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Smith, Alison; Balaguer, Isabel; Duda, Joan

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Alan L. Smith^a, Isabel Balaguer^b, Joan L. Duda^c

^a Department of Health and Kinesiology, Purdue University, West Lafayette, IN, USA ^b Department of Social Psychology, University of Valencia, Valencia, Spain ^c School of Sport and Exercise Science, The University of Birmingham, Birmingham, UK

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Goal orientation profile differences on perceived motivational climate, perceived peer relationships, and motivation-related responses of youth athletes

ALAN L. SMITH¹, ISABEL BALAGUER², & JOAN L. DUDA³

¹Department of Health and Kinesiology, Purdue University, West Lafayette, IN, USA, ²Department of Social Psychology, University of Valencia, Valencia, Spain and ³School of Sport and Exercise Science, The University of Birmingham, Birmingham, UK

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Abstract

The aims of this study were twofold: (a) to determine if dispositional achievement goal orientation profiles that are reported in the literature would be observed in a sample of youth athletes, and (b) to examine potential achievement goal orientation profile differences on perceptions of the motivational climate, perceptions of peer relationships, and motivation-related responses. Male soccer players ($n = 223$) aged 9–12 years (mean = 10.9, $s = 0.6$) completed a multi-section questionnaire containing assessments of dispositional goal (task, ego) orientations, the perceived task- and ego-involving features of the motivational climate, perceived peer acceptance and friendship quality (positive friendship quality, conflict), perceived ability, soccer enjoyment, and satisfaction with one's performance and the team. Four profiles were observed that closely matched those observed by Hodge and Petlichkoff (2000), though in the present study a lower proportion of participants exhibited achievement goal profiles consisting of relatively high ego orientation. Achievement goal profile differences were found for all variables except positive friendship quality, with a general trend for those reporting relatively lower task goal orientation to exhibit less adaptive responses. Overall, the findings support achievement goal frameworks (e.g. Nicholls, 1989) and suggest that further examination of dispositional achievement goals may afford a deeper understanding of social relationships and motivational processes in youth sport.

Keywords: *achievement motivation, cluster analysis, friendship, peer acceptance*

Introduction

Sport is a prominent context in the lives of young people and therefore has received considerable attention from sport scientists (see Smoll & Smith, 2002). Understanding what leads young people to choose, expend effort in and persist with sport pursuits has been of particular interest to researchers and practitioners because such insight can be linked to the provision of developmentally meaningful sport experiences. Since the late 1980s, one of the most popular approaches used to frame the study of motivational processes in sport is achievement goal theory (for recent reviews, see Duda & Hall, 2001; Roberts, 2001). Achievement goal theory emanates from work in the educational domain, with theorists proposing that individuals' achievement goals are key determinants of motivation-related cognition, affect and behaviour (Ames, 1992; Dweck, 1999; Maehr & Nicholls, 1980; Nicholls, 1984, 1989).

These theorists suggest that: (a) the demonstration of ability is a key concern, (b) achievement motivation is multidimensional in nature, and (c) goals are critical to motivational outcomes because they serve as a basis for judging competence and defining success and failure (Weiss & Ferrer-Caja, 2002).

The contributions of Nicholls (1984, 1989) have strongly impacted achievement motivation research in sport. His perspective holds that dispositional goal orientations are central to success and failure assessment in achievement contexts and therefore are key motivational constructs. Goal orientations represent tendencies to employ certain conceptions of ability in achievement situations (i.e. goal involvement) and take two forms – namely, task and ego orientation. *Task* orientation is the propensity to define success and construe one's competence in a manner that is self-focused and targets improvement and mastery. *Ego* orientation reflects the tendency to judge one's ability with respect to the performance of

others and to tie subjective success to the demonstration of superior ability. When one is predominantly task oriented, task involvement coupled with adaptive cognitive, affective and behavioural outcomes is expected. When one is predominantly ego oriented, ego involvement is predicted and may be coupled with adaptive or maladaptive psychological outcomes depending on ability perceptions (Duda, 2001; Nicholls, 1984).

Research in the physical domain has provided support for these theoretical propositions (see Biddle, Wang, Kavussanu, & Spray, 2003; Duda, 2001; Duda & Hall, 2001; Roberts, 2001). Correlational findings relative to task orientation consistently match with expectations, whereas findings relative to ego orientation are less robust, as would be expected given that predicted outcomes for ego orientation are dependent upon one's perceived ability. Higher task orientation links with stronger beliefs that effort and cooperation with others lead to success and that the purpose of sport is to promote a work ethic and foster cooperation. Furthermore, higher task orientation has been found to correspond to greater enjoyment/intrinsic interest and satisfaction, less performance-related anxiety, and greater commitment to practice, learning and effort. Higher ego orientation is associated with stronger beliefs that high ability and deceptive strategies lead to success and that the purposes of sport are the enhancement of self-importance and social status. Also, higher ego orientation has been associated with greater anxiety and concern, and less commitment to practice. Either a negative relationship or no association between ego orientation and enjoyment and intrinsic interest emerges in the sport-related literature (Duda & Hall, 2001). Overall, achievement goal orientations have been established as particularly meaningful motivational constructs in the physical domain.

An important theoretical caveat emphasized by Nicholls (1984, 1989) that warrants attention in goal orientation research is the presumption that the two major goal orientations are orthogonal. This means that individuals may have equally high, moderate or low levels of *both* task orientation and ego orientation or may have differing levels of the respective orientations. It is not necessarily the case that one orientation is predominant and therefore it is essential to move beyond the examination of task orientation and ego orientation in parallel to the consideration of simultaneous combinations of task orientation and ego orientation.

