

Research article

Young athletes' motivational profiles

Juan Antonio Moreno Murcia¹✉, Eduardo Cervelló Gimeno² and David González-Cutre Coll³

¹ Faculty of Sports Sciences, University of Murcia, ² Faculty of Social and Juridical Sciences, Miguel Hernández University of Elche, ³ Faculty of Humanities and Educational Sciences, University of Almería, Spain

Abstract

The aim of this study was to examine the relationship between motivational characteristics and dispositional flow. In order to accomplish this goal, motivational profiles emerging from key constructs within Achievement Goal Theory and Self-Determination Theory were related to the dispositional flow measures. A sample of 413 young athletes (Age range 12 to 16 years) completed the PMCSQ-2, POSQ, SMS and DFS measures. Cluster analysis results revealed three profiles: a "self-determined profile" characterised by higher scores on the task-involving climate perception and on the task orientation; a "non-self-determined profile", characterised by higher scores on ego-involving climate perception and ego orientation; and a "low self-determined and low non-self-determined profile" which had the lowest dispositional flow. No meaningful differences were found between the "self-determined profile" and the "non-self-determined profile" in dispositional flow. The "self-determined profile" was more commonly associated with females, athletes practising individual sports and those training more than three days a week. The "non-self-determined profile" was more customary of males and athletes practising team sports as well as those training just two or three days a week.

Key words: Self-determination, motivational climate, goal orientation, flow.

Introduction

Motivation has been a very important object of study among sports and exercise psychologists. Achievement Goal Theory (Nicholls, 1989) and Self-Determination Theory (Deci and Ryan, 1985; 1991; 2000; Ryan and Deci, 2000) are the most prominent current theories of motivation in the sport psychology literature and each has had considerable success in explaining motivational patterns in sport settings.

According to Achievement Goal Theory, individuals can define success according to different criteria that reflects two different perspectives. The first achievement goal perspective is self-referenced and reflects a task goal orientation in which individuals consider themselves to be successful when they have demonstrated personal improvement and have displayed effort. The second achievement goal perspective reflects a social comparison perspective in which success is considered to be realized when individuals demonstrate superior skills relative to others. Such a perspective is known as an ego orientation. At around the age of 12 years, these goal orientations tend to become consolidated in the individual's personality (Nicholls, 1989).

Coaches can be important influences in shaping the achievement goal orientations of athletes. Their influence can be reflected in the manner in which coaches respond during training sessions and competition in relation to the implicit and explicit responses that they provide in relation to the coach's own definition of success. A coach can either prioritise personal improvement and effort in task execution, which would reflect a task-involving climate or give more importance to winning and the demonstration of a greater ability than others, which would be reflective of an ego-involving climate.

Self-Determination Theory establishes different motivational types along a continuum. Consequently, individuals can be unmotivated (amotivation) or can range in self-determination from less self-determined to more self-determined. Amotivation refers to a lack of intention or the absence of motivation and therefore the involvement is likely to be disorganized and accompanied by frustration, fear or depressed feelings (i.e. "I don't really think my place is in sport"). On the self-determination continuum there are various points on the continuum that distinguish between individuals in their levels of self-determination. External regulation refers to the motive to participate to attain external incentives (i.e. "I do sports for the prestige of being an athlete"). Introjected regulation reflects motivation dictated by the desire to avoid culpability and to minimize anxiety feelings (i.e. "I must do sports to feel good about myself"). In the case of identified regulation, the activity is more important for the individual although s/he doesn't carry out this activity because of its inherent pleasure, but as a means of achieving a goal, such as improving their health. Integrated regulation consists of assimilating and organizing several identified regulations, evaluating them and classifying them in relation to other values and needs. A clear example of this would be an individual committed to the practice of physical activity because this involvement reflects his/her orientation toward a healthy lifestyle. This type of regulation is more often encountered among adults rather than children, as younger populations may be too young to have experienced a sense of integration (Vallerand and Rousseau, 2001). Intrinsic motivation involves participating in an activity for the pleasure and the enjoyment they get from it. Intrinsic motivation describes the inclination towards consolidation, mastery, spontaneous interest and exploration. This inclination is fundamental for social and cognitive development and represents the main origin of pleasure and vitality all throughout life (Ryan, 1995). Pelletier et al. (1995) proposed three types of intrinsic motivation, called "intrinsic motivation to know" (practising a sport for the pleasure of knowing

more about such sport), "intrinsic motivation to accomplish" (practising a sport for the pleasure of improving skills) and "intrinsic motivation to experience stimulation" (practising a sport for the pleasure of living stimulating experiences).

