match for him to follow.”

Lastly, two of the three coaches felt a moderate degree of benefit from being part of the project, with a 3rd coach reporting maximum benefit. All coaches felt their greatest contribution to change was during the final training month, when they were able to see their players on a more regular basis. Coaches supported the utility of their TARGET lesson task and pointed out that the efficacy of the intervention may have been enhanced even more if commenced in a winter training period prior to a competition phase. Coaches acknowledged that their involvement and time investment with the players over a competition phase was significantly lower than parents and that the impact of their role may not have been realized to its fullest potential.

Cross Case Analyses and Discussion

Comprehensive field-based interventions in high level sport that adopt a pure achievement goal approach are limited. Yet the application of achievement goal theory to influencing cognitions and behaviors in performance settings is both clear and needed. This study implemented an intervention program consisting not only of educational, strategy, and skill-based exercises for players, but also one that attempted to optimize the attitudes, values, and behavioral practices of significant others within a tennis player’s motivational climate. The central purpose of the study was to optimize the precompetition task and ego involvement states and related competition cognitions of three national standard junior tennis players. The introduction and subsequent findings of the matched control participant suggested that no nonintervention-based external factors influenced changes in such cognitive-motivational variables. This section discusses the key findings across cases while synthesizing both the conceptual and applied messages for researchers and practitioners working within youth sport environments.

Profiles of Goal Involvement

A key feature of this investigation was the attempt to conceptually advance the measurement of goal involvement in a competition context. Harwood and Swain (2001) supported the benefits of establishing a dichotomy between achieving task and ego involved goals for self-directed reasons as opposed to reasons associated with external social approval or self-presentation. The primary purpose of the intervention was to enhance self-directed task involvement and suppress social approval goals in the face of ego-involving match contexts. These contexts were purposely chosen to test the strength of the intervention. In line with previous research supporting hi-task/hi-ego goal profiles (Hodge & Petlichkoff, 2000), a state of self-directed ego involvement was viewed as a positive feature only alongside enhanced self-directed task involvement. While rebuking social approval ego involvement, in particular, we believed that a self-directed precompetition goal involvement profile would optimize the player’s application of personal qualities and competitive skills in matchplay. The competitive performance strategic system was intentionally devised to nurture such motivational states and to help players deal with subjective and objective achievement outcomes in progressive and

adaptive manners. Further, the application of RESISTANCE and the education and reinforcement of appropriate behaviors of significant others offered a coherence and synergy to this intervention aim.

Joan and Darren showed marked increases in their activation of self-directed task involvement. Maureen reported a high level of this state at the start of the intervention, perhaps reinforcing a limitation in the single item measures (Harwood & Swain, 1998), which had suggested lower task involvement at the selection stage. While she consolidated her prevailing focus on achieving self-directed task goals, all three players maintained reasonably high levels of self-directed ego involvement and reduced their focus on social approval ego goals.

The issue of self-directed versus social approval achievement goals is in need of greater conceptual and empirical scrutiny. For example, it would be interesting to explore whether this dichotomy is tantamount to expressing externally regulated versus identified motivation within the confounds of self-determination theory (Deci & Ryan, 1985). In other words, how much do athletes define success in terms of achieving positive (or avoiding negative) external or social consequences that happen to be associated with mastery or norm-referenced accomplishments? And how much do they define success in terms of mastery and norm-referenced accomplishments simply because that fulfills a personal requirement with which they internalize and identify? Such conceptual issues, and the related cognitive-behavioral consequences, need to be given further consideration within competitive youth sport.

In sum, the PGIQ provided some engaging findings as a purely intraindividual measure of goal involvement. It is hoped that this modest attempt does move the assessment of achievement goals forward at a contextual level and beyond previous attempts (e.g., Harwood & Swain, 1998; Hall & Kerr, 1997) at measuring situation-specific goal states. One of the major avenues of research stemming from this study is a fuller examination of the goal involvement-performance relationship and an examination of whether precompetition or during competition task and ego involvement states possess linear or curvilinear relationships with motor performance.