Several strategies have been used by sport psychologists to examine combinations of dispositional task and ego achievement goal orientations. One strategy has been to create four groups through a median or mean split of the task and ego orientation scores respectively (e.g. Fox, Goudas, Biddle, Duda, &

Armstrong, 1994; Roberts, Treasure, & Kavussanu, 1996; White, 1998). This results in the creation of high ego/high task, high ego/low task, low ego/high task and low ego/low task groups. Significant group differences on a variety of dependent variables (e.g. beliefs about success, enjoyment) have been observed and support the validity of this approach. Findings from this literature generally have been consistent with those of the correlational goal orientation literature; however, it has also been reported that higher levels of ego orientation are not maladaptive when combined with higher levels of task orientation.

A significant shortcoming of the median-/mean-split strategy is that it potentially masks the relevance of moderate goal orientation scores. Some researchers have used a cut-off criterion of ± 0.5 of a standard deviation from the median or mean to avoid categorizing moderately scoring participants into groups representing low or high extremes (e.g. Roberts *et al.*, 1996). While this addresses potential misclassification of participants, it introduces an alternative challenge in that a significant number of participants are removed from the analyses. In either case, the meaning of moderate scores on goal orientation measures cannot be ascertained and a structure is imposed on the data that may not reflect naturally occurring goal orientation profiles (Hodge & Petlichkoff, 2000).

As an alternative, Hodge and Petlichkoff (2000) advocate using cluster analysis to obtain goal orientation profiles. Cluster analysis is a data analytic approach that enables classification of objects into groups based on selected characteristics of the objects (Aldenderfer & Blashfield, 1984; Hair, Anderson, Tatham, & Black, 1998; Kaufman & Rousseeuw, 1990). With regard to goal orientation profiling in sport, athletes represent the objects for classification and their respective task orientation and ego orientation levels represent the characteristics of interest. The clustering process entails producing groups that possess the greatest possible within-group similarity of objects along with the greatest possible between-group dissimilarity of objects. Hodge and Petlichkoff (2000) compared the profiles of male rugby players aged 14–39 years that emerged using cluster analysis with those produced by a mean-split approach. The cluster analysis yielded four groups: high ego/low task, low ego/high task, high ego/moderate task and low ego/moderate task. Perceived rugby ability/competence discriminated the high ego/moderate task and low ego/moderate task groups, with the former reporting greater perceived ability/competence. Notably, extreme groups dictated by a mean-split procedure (i.e. high on both orientations, low on both orientations) did not emerge in the cluster analysis, suggesting that the mean-split approach does not capture naturally

occurring goal orientation profiles. However, cluster analysis will generate groups from data whether or not bona fide group structures exist, and therefore it is important to validate the profiles by assessing their generalizability across samples (Hair *et al.*, 1998). Also, and pertinent to the present research, the sample examined by Hodge and Petlichkoff (2000) predominantly consisted of young adults. This precludes generalization of the findings to youth sport participants. It is therefore important that sport psychologists examine the naturally occurring goal orientation profiles of young athletes.

Sport and physical education researchers have recently used cluster analysis to examine the motivational salience of goal orientation profiles in youth (Cumming, Hall, Harwood, & Gammage, 2002; Harwood, Cumming, & Fletcher, 2004; Harwood, Cumming, & Hall, 2003; Wang & Biddle, 2001; Wang, Chatzisarantis, Spray, & Biddle, 2002). For example, Harwood *et al.* (2004) examined the link between goal orientation profiles and the use of psychological skills by elite athletes aged 14–20 years. They observed three naturally occurring profiles: high task/moderate ego, low task/high ego and moderate task/low ego. Participants in the high task/moderate ego profile reported greater use of relaxation, imagery and self-talk than participants in the other two clusters. The number of clusters that emerged matched that of most of the other youth-based investigations. Although the constitution of clusters has varied somewhat across these investigations, clusters comprised of moderate levels of goal orientation consistently emerge. Also, participants with high/high and high/moderate goal orientation combinations consistently have reported more desirable responses on motivational indices (e.g. greater imagery use, physical activity, self-determination) than have participants with other goal orientation combinations (high task/low ego profiles were not observed in these studies). The findings of these investigations show much similarity to Hodge and Petlichkoff's (2000) landmark work and support the validity of using cluster analysis to uncover goal orientation profiles. However, validation is an ongoing process and the use of cluster analysis to examine youth goal orientation profiles is a relatively recent undertaking. More work is needed that assesses goal profile structures and the extent to which they are consistent or not with those reported in the literature. Furthermore, there is a need to examine whether young athletes who exhibit dissimilar goal orientation profiles vary in other well-established motivation-related constructs such as enjoyment and satisfaction as well as perceptions of the sport social environment.

Perspectives on achievement or success emphasized by the coach and peer interactions comprise

two significant facets of the social environment operating in youth sport. Therefore, in the present investigation we focused on youth athletes' perceptions of the motivational climate emphasized by the coach and perceptions of relationships with teammates. Exploring perceptions of the motivational climate within the goal orientation profiling framework is important because there is still much to be learned about the connections between dispositional goal orientations and motivational climates operating in sport (Roberts, 2001). Perceptions of the motivational climate capture the goal structures evident in a given achievement setting and constitute an important construct within Nicholls' (1989) and Ames' (1992) theoretical perspectives. Based on her work in the educational domain, Ames (1992; Ames & Archer, 1988) distinguished achievement contexts that emphasize and reward self-referenced criteria for success, learning and effort from those that stress and reinforce social comparison and evaluation through promotion of norm-referenced criteria for success. The former have been referred to as mastery (or task-involving) climates and are believed to promote task involvement, whereas the latter have been referred to as performance (or ego-involving) climates and are believed to promote ego involvement in achievement situations. Research in the physical domain suggests that perceptions of a mastery/task-involving climate are associated with more adaptive cognitive, affective and behavioural motivational outcomes, whereas perceptions of a performance/ego-involving climate correspond to more negative motivational outcomes (for reviews, see Biddle, 2001; Ntoumanis & Biddle, 1999; Treasure, 2001).