The majority of investigations carried out have examined different motivational types including their antecedents and their consequences in an isolated way (Ntoumanis, 2002). Findings have tended to indicate that the most self-determined motivational types (i.e. intrinsic motivation and identified regulation) are connected with the most positive consequences (Vallerand and Rousseau, 2001) in relation to various outcomes such as affect (pleasure, enjoyment, satisfaction, interest, positive emotions, better coping abilities and flow), cognitions (concentration) and behavioural outcomes (effort, intentions to continue exercising, sportspersonship and actual performance). In this sense, Vallerand (1997; 2001) proposed an analysis of how the motivation types established by the Self-Determination Theory are combined to form motivational profiles. Vallerand (1997; 2001) suggested studying how the different motivation types occur jointly in individuals by identifying groups of individuals with similar scores and further examining the different social factors which determine those profiles, as well as the outcomes that accompany each profile. This approach allows identification of profiles related to the most negative consequences, with the aim of developing strategies to increase the strength and quality of such individuals' motivation towards sports (Vlachopoulos et al., 2000).

Fox et al. (1994) suggested using the motivational profile approach to study goal orientations and their consequences. Research shows that individuals with high task and ego orientations, which is customary among elite athletes (Hardy et al., 1996), as well as individuals with high task orientations and low ego orientations tend to show higher levels of adaptive motivational patterns as reflected by hard work, intrinsic interest, enjoyment and higher persistence in practice despite getting not necessarily better results than those with a low task orientation (Dorobantu and Biddle, 1997; Goudas et al., 1994; Roberts et al., 1996; Standage and Treasure, 2002). Therefore, identifying subgroups of young people showing different profiles based on these contemporary motivational rates could be quite useful in increasing the effectiveness of interventions and in realizing greater participation (Wang and Biddle, 2001).

Some investigators have already undertaken the study of motivational profiles for individuals in different contexts, such as the research conducted by Vlachopoulos et al. (2000) carried out with adult athletes and Wang and Biddle's (2001) research with adolescent students with reference both to Physical Education lessons and sport. Ntoumanis (2002) examined motivational profiles in Physical Education lessons with students between the ages of 14 and 16 years old. More recently, Matsumoto and Takenaka (2004) studied adults practising and not practising physical activity and McNeill and Wang (2005) examined motivational profiles in young people between the ages of 14 and 15 years who practised or did not practise sport. Each of these studies were grounded in Self-Determination Theory and some of them also used

Achievement Goal Theory, in both cases trying to establish a relation between the different profiles and specific social factors (such as motivational climates) and concrete consequences, such as interest, effort, satisfaction, enjoyment, boredom, level of participation in the physical activity and self-worth. The combined results from these studies indicates that individuals who have profiles with high scores on self-determined motivation tend to view their involvement as occurring within a task-involving climate and generally realize the most positive consequences.

In the present study, the motivational profile approach was used in which the primary constructs from Self-Determination Theory and Achievement Goal Theory were related to dispositional flow in a sample of adolescent athletes. Dispositional flow reflects the individual's tendency to experience an optimal psychological, or flow state. According to Csikszentmihalyi (1988), there are individual differences in the capacity to experience this state and, as a result, some individuals are more prone to experience this state and thus have what is known as an *autotelic* personality. Jackson and Csikszentmihalyi (1999) consider flow to be a conscious state that is experienced in a wide range of contexts and which has universal characteristics where the individual is totally absorbed by what he or she is doing. Therefore, the flow state would synonymous with heightened concentration and it would also be a harmonious experience where mind and body work together, leaving the individual with the feeling that something special had happened. The flow state is also inherently enjoyable. It could be argued that flow raises the quality of the experience from ordinary to optimal and it is at this point when the individual feels truly active and connected with what he or she is doing. Given the very positive features of this experience, it is therefore highly interesting to analyse the factors that lead to the athlete's greater disposition to experience flow and, in this way, design training environments fostering the accomplishment of optimal experiences so as to achieve higher adherence to practice and better execution.