Improvements in Self-Regulation

Self-regulation is defined broadly as the self-generated thoughts, feelings, and behaviors that are planned and cyclically adapted based on performance feedback (Zimmerman, 1989). The competitive performance system was designed to enhance the attention and meaning that players gave to fundamental competitive tennis skills via an emphasis on self-feedback and reflection in training and match play. The CTPQ was designed around the notion that task involved athletes, by the very nature of their goal perspective, give meaning to the achievement of personal skills in a competitive encounter and self-referently reflect on their quality of execution. In other words, it might be suggested that if a player is high in task involvement, then s/he should be, or has the potential to be, high in basic self-regulation skills.

The effects of the intervention on self-regulation did indeed relate well to improvements in self-directed task involvement. Joan, Maureen, and Darren showed increases in their composite self-regulation scores across all three match situations. Mary, the control participant, remained unmoved after a full season of match play. Further, all intervention players gave greater cognitive consideration and value to achievements in those skills that had been meagerly prioritized at the outset.

This is interesting given that weaker performance components were not specifically targeted by the intervention.

In sum, although some players still only reported moderate levels of component self-regulation, and the CTPQ was limited by asking players about how much they would reflect on their skills but not specifying a particular reflective context (e.g., reflection between points, changeovers, or post-match), these kind of findings do provide excellent applied information for coaches whose role is to help maximize a player's potential in these four key areas.

Competition Cognitions

Given the situational nature of the investigation, the effects of a motivational intervention upon critical precompetition cognitions was valuable to investigate. First, all three players reported moderately high self-efficacy levels for each match prior to the intervention. These levels increased across two of the three players, with Joan exhibiting the most enhanced beliefs in her ability to win each match. Unfortunately, the intervention could not control for the potential effects of performance accomplishments over the summer (Bandura, 1977) as a major antecedent of efficacy expectations. In terms of cognitive appraisal (Lazarus & Folkman, 1984), Joan and Maureen reported marked cognitive reversals in their perceptions of whether the matches were challenging or threatening to their self-esteem, while Darren and Mary did not differ conclusively in their perceptions.

Taken together, these findings support the integrity of the intervention and the potential mediating effects of goal involvement states on self-efficacy and cognitive appraisal at an individual level. Specifically, the results advance the hypothesis that increasing task involvement and self-regulation while suppressing social approval goals facilitate positive efficacy expectations alongside more challenging and less threatening perceptions of competition.

Dispositional Goal Orientation

Due to the length of the study and multidimensional conceptualization of task and ego goals adopted by the investigation, no predictions were offered as to the effects of the intervention on task and ego orientations. While Mary showed little variation between phases, Joan, Maureen, and Darren either maintained or slightly increased their task orientation with the opposite occurring for their ego orientation. The length of Likert scale and scoring trends of the TEOSQ (see Duda & Whitehead, 1998) render actual individual change in goal orientations difficult to confirm. In essence, future research needs to consider the development of more context-specific measures of goal orientation (e.g., competition goal orientation, practice goal orientation) and a scaling procedure that can detect real longitudinal and/or developmental shifts in motivationally "at-risk" performers (see Harwood, in press).

Conclusion

In drawing this particular study to a close, it is worth expressing the tremendous feeling of satisfaction that one gains having ventured fully along the research to applied practice continuum and effected changes in young athletes. The authors appreciate some of the limitations to this project (e.g., imagined versus live situations) and the need to select the most pertinent information for the reader from the

extensive points and examples that could have been made. We invite achievement goal theorists to replicate and extend this type of intervention and to challenge some of the limitations that we faced as researchers. No doubt there is still much to be learned about the social development, activation, conceptualization, and measurement of achievement goals in youth sport contexts. Nevertheless, the findings from this study provide compelling evidence for the invaluable role that achievement goal and motivational climate research can play in the real world of competitive sport.