Perceptions of the motivational climate are influenced by the nature of relationships with important social agents in the sport setting. As measured in the sport setting, perceived motivational climate is primarily based upon the climate created by the coach (Newton, Duda, & Yin, 2000; Seifriz, Duda, & Chi, 1992; Walling, Duda, & Chi, 1993). For example, nearly half of the items on the Perceived Motivational Climate in Sport Questionnaire-2 (Newton *et al.*, 2000) refer specifically to the coach, and therefore respondents are encouraged to use the coach as the primary reference point in judging the motivational climate prevailing on their respective teams. Coaches are directly involved in and impact the sport experience of athletes and therefore are appropriately targeted in sport motivational climate research. However, peers are also integral to young athletes' experiences in the sport social environment and warrant consideration.

Peer relationships have received attention recently in the sport psychology literature, and are typically examined with reference to acceptance/status within the larger peer group and/or specific friendships

(Smith, 2003; Weiss & Stuntz, 2004). Peers are believed to be important agents in the social context of youth sport, in that they can shape opportunities for skill development and serve as sources of validation, social support and positive affect in achievement contexts (Evans & Roberts, 1987; Weiss, Smith, & Theeboom, 1996). This is believed to translate into desirable motivational outcomes in sport, as evidenced by recent work establishing a positive association of friendship quality indices with enjoyment of and commitment to youth tennis participation (Weiss & Smith, 2002). More positive perceptions of peer relationships may be associated with greater task goal orientation, as task orientation has been found to link to the belief that cooperation is fundamental to sport success (Duda & Nicholls, 1992). Less positive perceptions of peer relationships may be associated with greater ego goal orientation, as ego orientation is associated with self-centred views regarding the purposes of sport, the belief that comparative/normative standing is central to sport success, and concerns about the self and impression management (Duda, 2001; Duda & Hall, 2001; Roberts, 2001). Based on existing goal profiling work, however, a plausible hypothesis is that this maladaptive association would be buffered by the presence of moderate to high task orientation. We explore this possibility in the present investigation, which is an initial attempt to examine the link between goal orientation profiles and perceptions of peer relationships.

In summary, the aims of this study were twofold: (a) to determine if dispositional achievement goal orientation profiles that are reported in the literature would be observed in a sample of youth athletes, and (b) to assess potential achievement goal orientation profile differences on perceptions of the motivational climate, perceptions of peer relationships, and motivation-related responses (i.e. perceived ability, enjoyment and satisfaction). We hypothesized that achievement goal orientation profiles that are consistent with those reported in the literature would emerge and that these profiles would reflect differing perceptions of the sport social environment and motivation-related responses. Based on the existing goal profiling literature, we specifically expected that more adaptive responses would be observed in profiles characterized by relatively moderate or high levels of task orientation, regardless of level of ego orientation.

Methods

Participants

A total of 223 male soccer players from a youth league in the Valencian Community, Spain participated

in this investigation. Participants ranged in age from 9 to 12 years (mean = 10.9, $s = 0.6$) with most (79.8%) having two or more years of organized soccer experience. Nearly one-quarter (23.8%) of participants were participating in their first season with their club, 7.6% had been with their club for one year, 23.3% for two years, 24.2% for three years, and 21.1% for more than three years. Most participants (68.2%) were in their first season with their current coach, 14.8% were in their second season with their coach, 12.6% were in their third season with their coach, and 4.5% had been with their coach for more than three years. The overwhelming majority of participants (92.4%) engaged in two practice sessions a week and all but two participants spent 7 h a week or less practising soccer.

Procedure and measures

Standard procedures for the protection of human research participants were employed as approved by an institutional ethics review committee. In the fifth or sixth month of a 10 month soccer season, participants completed a multi-section questionnaire containing demographic items and measures of the study variables. Questionnaires were administered to teams by a trained research assistant either before or after a regularly scheduled practice session. The questionnaire took about 30 min to complete. When available, validated Spanish instruments were used. Measures not previously translated from English to Spanish were submitted to a standard translation and back-translation procedure. The following variables were assessed:

Dispositional achievement goal orientation. Task orientation and ego orientation were assessed using a Spanish version of the Task and Ego Orientation in Sport Questionnaire (TEOSQ; Balaguer, Castillo, & Tomás, 1996; Duda, 1989). Respondents completed 13 items (7 task, 6 ego) with reference to the stem, "I feel most successful in soccer when...". Example task orientation items include "I work really hard" and "I do my very best", while example ego items include "others mess up and I don't" and "I'm the best". Response options fall on a 5-point Likert scale of (1) "strongly disagree", (2) "disagree", (3) "neutral", (4) "agree" and (5) "strongly agree". Task orientation and ego orientation subscale scores, respectively, were obtained by calculating the mean of subscale items. Acceptable reliability and validity of the TEOSQ has been established (see Duda & Whitehead, 1998). In the present study, internal consistency reliability was acceptable for both the task orientation ($\alpha = 0.72$) and ego orientation ($\alpha = 0.73$) subscales.

Perceived motivational climate. Perceptions of a task-involving and ego-involving climate on one's soccer team were assessed using a Spanish version of the Perceived Motivational Climate in Sport Questionnaire-2 (PMCSQ-2; Balaguer, Mayo, Atienza, & Duda, 1997; Newton *et al.*, 2000). Respondents completed 29 items (15 task, 14 ego) with reference to the stem "On this soccer team...". Example items tapping perceived task-involving climate include "each player contributes in some important way" and "the coach encourages players to help each other learn". Example items on the ego-involving climate subscale include "the coach praises players only when they outplay team-mates" and "players are punished when they make a mistake". Response options fall on a 5-point Likert scale of (1) "strongly disagree", (2) "disagree", (3) "neutral", (4) "agree" and (5) "strongly agree". Subscale scores were created by calculating the mean of item scores comprising the respective climate dimensions. Newton and colleagues (2000) have supported the reliability and validity of the PMCSQ-2, and internal consistency reliability in the present study was acceptable (task $\alpha = 0.77$, ego $\alpha = 0.75$).