Recent investigations indicate that many young athletes tend to give up sport practice during adolescence (Wang et al., 2007). It is therefore essential to assess the factors related to sports motivation at this age so as to better understand the variables underlying sports commitment in order to gain the benefits obtained from sport at physical (i.e. physical development), psychological (i.e. higher concentration and less anxiety) and social levels (i.e. sport as a medium of social relationships). Moreover, the attitudes developed towards sport practice at this stage will have a strong influence at the adult stage (Malina, 2001). No published works have been found regarding motivational profiles in adolescent athletes. The only known work that uses this approach with athletes, albeit with adult, is that by Vlachopoulos et al. (2000).

Vlachopoulos et al. (2000) built on work from Vallerand and Fortier (1998) that examined possible relationships between self-determined and non-self-determined motivation types. Vlachopoulos et al. (2000) established four theoretical motivational profiles: the traditional self-determined profile, represented by individuals with high levels of self-determined motivation

and low non-self-determined motivation; a second profile in which individuals have high scores both in self-determined and in non-self-determined motivation; a third profile in which individuals have high scores only in non-self-determined types of motivation; and a fourth profile in which individuals have low scores in both motivation types. In their investigation only the first two profiles were present because the other two are more associated with sport abandonment which was not representative of their sample.

In the present study, it was hypothesized that a self-determined profile would be related to a high task orientation, a task-involving climate perception and dispositional flow. This study is unique in that it utilized a motivational profile approach with adolescents, which is a particularly important developmental phase in relation to motivation whereas most previous research has utilised adult athletes as their sample.

Methods

Participants

The sample for this study was comprised of 413 athletes (322 boys and 91 girls), from 28 sports schools participating in various levels of competition in the Region of Murcia (Spain). The participants ranged in age from 12 to 16 years old ($M = 13.74$, $SD = 1.34$) and 72.2% of the sport participants practised their sport between 2 and 3 days a week whereas 27.8% practised more than 3 days a week. The participants engaged in both individual sports ($n = 206$) and team sports ($n = 207$).

Instruments

Perceived Motivational Climate in Sport Questionnaire-2 (PMCSQ-2): We used the Spanish version (Balaguer et al., 1997) of the Perceived Motivational Climate in Sport Questionnaire-2 (Newton and Duda, 1993; Newton et al., 2000), which has two factors: ego-involving motivational climate perception and task-involving motivational climate perception. The respondents respond to the stem "During the training session for my team or training group...". This measure uses a Likert scale ranging from 0 (total disagreement) to 10 (total agreement) and is made up of 29 items: 14 of which measure the ego-involving motivational climate perception (i.e. "The coach thinks that only the best ones make it possible for the group to succeed") and the other 15 items measure the task-involving motivational climate perception (i.e. "Effort is rewarded"). The questionnaire demonstrates good internal consistency with alpha values of .85 for the task climate and of .91 for the ego climate subscales.

Perception of Success Questionnaire (POSQ): We used the Spanish version (Cervelló et al., 1999) of the Perception of Success Questionnaire (Roberts and Balagué, 1991; Roberts et al., 1998) for measuring the goal orientations of young athletes. The questionnaire has 12 items, 6 of which assess the athletes' task orientation (i.e. "I feel most successful when I practise at my maximal capacity"). The other 6 items assess the athletes' ego orientation (i.e. "I feel most successful when I am the best"). The questionnaire uses a Likert scale ranging from 0 (total

disagreement) to 10 (total agreement). This questionnaire demonstrated good internal reliability in the present study with Cronbach alpha values of .84 for the task subscale and .91 for the ego subscale.

Sport Motivation Scale (SMS): We used the Spanish language translation (Núñez et al., 2006) of the original version of the Sport Motivation Scale developed by Brière et al. (1995) and Pelletier et al. (1995). This scale assesses the different motivational types identified by Self-Determination Theory: amotivation, external regulation, introjected regulation, identified regulation, intrinsic motivation to know, intrinsic motivation to experience stimulation and intrinsic motivation to accomplish. This scale is comprised of 4 items for each factor and so it has 28 total items with the stem question of "I participate and try hard when practising my sport...". The measure uses a Likert scale format with possible responses ranging from 0 (total disagreement) to 10 (total agreement). Alpha values of .74 for the intrinsic motivation to know, .75 for the intrinsic motivation to experience stimulation, .74 for the intrinsic motivation to accomplish, .70 for identified regulation, .64 for introjected regulation, .67 for external regulation and .74 for amotivation were found in this study.

Two subscales (introjected regulation and external regulation) had an internal reliability value inferior to the recommended .70 (Nunnally, 1978). Due to the small number of items which comprise the subscales, the internal validity observed can be considered marginally acceptable (Hair et al., 1998; Nunnally and Bernstein, 1994). Moreover, the introjected regulation factor has shown low alpha values in previous studies (McNeill and Wang, 2005; Wang and Biddle, 2001).

