

Identification of students' multiple achievement and social goal profiles and analysis of their stability and adaptability



Teresa Gonçalves^a, Markku Niemivirta^{b,c}, Marina S. Lemos^{d,*}

^a Escola Superior de Educação, Av. Cap. Gaspar de Castro 513, 4901-908, Instituto Politécnico de Viana do Castelo, Portugal

^b Institute of Behavioral Sciences, P.O. Box 9, (Siltavuorenpenger 5A) 00014, University of Helsinki, Finland

^c Faculty of Educational Sciences, P.O. Box 1092, 0317 University of Oslo, Norway

^d Faculdade de Psicologia e de Ciências da Educação, R. Alfredo Allen, 4200-135, Universidade do Porto, Portugal

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ABSTRACT

The present study moves to a more comprehensive understanding of the dynamics of student's goal orientation by jointly analyzing a variety of students' achievement goals together with students' social goals, and their combined effects. Using a person-centered approach (latent cluster analysis) the study identified students' ($N = 386$) goal profiles, analysed in what ways achievement and social goals are combined, and tested whether profile groups differed on their motivational and academic adaptability. Moreover, this study analysed stability and change in students' multiple goal profiles across the transition into secondary school (from 9th to 10th grade). Six distinct profiles of achievement and social goals emerged showing construct stability over time. Across profiles findings showed that prosocial and social responsibility goals are connected with mastery goals, but seem more difficult to reconcile with performance-competitive goals. In general, findings highlighted the positive role of both mastery and social goals in students' academic outcomes (differences between profiles ranging from η^2 0.03 to 0.18), but also showed that distinct goal combinations may be compatible with students' motivation and academic success.

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1. Introduction

Achievement goal theory figures as one of the most representative approaches to student motivation. Within this framework, achievement goals, that is, students' desired end-states in an achievement context, have been linked to student's motivation, academic achievement, and well-being (see Covington, 2000; Elliot, 2005). The present study contributes to this research by addressing two current developments in the field. First, it has been progressively recognized as not probable that a single goal may explain behavior in a given context (Boekaerts, de Koning, & Vedder, 2006; Wentzel & Wigfield, 1998). A comprehensive understanding of goal-orientation views behavior as typically regulated jointly by multiple goals, the configuration of the various goals determining the course of action and its effects. Secondly, along with the frequently-investigated achievement motivation, the importance of social motivation in students' academic outcomes has also been recognized. In fact, it seems that besides achievement goals, social goals also play an important role in academic performance (e.g., Urdan & Maehr, 1995), and that the interactions between social and academic

goals may influence the amount and quality of student learning (Covington, 2000). This study investigates students' multiple goals, expanding each of the above trends in goal theory and research.

1.1. Students' achievement goals

Within goal theories of motivation in education, initially two types of achievement goals were identified: mastery goals, representing the purpose to improve one's competence, and performance goals, representing the purpose to demonstrate competence and outperform others (see Elliot, 2005). The study of multiple goals first emerged from acknowledging that characterizing students as oriented to mastery versus performance (dichotomous perspective), which dominated much of the research within normative achievement goal theory, may represent an oversimplification of the complexity of motivation (Pintrich, 2000). Thus, a multiple goal perspective should be a relevant issue to consider in seeking to understand the functioning of students, particularly when facing the complex and multidimensional classroom demands.

Nicholls was the first scholar to move from a dichotomous mastery versus performance goal perspective, stressing that students may adopt both mastery and performance goals. To support this argument, he evidenced that some students may show a high-high profile (high

* Corresponding author.

E-mail addresses: teresag@ese.ipv.pt (T. Gonçalves), markku.niemivirta@helsinki.fi (M. Niemivirta), marina@fpce.up.pt (M.S. Lemos).

Mastery and high Performance oriented¹), while other students show a high-low profile in those dimensions (Nicholls, Cheung, Lauer, & Patashnick, 1989). Further distinction into approach and avoidance performance tendencies (known as the revised goal theory; Elliot & Church, 1997) led to the consideration of three main types of achievement goals: mastery, performance-approach (directed towards the demonstration of ability), and performance-avoidance goals (avoiding demonstrating a lack of ability), and thus to a wider range of possible profiles of goal orientations.