Perceived peer acceptance. Perceived peer acceptance in soccer was assessed using an adapted (to soccer) version of the social acceptance subscale from Harter's Self-Perception Profile for Children (Harter, 1985). Six items were presented in a structured-alternative format where two types of children are described (e.g. "Some kids are popular with others their age in soccer BUT Other kids are not very popular in soccer"). First a respondent determined which type of child he most closely resembled and then whether the description was "really true" or "sort of true" for him. Item scores range from 1 to 4 with higher scores representing higher perceived social acceptance. A subscale score was created by averaging the item responses. The psychometric integrity of the original scale has been supported (Harter, 1985) as well as sport-specific adaptations of the scale (e.g. Weiss & Smith, 2002). In the present study, the internal consistency reliability of the scale was marginal ($\alpha = 0.62$). However, the peer acceptance data were included in the analyses in the interest of retaining a balanced representation of sport peer relationship perceptions (i.e. perceptions of the broad peer group as well as a specific friendship). The reader should cautiously interpret findings related to the peer acceptance scale.

Perceived friendship quality. Perceived positive friendship quality and friendship conflict were assessed using the Sport Friendship Quality Scale (SFQS; Weiss & Smith, 1999). The SFQS consists of 22 items that tap five dimensions of positive friendship

quality (i.e. self-esteem enhancement and supportiveness, loyalty and intimacy, things in common, companionship and pleasant play, and conflict resolution) and friendship conflict. Items were completed with reference to a single best friend on the soccer team, which was reinforced by the instruction set and by asking the respondent to write the name of his best friend at the top of the questionnaire. Example items tapping positive friendship quality include "My friend and I praise each other for doing soccer well" and "My friend and I play well together". An example conflict item is "My friend and I get mad at each other". Response options fall on a 5-point Likert scale of (1) "not at all true", (2) "a little true", (3) "somewhat true", (4) "pretty true" and (5) "really true". A global positive friendship quality score was created by averaging the responses to friendship quality items and a friendship conflict score was created by averaging the responses to conflict items. Support for the reliability and validity of the SFQS has been reported by Weiss and Smith (1999, 2002). In the present study, internal consistency reliability was acceptable for both the positive friendship quality ($\alpha = 0.84$) and friendship conflict ($\alpha = 0.79$) subscales.

Perceived ability. Perceived ability in soccer was assessed using one item, "Compared to other boys your age, how good are you at soccer?" Participants responded on a 7-point Likert scale with the anchors (1) "one of the worst", (4) "intermediate, not good or bad" and (7) "one of the best". Internal consistency reliability cannot be assessed for a one-item measure. Although one-item measures are less preferable to multi-item assessments of psychological constructs, we chose this measurement approach in the interest of maintaining a reasonable overall questionnaire length and because responses to single-item assessments of perceived ability have been found to associate with psychological constructs in theoretically expected directions (e.g. Castillo, Balaguer, Duda, & García-Merita, 2004; Pensgaard & Roberts, 2000).

Soccer enjoyment, satisfaction with performance and satisfaction with team. The young athletes' reported overall soccer enjoyment and levels of satisfaction with performance and team were assessed using pre-existing measurement instruments and items constructed for the present study. Five items developed by Duda and Nicholls (1992) were used to tap overall enjoyment of the soccer experience (e.g. "I usually enjoy playing soccer"). Three items constructed for the present investigation targeted the players' satisfaction specific to their own performance ("I am satisfied with my soccer achievements", "I am satisfied with what I have attained in

soccer”, “In general, I am satisfied with my performance in soccer”). Four items based on Walling and colleagues’ (1993) assessment of team satisfaction were used to tap an athlete’s satisfaction with being part of his team (e.g. “It pleases me to be a member of my team”). Participants responded to the items using a 5-point Likert scale of (1) “strongly disagree”, (2) “disagree”, (3) “neither agree nor disagree”, (4) “agree” and (5) “strongly agree”. In the present study, the internal consistency reliability was acceptable for the satisfaction with performance scale ($\alpha = 0.71$). Upon removing one problematic item from each scale, internal consistency reliability was acceptable for the overall enjoyment of soccer scale ($\alpha = 0.80$) and the satisfaction with team scale ($\alpha = 0.72$).

Data analysis

Cluster analysis was conducted using the task and ego goal orientation variables to address the first aim of the study. To address the second aim, goal orientation profile groups that emerged from the cluster analysis were compared for differences on the set of dependent variables (i.e. perceptions of motivational climate, perceptions of peer relationships, and motivation-related responses) using one-way multivariate analysis of variance (MANOVA). Univariate follow-up tests (i.e. ANOVA and Scheffé *post hoc*) were conducted upon obtaining a significant multivariate finding.

Results

Descriptive statistics

Descriptive statistics are shown in Table I. Overall, the participants reported high task goal orientation, perceptions of a task-involving climate, soccer enjoyment and satisfaction (with performance and team). Moderate-to-high perceptions of peer acceptance, positive friendship quality, and soccer ability were reported along with low-to-moderate ego goal orientation and perceptions of an ego-involving climate. Perceived friendship conflict was low. The direction and magnitude of correlations were largely consistent with theoretical expectations and previous research.