Dispositional Flow Scale (DFS): We used the Spanish version (García Calvo et al., 2005) of the Dispositional Flow Scale (Jackson et al., 1998) for measuring the variable of dispositional flow. The questionnaire has 36 items that were developed to measure the disposition of athletes to experience the flow state. This measure also uses a Likert scale format with possible answers ranging from 0 (total disagreement) to 10 (total agreement). The questionnaire had a Cronbach alpha level of .91 for the overall scale in the present study.

Procedure

We contacted the primary administrators and coaches at the selected sports schools and informed them of our objectives while seeking their cooperation and involvement. Upon receiving their support we proceeded with the data collection. The primary researcher was present during data collection to explain the purposes of our study and to solve any potential problems. Participants required approximately 20 minutes to complete the questionnaires. All participation was voluntary and corresponded to all procedures for the protection of human participants.

Data analysis

Our data analysis proceeded in a specific way. First, we calculated the descriptive statistics, the means, the standard deviations and the correlation coefficients among the different variables. Secondly, we carried out a cluster

Table 1. Mean, standard deviation and correlations among variables.

| | M | SD | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|----------------------------|------|------|---|------|-------|-------|-------|-------|-------|-------|-------|-------|--------|-------|
| 1. Ego-involving climate | 4.32 | 2.32 | - | -.05 | .34** | -.11* | -.03 | .02 | -.03 | .15** | .14** | .35** | .43** | .15** |
| 2. Task-involving climate | 7.78 | 1.34 | - | - | .00 | .35** | .48** | .51** | .42** | .45** | .34** | .23** | -.01 | .43** |
| 3. Ego orientation | 6.72 | 2.72 | - | - | - | .32** | .08 | .10* | .16** | .13** | .20** | .31** | .17** | .26** |
| 4. Task orientation | 8.67 | 1.48 | - | - | - | - | .30** | .34** | .42** | .24** | .29** | .04 | -.16** | .38** |
| 5. Intrinsic to know | 7.95 | 1.73 | - | - | - | - | - | .72** | .64** | .57** | .45** | .40** | -.03 | .44** |
| 6. Intrinsic stimulation | 7.78 | 1.76 | - | - | - | - | - | - | .70** | .59** | .54** | .37** | -.05 | .48** |
| 7. Intrinsic to accomplish | 8.05 | 1.68 | - | - | - | - | - | - | - | .50** | .46** | .33** | -.09* | .44** |
| 8. Identified regulation | 7.32 | 1.92 | - | - | - | - | - | - | - | - | .53** | .54** | .14** | .40** |
| 9. Introjected regulation | 7.57 | 1.80 | - | - | - | - | - | - | - | - | - | .43** | .08 | .36** |
| 10. External regulation | 6.27 | 2.25 | - | - | - | - | - | - | - | - | - | - | .34** | .32** |
| 11. Amotivation | 3.43 | 2.71 | - | - | - | - | - | - | - | - | - | - | - | .05 |
| 12. Dispositional flow | 7.19 | 1.28 | - | - | - | - | - | - | - | - | - | - | - | - |

*p < 0.05, **p < 0.01.

analysis to classify the athletes into different motivational profiles according to the scores obtained on the measures. Thirdly, we examined whether there was any important difference among profiles and examined potential group differences through a MANOVA. Finally, we completed the examination with a residual analysis to examine potential differences among groups depending on gender, weekly practice days and sport type practised among the profiles obtained.

Results

Descriptive statistics and correlational analysis

Descriptive statistics were generated for the sample. Table 1 reveals that the athletes had stronger task climate perceptions ($M = 7.78$) than ego climate perceptions ($M = 4.32$), as well as higher scores on task orientation ($M = 8.67$) than on ego orientation ($M = 6.72$). Furthermore, they had higher scores on intrinsic motivation to know ($M = 7.95$), in intrinsic motivation to experience stimulation ($M = 7.78$), in intrinsic motivation to accomplish ($M = 8.05$), in identified regulation ($M = 7.32$) and in introjected regulation ($M = 7.57$), than they did on external regulation ($M = 6.27$) and in amotivation ($M = 3.43$). The mean score for dispositional flow was 7.19.