References

- Ames, C. (1992). Achievement goals, motivational climate and motivational processes. In G.C. Roberts (Ed.), *Motivation in sport and exercise*, (pp. 161-176). Champaign, IL: Human Kinetics.
- Bandura, A. (1977). Self-efficacy: Towards a unifying theory of behavioral change. *Psychological Review*, **84**, 191-215.
- Brustad, R.J. (1988). Affective outcomes in competitive youth sport: The influence of intrapersonal and socialisation factors. *Journal of Sport & Exercise Psychology*, **10**, 307-321.
- Brustad, R.J. (1992). Integrating socializing influences into the study of children's motivation in sport. *Journal of Sport & Exercise Psychology*, **14**, 59-77.
- Butler, R.J., & Hardy, L. (1992). The performance profile: Theory and application. *The Sport Psychologist*, **6**, 253-264.
- Burton, D. (1989). Winning isn't everything: Examining the impact of performance goals on collegiate swimmers' cognitions and performance. *The Sport Psychologist*, **3**, 105-132.
- Chaumeton, N.C., & Duda, J.L. (1988). Is it how you play the game or whether you win or lose? The effect of competitive level and situation on coping behaviours. *Journal of Sport Behaviour*, **11**, 157-174.
- Cumming, J., Hall, C., Harwood, C.G., & Gammage, K. (2002). Motivational orientations and imagery use: A goal profiling analysis. *Journal of Sport Sciences*, **20**, 127-136.
- Deci, E.L., & Ryan, R.M. (1985). *Intrinsic motivation and self-determination in human behavior*. New York: Plenum Press.
- Duda, J.L. (2001). Achievement goal research in sport: Pushing the boundaries and clarifying some misunderstandings. In G. Roberts (Ed.), *Advances in motivation in sport and exercise* (p. 129-182). Champaign, IL: Human Kinetics.
- Duda, J.L., & Hom, H. (1993). Interdependencies between the perceived and self-reported goal orientations of young athletes and their parents. *Pediatric Exercise Science*, **5**, 234-241.
- 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., & Whitehead, J. (1998). Measurement of goal perspectives in the physical domain. In J.L. Duda (Ed.), *Advances in sport and exercise psychology measurement* (pp. 21 - 48). Morgantown, WV: Fitness Information Technology.
- Duda, J.L., Olson, L.K., & Templin, T.J. (1991). The relationship of task and ego orientation to sportsmanship attitudes and the perceived legitimacy of injurious acts. *Research Quarterly for Exercise & Sport*, **62**, 79-87.
- 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.
- Dunn, J.G.H., & Dunn, J.C. (1999). Goal orientations, perceptions of aggression, and sportpersonship in elite male youth ice hockey players. *The Sport Psychologist*, **13**, 183-200.
- Ebbeck, V., & Becker, S.L. (1994). Psychosocial predictors of goal orientation in youth soccer. *Research Quarterly for Exercise & Sport*, **65**, 355-362.

- Epstein, J. (1989). Family structures and student motivation: A developmental perspective. In C. Ames & R. Ames (Eds.), *Research on motivation in education. Vol. 3: Goals and cognitions* (pp. 259-298). New York: Academic Press.
- Ewing, M.E. (1981). *Achievement motivation and sport behaviour of males and females*. Unpublished doctoral dissertation, University of Illinois, Urbana.
- Fox, K., Goudas, M., Biddle, S., Duda, J.L., & Armstrong, N. (1994). Children's task and ego goal profiles in sport. *British Journal of Educational Psychology*, **64**, 253-261.
- Gambrill, E.D. (1977). *Behavior modification: Handbook of assessment, intervention and evaluation*. San Francisco, CA: Jossey-Bass.
- Gernignon, C., & Le Bars, H. (2000). Achievement goals in aikido and judo: A comparative study among beginner and experienced practitioners. *Journal of Applied Sport Psychology*, **12**, 168-179.
- 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.
- Hall, H.K., & Kerr, A.W. (1997). Motivational antecedents of pre-competitive anxiety in youth sport. *The Sport Psychologist*, **11**, 24-42.
- Hanton, S.M., & Jones, G.J. (1999). The effects of a multi-modal intervention program on performers: II. Training the butterflies to fly in formation. *The Sport Psychologist*, **13**, 22-41.
- Harwood, C.G. (in press). Assessing achievement goals in sport: Caveats for consultants and a case for contextualization. *Journal of Applied Sport Psychology*.
- Harwood, C.G., & Hardy, L. (2001). Persistence and effort in moving achievement goal research forward: A response to Treasure and colleagues. *Journal of Sport & Exercise Psychology*, **23**, 330-345.
- Harwood, C.G., & Swain, A.B. (2001). The development and activation of achievement goals in tennis: I. Understanding the underlying factors. *The Sport Psychologist*, **15**, 319-341.
- Harwood, C.G., & Swain, A.B. (1998). Antecedents of pre-competition achievement goals in elite junior tennis players. *Journal of Sport Sciences*, **16**, 357-371.
- Harwood, C.G., Hardy, L., & Swain, A.B. (2000). Achievement goals in sport: A critique of conceptual and measurement issues. *Journal of Sport & Exercise Psychology*, **22**, 235-255.
- Hayes, S.C., Barlow, D.H., & Nelson-Gray, R.O. (1999). *The scientist-practitioner: Research and accountability in the age of managed care*. Boston: Allyn & Bacon.
- Hellstedt, J.C. (1987). The coach/parent/athlete relationship. *The Sport Psychologist*, **1**, 151-160.
- Hersen, M., & Barlow, D. (1976). *Single case experimental designs: Strategies for studying behavior change*. New York: Pergamon.
- Hodge, K., & Petlichkoff, L. (2000). Goal profiles in sport motivation: A cluster analysis. *Journal of Sport & Exercise Psychology*, **22**, 256-272.
- Hom, H., Duda, J.L., & Miller, A. (1993). Correlates of goal orientations among young athletes. *Pediatric Exercise Science*, **5**, 168-176.
- Hrycaiko, D., & Martin, G.L. (1996). Applied research studies with single subject designs: Why so few? *Journal of Applied Sport Psychology*, **8**, 183-199.
- Kazdin, A.E. (1973). Covert modeling and the reduction of avoidance behavior. *Journal of Abnormal Psychology*, **81**, 87-95.
- Kim, M.S., & Gill, D.L. (1997). A cross-cultural extension of goal perspective theory to Korean sport youth. *Journal of Sport & Exercise Psychology*, **19**, 142-155.
- Lang, P.J. (1979). A bio-informational theory of emotional imagery. *Psychophysiology*, **17**, 495-512.
- Lazarus, R.S., & Folkman, S. (1984). *Stress, appraisal and coping*. New York: Springer.
- 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.