Data were screened for the presence of outliers before conducting the cluster analysis. Outliers can lead to generation of cluster solutions that misrepresent the true structure of the data, though removal of outliers must be carefully considered as they also can represent undersampling of bona fide groups within a population (Hair *et al.*, 1998). Thus, we were conservative in removing outliers, using multiple criteria in the decision-making process. Ultimately,

Table I. Cronbach’s alpha coefficients, correlations, means and standard deviations for the study variables ($n = 223$).

Variable	1	2	3	4	5	6	7	8	9	10	11
1. Task orientation	0.72										
2. Ego orientation	-0.17*	0.73									
3. Task-involving climate	0.33**	-0.13*	0.77								
4. Ego-involving climate	-0.05	0.35**	-0.16*	0.75							
5. Peer acceptance	0.18**	-0.03	0.19**	-0.07	0.62						
6. Positive friendship quality	0.16*	-0.14*	0.16*	-0.17**	0.12	0.84					
7. Friendship conflict	-0.12	0.15*	0.00	0.08	-0.11	-0.06	0.79				
8. Perceived ability	0.04	0.24**	-0.02	-0.02	0.18**	0.00	-0.04	-			
9. Soccer enjoyment	0.44**	-0.17*	0.36**	-0.08	0.28**	0.14*	-0.20**	0.06	0.80		
10. Satisfaction – performance	0.28**	-0.05	0.23**	0.00	0.19**	0.22**	-0.11	0.20**	0.37**	0.71	
11. Satisfaction – team	0.20**	-0.17*	0.24**	-0.13	0.12	0.12	-0.07	-0.02	0.60**	0.40**	0.72
Response set range	1–5	1–5	1–5	1–5	1–4	1–5	1–5	1–7	1–5	1–5	1–5
Mean	4.29	2.11	4.23	2.28	3.07	3.90	1.84	4.86	4.69	4.34	4.59
s	0.56	0.82	0.49	0.62	0.57	0.53	0.86	1.18	0.54	0.78	0.66

Note: Alpha coefficient values appear on the matrix diagonal. Pearson product–moment *r*-values appear below the matrix diagonal. * $P < 0.05$, ** $P < 0.01$.

two outliers were removed from the sample. These were extreme univariate outliers (i.e. $z > 5.0$) on task goal orientation, were significant ($P < 0.001$) multivariate outliers according to the Mahalanobis D^2 measure on the variables to be clustered as well as the full variable set, and meaningfully perturbed the cluster solution when included in the cluster analysis. The cluster analysis findings reported below are therefore based on 221 cases.

Cluster analysis

A k -means (i.e. non-hierarchical) cluster analysis was conducted using SPSS 11.5 (SPSS Inc., Chicago, IL). Standardized scores for the task and ego goal orientation variables were used in the analysis. As the correlation between the two goal orientation scales was low (i.e. $r = -0.17$), supporting the conceptualization of these variables as orthogonal, there were no concerns with multicollinearity. The analysis employed simple Euclidean distance as the similarity measure. Based on existing goal profiling literature, three or four clusters were expected to best represent the data structure. However, solutions specifying from two to six clusters were examined in the interest of fully evaluating the data. When two clusters were specified, no high task group emerged. When three or four clusters were specified, non-redundant cluster profiles were obtained, with the theoretically interesting high ego/low task group emerging in the four-cluster model. Redundant clusters emerged when more than four clusters were specified. Thus, for conceptual and empirical reasons, the four-cluster solution was considered the most acceptable representation of the data. To assess the stability of the four-cluster solution, the cluster analysis was conducted with both random starting seeds and starting seeds corresponding to the Hodge and Petlichkoff (2000) profiles. They also deemed a

four-cluster solution as the best representation of the data in their investigation of (predominantly) adult rugby players. Both approaches produced similar solutions, suggesting a relatively robust data structure. Results of the analyses conducted using the Hodge and Petlichkoff starting seeds are reported in the present article. To further assess the stability of the four-cluster solution, two-thirds of the sample was randomly selected and the cluster analysis was re-run. Over 97% of participants in this analysis maintained their cluster membership from the full sample analysis.

Table II contains participant numbers, unstandardized means and standard deviations, and z -scores for the achievement goal profiles that emerged from the cluster analysis. The resulting profiles largely corroborate the findings of Hodge and Petlichkoff (2000), which also appear in Table II for ease in making comparisons. Using a z -score of ± 0.5 as a criterion to judge *relatively* high or low scores on the achievement goal orientation variables, Cluster 1 ($n = 81$) consisted of young athletes with a low ego/high task profile, Cluster 2 ($n = 23$) consisted of those with a high ego/low task profile, Cluster 3 ($n = 47$) consisted of those with a high ego/moderate task profile, and Cluster 4 ($n = 70$) consisted of those with a moderate ego/low task profile. Clusters 1, 2 and 3 directly matched clusters found by Hodge and Petlichkoff. Cluster 4 differed as a result of the magnitude of z -scores (i.e. moderate ego/low task instead of low ego/moderate task), though in both studies the direction of the z -scores for both ego goal orientation and task goal orientation was negative. Finally, the proportion of participants comprising the respective clusters appeared to differ between the present investigation and that of Hodge and Petlichkoff (2000), with a lower proportion of athletes in the present investigation represented in the high ego clusters.

Table II. Participant numbers, means, standard deviations and standardized scores for clusters representing achievement goal profiles.