It can also be observed that dispositional flow was positively and significantly related with numerous variables including perception of an ego-involving climate (r

= 0.15, $p < 0.01$), the perception of a task-involving climate ($r = 0.43$, $p < 0.01$), ego orientation ($r = 0.26$, $p < 0.01$), task orientation ($r = 0.38$, $p < 0.01$), intrinsic motivation to know ($r = 0.44$, $p < 0.01$), intrinsic motivation to experience stimulation ($r = 0.48$, $p < 0.01$), intrinsic motivation to accomplish ($r = 0.44$, $p < 0.01$), identified regulation ($r = 0.40$, $p < 0.01$), introjected regulation ($r = 0.36$, $p < 0.01$) and external regulation ($r = 0.32$, $p < 0.01$). There were no significant relationships involving amotivation.

Cluster analysis

We used a hierarchical cluster analysis to classify the athletes into different profiles depending on the scores obtained in motivational climates perceptions, goal orientations, sports motivation and the dispositional flow. At each step of the algorithm, there was only one object changing groups and groups were nested using the Ward method which tends to form compact, same-size and same-shape clusters. The decision to choose this method was based on the intent to minimise the differences within the clusters and to avoid problems with forming long, snake-like chains found with other methods (Hair et al., 1998). The cluster analysis was carried out with 12 variables, previously converted into Z scores following the standard procedure for this type of analysis.

As a way of determining the number of groups that would constitute the group classifications it is useful to

Table 2. Cluster means, standard deviations and Z scores for the three-cluster solution.

| | Cluster 1 (n = 221) | | | Cluster 2 (n = 57) | | | Cluster 3 (n = 135) | | |
|-------------------------|---------------------|------|------|--------------------|------|-------|---------------------|------|------|
| | M | SD | Z | M | SD | Z | M | SD | Z |
| Ego-involving climate | 3.71 | 2.06 | -.26 | 2.90 | 1.71 | -.61 | 5.92 | 2.09 | .68 |
| Task-involving climate | 8.06 | 1.30 | .20 | 6.97 | 1.41 | -.60 | 7.66 | 1.23 | -.08 |
| Ego orientation | 6.49 | 2.73 | -.08 | 4.59 | 3.18 | -.78 | 7.99 | 1.62 | .46 |
| Task orientation | 9.04 | 1.23 | .24 | 7.85 | 1.75 | -.55 | 8.41 | 1.53 | -.17 |
| Intrinsic to know | 8.56 | 1.39 | .35 | 6.12 | 1.93 | -1.05 | 7.72 | 1.56 | -.13 |
| Intrinsic stimulation | 8.43 | 1.30 | .37 | 5.91 | 1.94 | -1.05 | 7.49 | 1.71 | -.16 |
| Intrinsic to accomplish | 8.68 | 1.17 | .37 | 6.20 | 2.30 | -1.10 | 7.80 | 1.42 | -.14 |
| Identified regulation | 7.84 | 1.61 | .26 | 4.57 | 1.91 | -1.42 | 7.65 | 1.37 | .16 |
| Introjected regulation | 8.11 | 1.37 | .29 | 5.09 | 2.01 | -1.37 | 7.74 | 1.44 | .09 |
| External regulation | 6.36 | 2.06 | .04 | 3.55 | 2.09 | -1.20 | 7.26 | 1.63 | .43 |
| Amotivation | 1.98 | 1.69 | -.53 | 1.97 | 1.93 | -.53 | 6.42 | 1.72 | 1.10 |
| Dispositional flow | 7.33 | 1.22 | .11 | 6.46 | 1.35 | -.56 | 7.26 | 1.26 | .05 |