- Newton, M., Duda, J.L., & Yin, Z. (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. (1989). *The competitive ethos and democratic education*. Cambridge, MA: Harvard University Press.
- Nicholls, J.G., Patashnick, M., & Nolen, S.B. (1985). Adolescent theories of education. *Journal of Educational Psychology*, **77**, 683-692.
- Ntoumanis, N., & Biddle, S.J.H. (1998). The relationship between competitive anxiety, achievement goals and motivational climates. *Research Quarterly For Exercise and Sport*, **69**(2), 176-187.
- Ollendick, T.H. (1986). Behavior therapy with children and adolescents. In S.L. Garfield & A.E. Bergin (Eds.), *Handbook of psychotherapy and behavior change* (pp. 525-564). New York: John Wiley and Sons.
- Prapavessis, H., Grove, J.R., McNair, P.J., & Gable, N.T. (1992). Self regulation training, state anxiety, and sport performance: A psychophysiological case study. *The Sport Psychologist*, **6**, 213-229.
- Roberts, G.C., Treasure, D.C., & Balague, G. (1998). Achievement goals in sport: The development and validation of the Perceptions of Success Questionnaire. *Journal of Sport Sciences*, **16**, 337-347.
- Roberts, G.C., Treasure, D.C., & Kavusannu, M. (1996). Orthogonality of achievement goals and its relationship to beliefs about success and satisfaction in sport. *The Sport Psychologist*, **10**, 398-408.
- Theeboom, M., DeKnop, 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 & Exercise Psychology*, **17**, 294-311.
- 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 & Exercise Psychology*, **23**, 217-329.
- Urduan, T.C., & Maehr, M.L. (1995). Beyond a two-goal theory of motivation and achievement: A case for social goals. *Review of Educational Research*, **65**, 213-243.
- Weathers, L., & Liberman, R.P. (1975). The family contracting exercise. *Journal of Behaviour Therapy and Experimental Psychiatry*, **6**, 208-214.
- Williams, L. (1998). Contextual influences and goal perspectives among female youth sport participants. *Research Quarterly for Exercise & Sport*, **69**, 47-57.
- Zimmerman, B.J. (1989). A social cognitive view of self-regulated academic learning. *Journal of Educational Psychology*, **81**, 329-339.

Authors' Notes

¹A full explanation of the procedure is available from the first author.

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