Cluster	<i>n</i>	Ego orientation		Task orientation	
		mean (<i>s</i>)	<i>z</i>	mean (<i>s</i>)	<i>z</i>
Present study					
1. Low ego/high task	81	1.60 (0.42)	−0.62	4.72 (0.21)	0.83
2. High ego/low task	23	2.93 (0.63)	1.00	3.48 (0.42)	−1.71
3. High ego/moderate task	47	3.13 (0.62)	1.25	4.47 (0.29)	0.32
4. Moderate ego/low task	70	1.74 (0.42)	−0.45	4.02 (0.24)	−0.61
Hodge and Petlichkoff (2000)					
1. Low ego/high task	61	2.28 (0.48)	−0.75	4.57 (0.28)	0.90
2. High ego/low task	42	3.27 (0.44)	0.58	3.46 (0.31)	−1.42
3. High ego/moderate task	83	3.50 (0.45)	0.88	4.35 (0.30)	0.44
4. Low ego/moderate task	67	2.28 (0.50)	−0.75	3.93 (0.23)	−0.45

Profile difference analyses

A one-way MANOVA was conducted to determine whether there were achievement goal profile differences on the set of dependent variables of interest in this study (i.e. perceived motivational climate, perceived peer relationships, perceived ability, soccer enjoyment, and satisfaction with one's own performance and the team). The multivariate effect was significant (Pillai's trace = 0.43, $F_{27,633} = 3.95$, $P < 0.001$, $\eta_p^2 = 0.14$). Follow-up ANOVAs revealed profile differences on all dependent variables except positive friendship quality (see Table III). Scheffé *post hoc* comparisons ($P < 0.05$) of profile groups were conducted for those dependent variables exhibiting a significant univariate effect to assess the nature of these differences (also in Table III). Significant differences were in theoretically expected directions. Those with a low ego/high task profile reported higher perceived task-involving climate, perceived peer acceptance, soccer enjoyment, and satisfaction with performance and team as well as lower perceived ego-involving climate and friendship conflict than those with a high ego/low task profile. The low ego/high task group did not differ from the high ego/moderate task group, but did exhibit higher perceived peer acceptance than the moderate ego/low task participants. The high ego/low task group reported lower perceived task-involving climate, soccer enjoyment, and satisfaction with performance and team than the high ego/moderate task group. They also reported lower soccer enjoyment and satisfaction with team than the moderate ego/low task group. Those with a moderate ego/low task profile reported lower perceived ability than those with a high ego/moderate task profile. Overall, the comparisons suggest that those reporting relatively lower task goal orientation exhibit less adaptive responses to climate, peer relationship, and enjoyment/satisfaction measures.

Discussion

The first aim of this investigation was to determine if dispositional achievement goal orientation profiles that are reported in the literature would be observed in a sample of young athletes. Our sample consisted of boys aged 9–12 years involved in an organized youth soccer league. To our knowledge, this is the youngest sample used in a cluster-analytic study of goal orientation profiles in sport. The findings of the cluster analysis we conducted are markedly similar to those of Hodge and Petlichoff's (2000) investigation of 14- to 39-year-old rugby players. Three of four clusters were replicated using the ± 0.5 z -score criterion and the fourth exhibited z -scores of the same valence. Our findings were not as tightly

Table III. Univariate F , effect size, and cluster means, standard deviations and standardized scores for the dependent variables.

Variable	$F_{3,220}$	η_p^2	Cluster					
			1. Low ego/high task		2. High ego/low task		3. High ego/mod. task	
			mean (s)	z	mean (s)	z	mean (s)	z
Task-involving climate	8.73**	0.11	4.40 (0.45) ^b	0.35	3.90 (0.49) ^a	-0.70	4.24 (0.42) ^b	0.01
Ego-involving climate	4.48**	0.06	2.15 (0.58) ^a	-0.20	2.53 (0.65) ^b	0.40	2.48 (0.70) ^{ab}	0.32
Peer acceptance	7.15**	0.09	3.26 (0.47) ^b	0.32	2.86 (0.66) ^a	-0.37	3.14 (0.54) ^{ab}	0.11
Positive friendship quality	1.40	0.02	3.96 (0.54)	0.11	3.71 (0.45)	-0.37	3.91 (0.47)	0.00
Friendship conflict	4.23**	0.06	1.65 (0.85) ^a	-0.22	2.26 (0.72) ^b	0.49	2.04 (1.02) ^{ab}	0.23
Perceived ability	3.61*	0.05	4.84 (0.98) ^{ab}	0.00	4.91 (1.47) ^{ab}	0.06	5.26 (1.15) ^b	0.35
Soccer enjoyment	18.25**	0.20	4.89 (0.22) ^b	0.38	4.11 (1.02) ^a	-1.18	4.73 (0.37) ^b	0.06
Satisfaction – performance	7.37**	0.09	4.53 (0.70) ^b	0.25	3.78 (0.79) ^a	-0.71	4.48 (0.70) ^b	0.19
Satisfaction – team	7.87**	0.10	4.78 (0.43) ^b	0.28	4.06 (1.16) ^a	-0.81	4.53 (0.74) ^b	-0.09
							4.15 (0.48) ^{ab}	-0.18
							2.20 (0.58) ^{ab}	-0.12
							2.89 (0.59) ^a	-0.33
							3.90 (0.56)	-0.01
							1.79 (0.73) ^{ab}	-0.06
							4.54 (1.22) ^a	-0.25
							4.66 (0.41) ^b	-0.09
							4.20 (0.82) ^{ab}	-0.18
							4.60 (0.51) ^b	0.01

Notes: * $P < 0.05$, ** $P < 0.01$; Scheffé *post hoc* comparisons conducted for variables with significant univariate F . Cluster differences ($P < 0.05$) on variable scores indicated by distinct superscripts (a represents lower value, b represents higher value).

matched to the three-cluster solutions that emerged in previous sport-based investigations of youth athletes (Cumming *et al.*, 2002; Harwood *et al.*, 2003, 2004). However, correspondence is reasonable in that clusters characterized by relatively moderate goal orientation emerged and in light of substantial differences in the participant samples. Unlike the present study, those investigations included female participants, individual-sport athletes and elite performers. Overall, the findings of the present study and previous goal profiling investigations are in accord, suggesting that the structure of dispositional achievement goal profiles is robust.