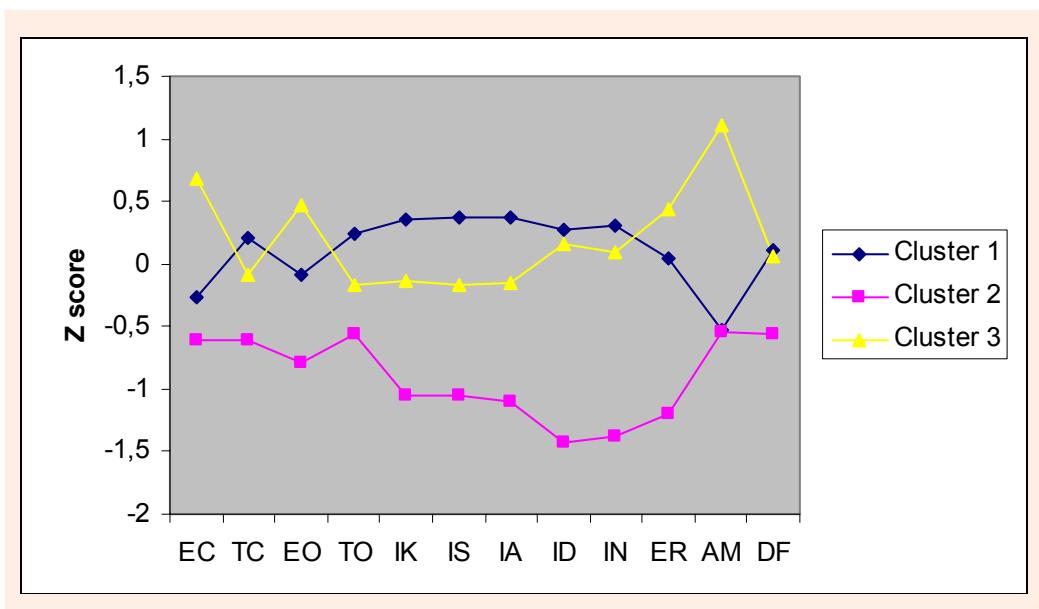


Figure 1. Cluster profiles for the 3-cluster solution of the hierarchical cluster analysis.

Abbreviations: EC = Ego-involving Climate; TC = Task-involving Climate; EO = Ego Orientation; TO = Task Orientation; IK = Intrinsic motivation to Know; IS = Intrinsic motivation to experience Stimulation; IA = Intrinsic motivation to Accomplish; ID = Identified regulation; IN = Introjected regulation; ER = External Regulation; AM = Amotivation; DF = Dispositional Flow.

identify the used method's iterations. The dendrogram was used to identify the profiles and a solution of three clusters was obtained for this sample of young athletes. It can be observed that the greatest leaps occurred when the algorithm changed from 3 to 2, 2 to 1 and 1 to 0 groups. The Mojena criterion applied with $k = 2.5$ offers a cut-off distance of 2.83 and selects the number of groups to be 3. For this reason we take 3 as the number of groups. In Table 2, the means, standard deviations and Z scores of the variables in each cluster can be observed. Differences in Z scores of 0.50 or greater were considered higher, while differences from 0.25 to 0.49 were considered moderated and inferior to 0.25 as lower, as a result we established different groups with higher, moderated or lower punctuations compared with other groups (Wang and Biddle, 2001).

Figure 1 shows the motivational profiles for the three-cluster solution. The first profile was labelled the "self-determined profile" and was comprised of 221 athletes (53.5% of the sample) and these individuals showed high scores on intrinsic motivation, task orientation and task-involving climate perception; moderate scores on identified regulation, introjected regulation, external regulation, ego orientation, ego-involving climate perception and dispositional flow and low scores in amotivation. The second profile ($n = 57$; 13.8% of the sample) was labelled as the "low self-determined and low non-self-determined profile" and showed low scores on intrinsic motivation, identified regulation, introjected regulation, external regulation, amotivation, ego orientation, task orientation, ego climate perception, task climate perception and the dispositional flow. The final subgroup was labelled the "non-self-determined profile" and was comprised of 135 athletes (32.7% of the sample). This group had moderate scores on intrinsic motivation, identified regulation, introjected regulation, task orientation, task-involving climate

perception and dispositional flow as well as high scores in external regulation, amotivation, ego orientation and ego climate perception.

Following these results, a MANOVA was conducted to find any differences on the outcome variables in relation to the clusters. The results revealed significant differences, Wilk's $\Lambda = .181$, $F(24,798) = 44.89$, $p < 0.001$ among the groups. The subsequent ANOVAs pointed out the existence of significant differences among the three clusters on all variables ($p < 0.001$). Tukey's HSD revealed significant differences among the three groups, except in identified regulation, introjected regulation and the dispositional flow between cluster 1 and 3, and amotivation between cluster 1 and 2.

Gender, practice days and sport type differences in cluster composition

A MANOVA was carried out to analyse the differences according to gender, weekly practice days and sport type (individual or team) among the motivational profiles and revealed significant differences (Wilk's $\Lambda = .936$, $F(6, 816) = 4.58$, $p < 0.001$). The subsequent ANOVAs showed significant differences for gender ($F(2, 410) = 7.17$, $p < 0.01$), practice days ($F(2, 410) = 4.53$, $p < 0.02$) and sport type ($F(2, 410) = 8.60$, $p < 0.001$). In Table 3 the composition of individuals in every cluster can be observed. Concerning gender, cluster 1 is associated negatively with 72.4% of men and positively with 27.6% of women, while cluster 3 is associated positively with 88.9% of men and negatively with 11.1% of women. In relation to the weekly practice days, it can be observed that cluster 1 is connected negatively with 66.1% of athletes who train 2 or 3 days a week and positively with 33.9 % who practise more than 3 days a week, while cluster 3 is connected positively with 80.0% who train 2 or 3 days a week and negatively with 20.0% who practise

Table 3. Cluster characteristics' by gender, practice days and sport type.

| | | Gender | | Days | | Sport | |
|------------------|-----------|-----------------------------|------------------------------|---------------------------|-----------------------------------|----------------------------------|----------------------------|
| | | Males (n = 322) 78.0% | Females (n = 91) 22.0% | 2-3 (n = 298) 72.2% | More than 3 (n = 115) 27.8% | Individual (n = 206) 49.9% | Team (n = 207) 50.1% |
| Cluster 1 | n = 221 | 160 | 61 | 146 | 75 | 127 | 94 |
| | % | 72.4 | 27.6 | 66.1 | 33.9 | 57.5 | 42.5 |
| | Residuals | -2.9 | 2.9 | -3.0 | 3.0 | 3.3 | -3.3 |
| Cluster 2 | n = 57 | 42 | 15 | 44 | 13 | 31 | 26 |
| | % | 73.7 | 26.3 | 77.2 | 22.8 | 54.4 | 45.6 |
| | Residuals | -.8 | -.8 | .9 | -.9 | -.7 | -.7 |
| Cluster 3 | n = 135 | 120 | 15 | 108 | 27 | 48 | 87 |
| | % | 88.9 | 11.1 | 80.0 | 20.0 | 35.6 | 64.4 |
| | Residuals | 3.7 | -3.7 | 2.5 | -2.5 | -4.1 | 4.1 |

sport more than 3 days a week. Finally, concerning the sport type, cluster 1 is connected positively with 57.5% of athletes practising individual sports and negatively with 42.5% of athletes practising team sports, while cluster 3 is connected negatively with 35.6% of athletes practising individual sports and positively with 64.4% practising team sports.

Discussion

In this work we have tried to identify different motivational profiles in adolescent athletes, starting with the Achievement Goal Theory and the Self-Determined Theory and have related these profiles to the disposition to experience the flow state or optimal psychological state. Analysing the different motivational variables as a whole, by conforming profiles, provides more information and allows the planning of intervention strategies to promote sports motivation in those groups where it is most needed.

The cluster analysis revealed the presence of three motivational profiles: a "self-determined profile", a "non-self-determined profile" and a "low self-determined and low non-self-determined profile". These results are similar to the four theoretical profiles established by Vlachopoulos et al. (2000), although in this study the profile that they identified with high scores both in self-determined motivation and in non-self-determined motivation has not been found. Vlachopoulos et al. (2000) did not find the presence of profiles that would be anticipated to be the precursor to sport dropout such as the "non-self-determined profile" and "low self-determined and low non-self-determined profile", but it could be expected that they would be present in adolescence, since adolescence is a period where participation in sports progressively decreases.

The "self-determined profile" was characterised by high scores on intrinsic motivation, moderate scores on identified regulation, introjected regulation and external regulation, and low scores on amotivation. Furthermore, this profile reveals high task orientation and task-involving climate perceptions, as well as moderate ego orientation and ego-involving climate perceptions. The "non-self-determined profile" showed moderate scores on intrinsic motivation, identified regulation and introjected regulation and high scores on external regulation and amotivation. This profile was also characterised by high ego orientation and an ego-involving climate perception,

as well as moderate task orientation and task-involving climate perception. Both profiles revealed a moderate dispositional flow tendency, with no significant differences between the profiles. Finally, the "low self-determined and low non-self-determined profile" showed low scores on all variables of the study.