The present results are interesting in light of Nicholls' (1978, 1989) perspective on the development of dispositional achievement goal orientations. He suggested that youth possess an immature conception of ability until around age 12 years, where the capacity to distinguish ability from effort and luck as well as the capacity to judge task difficulty in normative terms is acquired. Until these capacities are acquired, it is believed that children are not fully capable of adopting a differentiated conception of ability in achievement contexts. A differentiated conception of ability is assumed to underlie ego orientation, while an undifferentiated conception of ability is the focus when task orientation prevails (Nicholls, 1989). Although within-age group variability exists, developmental differences in these capacities have been observed in the physical domain by Fry (2000a, 2000b; Fry & Duda, 1997) and therefore we might reasonably expect that distinct goal orientation profiles (based on the athletes' degree of task and ego orientation) would be difficult to detect with the present sample. Contemporary measures of dispositional sport goal orientations (like the TEOSQ) focus on tendencies of respondents to use more or less task- and ego-involved criteria to judge success in sport, rather than differentiated or undifferentiated conceptions of ability *per se* (Duda, 2001). Nonetheless, the close match of the present findings with Hodge and Petlichkoff's (2000) findings is notable because it suggests that the participants in the present study possessed sufficient cognitive development to reflect adult-like dispositional achievement goal orientation profiles. However, hinting at possible development-related differences, the proportions of individuals we observed in the respective clusters varied from those reported by Hodge and Petlichkoff (2000). Lower proportions of participants in the present investigation were assigned to the two clusters characterized by relatively high ego orientation scores. This pattern is consistent with a developmentally less mature sample and suggests that exploration of the evolution and stability of dispositional achievement goal orientation profiles as young athletes move into

adolescence and then to adulthood is a worthwhile avenue for future research.

The second aim of our investigation was to determine if participants characterized by different goal orientation profiles differed in their views of goal structures and peer relationships marking the social environment in youth sport as well as key motivation-related responses. Along with replicating cluster solutions across samples, this is an important strategy for supporting the validity of the profiles (Hair *et al.*, 1998). Observing group differences on theoretically relevant constructs indicates that the profiles have predictive value, thus bolstering the evidence that the profiles represent genuine group structures. Group differences in the targeted variables were evident that were consistent with theoretical expectations. For example, those reporting relatively low ego orientation along with relatively high task orientation would be expected to show adaptive perceptions of the sport environment and motivation-related responses compared with those reporting relatively high ego orientation coupled with relatively low task orientation. These athletes reported higher perceptions of a task-involving climate, peer acceptance, soccer enjoyment, and satisfaction with both performance and team. They also perceived the coach-created climate to be less ego involving and reported less conflict with their best friend on the team. However, the responses of these athletes on all dependent variables were indistinguishable from those of athletes reporting relatively high ego orientation along with relatively moderate task orientation. This supports research on youth-based goal profiling that suggests relatively high levels of ego orientation are not maladaptive when coupled with at least relatively moderate levels of task orientation (Cumming *et al.*, 2002; Harwood *et al.*, 2003, 2004; Wang & Biddle, 2001; Wang *et al.*, 2002). Collectively, the cluster difference findings suggest that those with relatively lower task goal orientation have less adaptive perceptions of the motivational climate and peer relationships and experience less enjoyment and satisfaction in sport than those with relatively higher task goal orientation.

In this research, we considered the social environment manifested to be multifaceted in terms of the significant others involved and multidimensional with respect to the features of the environment targeted. First, we targeted perceptions of the motivational climate created by the coach. Athletes' views about the motivational climate manifested in sport are assumed to comprise their composite perceptions of the situational structures (e.g. the nature of and basis for rewards/punishments, the type of interactions between team members that are emphasized) that should make it more or less likely that they will be concerned with demonstrating self-referenced

competence or superiority compared with others. Our findings are consistent with theoretical expectations and previous cross-sectional work regarding the congruence between athletes' goal orientations and perceptions of the motivational climate prevailing on one's team (Duda, 2001). Longitudinal research is recommended to determine if dispositional achievement goals precede, follow and/or interact with perceptions of the motivational climate in driving goal involvement and other achievement-related outcomes (Duda, 2001; Roberts, 2001).

Second, we assessed perceptions of peer relationships, specifically perceptions of peer acceptance and positive/negative qualities of the friendship with a single team-mate. Unlike our assessment of the perceived motivational climate, which targeted the prevailing achievement-related structures emphasized by the coach to the team, the assessment of peer relationships tapped the young athletes' perceptions of their selves juxtaposed with peer-centred dimensions of the social environment. We observed goal orientation profile group differences that suggested those participants with relatively higher task goal orientation had relatively higher perceptions of acceptance by their team-mates collectively and lower perceptions of conflict with their best friend on the team. This finding extends the emerging database on peer relationships in sport that links positive peer relationships with motivation-related variables (for reviews, see Smith, 2003; Weiss & Stuntz, 2004). Moreover, the present results suggest that how young athletes tend to judge their competence and define success (i.e. their achievement-related concerns) may have implications for how they relate to their peers in the sporting context. These preliminary findings imply that peer relationships in the athletic milieu are more likely to be flourishing when youth sport participants focus their achievement striving on improvement, mastery and exerted effort. Longitudinal work is necessary to tease out the interplay between achievement goal emphases and features of peer relationships in youth sport.

An interesting finding was the absence of significant goal orientation profile group differences on perceptions of positive friendship quality. Positive friendship quality as assessed in this study pertains to a variety of elements of a specific, dyadic relationship on the team (e.g. self-esteem enhancement and supportiveness, loyalty and intimacy). There are several possible explanations for this finding. First, theoretical perspectives on social relationships suggest that multiple social agents can fulfil psychosocial needs (e.g. Sullivan, 1953). Thus, provision of esteem enhancement, supportiveness, intimacy and other friendship dimensions may occur across multiple dyadic relationships on one's team while no one relationship offers all provisions. Positive friendship

quality may be salient in the sport context, but researchers may have to tap perceptions of multiple dyadic relationships to detect this. Second, positive friendship quality may be more tightly linked with social goal orientations than achievement goal orientations. Allen's (2003) recent work in the youth sport domain suggests that goal orientations emphasizing social affiliation and social validation contribute to prediction of sport enjoyment over and above achievement goal orientations. Although much additional research on social goal orientations is needed to establish their unique or complementary contribution to motivational processes in sport, it stands to reason that such orientations would be germane to perceptions of relationships with friends and other peers within the sport setting. Third, soccer is a team sport and therefore athletes' perceptions of peer relationships may be more closely attuned to the group. Perceived social acceptance may be more motivationally salient than perceptions of a specific friendship within competitive team sport, where involvement is relatively structured and goals are focused upon collective outcomes. Finally, and related to the relative salience of the peer group versus specific friendships, previous work has shown that close friendships may be more motivationally salient to females than males in making sport participation decisions (Coakley & White, 1992). Our findings therefore may be a reflection of the present research being limited to male participants.

In addition to comparing achievement goal profile groups on perceptions of the social environment, we examined group differences on levels of perceived ability, soccer enjoyment, satisfaction with personal performance and satisfaction with the team. These are central motivation-related variables (see Weiss & Ferrer-Caja, 2002) and have been assessed in numerous studies grounded in contemporary achievement goal frameworks (see Duda & Hall, 2001; Roberts, 2001). In the present investigation, those young athletes reporting relatively moderate ego orientation coupled with relatively low task orientation were lower in perceived ability than those individuals reporting relatively high ego orientation coupled with relatively moderate task orientation. This difference is consistent with Hodge and Petlichkoff's (2000) perceived competence findings and may represent a distinction between a profile generally characterized by low motivation (i.e. negative *z*-scores for both goal orientations) and one generally characterized by high motivation (i.e. positive *z*-scores for both goal orientations) (also see Wang & Biddle, 2001; Wang *et al.*, 2002). Perceived ability for those in the latter profile may rest on achievement of specific task-related or ego-related goals, increasing the possibility of maintaining relatively high perceptions of ability. However, as

pointed out by Duda (2001), we lack an understanding of the causal interdependencies between goal orientation profiles and perceived ability and therefore would significantly enhance the knowledge base by conducting longitudinal investigations of the level and resiliency of such cognitions, especially across the typical “ups” and “downs” of competitive sport seasons.

Participants in the profile characterized by relatively high ego orientation coupled with relatively low task orientation reported lower enjoyment and satisfaction compared with the young athletes classified in the other profiles. This finding is consistent with the tenets of achievement goal frameworks (e.g. Nicholls, 1989), as those who are predominantly ego oriented are believed to be more susceptible to maladaptive motivational outcomes. However, this finding should be interpreted in light of the fact that mean values for enjoyment and the two satisfaction variables in absolute terms were high (i.e. most above 4 on a 5-point scale). Therefore, the profile group differences might best be described as showing more or less *adaptive* motivational outcomes. Observing such positive affective responses in youth sport might correspond to the assessment of a motivationally homogeneous sample in the present investigation. That is, as typically is the case based on existing measures of dispositional sport goal orientations (see Duda & Whitehead, 1998), the task goal orientation scores were high in absolute terms and the resulting dispositional achievement goal profile groups should be interpreted accordingly. Those characterized as possessing relatively low task orientation on average scored above the neutral point of the task orientation scale.

We operationalized the social environment of youth soccer more broadly than is typical in youth sport research. However, more can be done to look at potentially meaningful facets of this environment in subsequent research. For example, the motivational climate is shaped by team-mates (Vazou, Ntoumanis, & Duda, 2005) and parents (White, 1998) as well as coaches. Future research that includes views about the motivational climate created by different significant others should meaningfully extend the literature. Beyond this, exploring the value young athletes place on social relationships in sport is an important direction for future work. Allen's (2003) recent work on social goal orientations may serve as a useful framework for such efforts.

Two measurement limitations of this investigation warrant attention. First, perceived ability was assessed with one item. The psychometric integrity of such measures cannot be assessed and therefore findings pertaining to perceived ability in the present study should be interpreted with caution. Second, the internal consistency reliability of the perceived

peer acceptance measure was marginal. Although the measure was sufficiently reliable to enable detection of group differences, the effect size of the peer acceptance differences may be underestimated. No specific item(s) appeared to be the root cause of the reliability problem and previous use of the measure in sport psychology research has yielded higher internal consistency reliability values (e.g. Weiss & Smith, 2002). The problem may have stemmed from the translation process and therefore further psychometric evaluation of this scale for use with Spanish youth is warranted. Also, peer relationship variables such as actual peer acceptance, reciprocated and unreciprocated friendship nominations, and the number of team-mates that are considered friends may be pertinent to a comprehensive understanding of peer relationships in sport. Future research that employs these variables is recommended.

Overall, the dispositional achievement goal orientation profiles that emerged in the present study were consistent with those observed in previous goal profiling research on youth and adults. Furthermore, the present study established the salience of goal orientation profiles to young athletes' views and interpretations of the sport social environment, as captured by their perceptions of the motivational climate primarily created by their coaches *and* their perceptions of relationships with team-mates, as well as to motivation-related responses. Effect sizes for the significant profile group differences were modest, though not unusual for investigations of psychosocial processes. Specifically, an average of 9.5% (range 5–20%) of the variance in the dependent variables of interest was explained by group membership. In their totality, however, the results suggest that achievement goal orientations meaningfully correspond to young athletes' cognitive and affective reactions in sport as well as their perceptions of the sport social environment.

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