These results lend support to previous work in the field of physical activity and sport that have examined task-involving climate perceptions (Ntoumanis, 2002; Ntoumanis and Biddle, 1999; Parish and Treasure, 2003) and task orientations (Standage and Treasure, 2002; Wang and Biddle, 2001) and found these variables to be positively related to self-determined motivation. An ego-involving climate perception (Ntoumanis, 2002; Ntoumanis and Biddle, 1999) and an ego orientation (Georgiadis et al., 2001) have been found in previous research to be associated with the less self-determined forms of motivation. These findings suggest that during their training periods, coaches should develop climates that promote hard work, effort and progress more than social comparison to enhance self-determination and positive affective, cognitive and behavioural consequences for young athletes (Vallerand and Rousseau, 2001). Although we did not find significant differences between the "self-determined profile" and the "non-self-determined profile" in the tendency toward dispositional flow, previous research indicates that self-determination is positively associated with flow (Jackson et al., 1998; Kowal and Fortier, 1999; 2000). As a conclusion, it can be stated that if coaches promoted self-determined motivational profiles among young athletes by transmitting task-involving climates and also by using different strategies to foster feelings of competence, autonomy and relatedness that they would take an important step forward in improving young athletes' desires to practise sport (Vallerand and Rousseau, 2001).

As expected, the highest percentage of athletes was found within the "self-determined profile" (53.5%) and thus this group is characterised by a self-regulated participation that should result in more positive consequences. Individuals within the "non-self-determined profile" group (32.7%) are seriously threatened by amotivation and they could be affected by negative consequences in the short term. Moreover, the "low self-determined and low non-self-determined profile" reveals the lowest percentage of the sample (13.8%), which is a positive piece of information because this profile is the least desirable.

On the one hand, it is worth mentioning that the “self-determined profile” reveals a positive association with females, athletes practising individual sports and those training more than three days a week. On the other hand, the “non-self-determined profile” is associated with males and athletes practising team sports and those training two or three days a week.

Although a large proportion of the athletes were found to have a self-determined profile, almost the half of the sample has less desirable profiles that should be addressed by coaches. As indicated previously, the coach must give priority to the display of effort and not solely to the results. In this way, s/he will promote a cooperative learning environment because s/he will treat all the members of the group in a similar and beneficial way. Identifying motivational profiles allows us to know to which type of individuals an intervention should be targeted. Our results show that males, team sport participants and athletes who train fewer days a week should receive special attention because they tend to experience less self-determination. It would be interesting to examine whether these findings are generalizable to different samples of athletes, because it will allow us to give information to coaches about the individuals who would be most inclined to drop out of sport.

Despite the fact that the results of the study show differences in the variables of the groups analysed, the size of these differences is moderate. This finding could be due to the size of the sample more than to the size of the effect. Differences found shall be verified in different populations in future studies.

Future investigations should be focused on the analysis of motivational profiles, in relation to a greater variety of affective, cognitive and behavioural consequences as this study only examined relationships between profiles and dispositional flow. It would also be appropriate to use longitudinal studies to analyse the motivational profiles and in this way being able to find out which of them lead to greater persistence in sports practice and which profiles are associated with premature abandonment.

Conclusion

In conclusion, this study has tried to examine the effects of different motivational variables as a whole through different profiles in an adolescent athlete sample. We have identified a “self-determined profile”, a “non-self-determined profile” and a “low self-determined and low non-self-determined profile”. The results provide information necessary to work on the least desirable profiles through the transmission of task-involving motivational climates.

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Key points

- The “self-determined profile” was characterized by high task orientation, high task-involving climate perception and was more commonly associated with females, athletes practising individual sports and those training more than three days a week.
- The “non-self-determined profile” was characterized by high ego orientation, high ego-involving climate perception and was more customary of males and athletes practising team sports as well as those training two or three days a week.
- Both profiles revealed a moderate tendency toward dispositional flow, with no significant differences between the two profiles.
- The “low self-determined and low non-self-determined profile” had low scores on all of the variables in the study.

AUTHORS BIOGRAPHY

Juan Antonio Moreno MURCIA Employment

Full professor. Faculty of Sports Sciences, University of Murcia, Spain.

Degree

PhD

Research interests

Sports motivation, aquatic activities.

E-mail: morenomu@um.es



Eduardo Cervelló GIMENO Employment

Full professor. Faculty of Social and Juridical Sciences. Miguel Hernández University of Elche, Spain.

Degree

PhD

Research interests

Sports motivation.

E-mail: ecervello@umh.es



David González-Cutre COLL Employment

Predoctoral grant holder. Faculty of Humanities and Educational Sciences, University of Almería, Spain.

Degree

MSc

Research interests

Sports motivation.

E-mail: david@crononautas.com



✉ Juan Antonio Moreno Murcia

Facultad de Ciencias del Deporte, Universidad de Murcia, Parque Almansa, 30730 San Javier, Murcia, Spain