Besides the criticism of the dichotomous conceptualization of achievement goals, questioning the debilitating effects of performance goals also moved research to a focus on multiple goals. In fact, initial research linked mastery goals to various adaptive outcomes, including higher levels of self-efficacy, task value, interest, the use of deeper cognitive and metacognitive strategies, and to engagement and achievement. In contrast, performance goals were related to less adaptive motivational and achievement outcomes (see, Ames, 1992; Dweck & Leggett, 1988). However, later research suggested more complex interactions between goals. For example, it was hypothesized that performance goals, when coupled with mastery goals, might not be debilitating. Moreover, it has been stressed that a profile with a dominant performance-goal orientation is more adaptive than an overall low achievement goal profile (Pintrich, 2000). Other studies have even confirmed the advantage of an interaction between performance and mastery goals on other motivational variables, learning, self-regulation, and achievement (Ainley, 1993; Bouffard, Boisvert, Vezeau, & Larouche, 1995). However, some studies suggested that a high Mastery and high Performance profile seems to work negatively, weakening the positive relationship between mastery goals and other aspects of students' motivation, cognition, and self-regulation in the classroom context (e.g., Wolters, Yu, & Pintrich, 1996).

This line of research was further developed within the revised goal theory framework, suggesting that different combinations of goals may differentially promote achievement outcomes (Barron & Harackiewicz, 2001).

However, most of the multiple goal research studies only evidenced the independent or interactive effects of each of the different goals on different outcomes, rather than actual multiple-goals effects. Alternatively, as argued by Pastor, Barren, Miller, and Davis (2007), the use of person-centered methods is particularly suited for revealing the typical goal combinations orienting students' achievement behavior, and hence clarifying the effects of multiple simultaneous goals and predicting more accurately the different educational outcomes of the various goal profiles. Yet only a few studies have adopted a person-centered approach to analyse a large range of achievement goals including approach and avoidance tendencies (e.g., Conley, 2012; Pastor et al., 2007; Tuominen-Soini, Salmela-Aro, & Niemivirta, 2008, 2011). In the existing studies, mastery-focused profiles were generally found to be adaptive, showing positive relations to achievement. By contrast, indifferent, disengaged, and avoidance-oriented profiles displayed lower achievement. Finally, although performance-oriented strivings within students' multiple goals profiles did not show a negative effect on academic achievement, in the study by Tuominen-Soini and colleagues, they were associated with lower subjective well-being than mastery-oriented profiles. In addition to analyzing profiles of multiple achievement goals, for a fuller understanding of students' goal orientations, social goals should also be considered. Indeed, as Doyle (1986) argued, multidimensionality is a specific element of the nature of classroom environments: "a classroom is a crowded place in which many people with different preferences and abilities must use a restricted supply of resources to accomplish a broad range of social and personal objectives" (p. 394).

1.2. Social goals at school

In a similar direction, goal theorists such as Blumenfeld (1992) or Maher and Braskamp (1986) have also argued early on for the importance of social goals for students' achievement motivation and behavior. For example, Maehr's personal investment theory proposes that learning and achievement depend not only on students' achievement goals, but also on their social-approval and social-compliance goals (Maehr & Nicholls, 1980). More recently, the need for studying social goals along with academic goals to gain a more complete understanding of students' motivation has been progressively recognized (Boekaerts et al., 2006; Covington, 2000; Dowson & McInerney, 2001; Lemos, 1996; Patrick, Anderman, & Ryan, 2002; Urdan & Maehr, 1995; Wentzel, 1992, 1996).

In a preliminary note, it is important to remember that social goals have been differently conceptualized and approached. One line of approach has been to investigate social goals as students' social reasons for achieving academically (e.g., Dowson & McInerney, 2001; McInerney & Ali, 2006; Urdan & Maehr, 1995). Within this perspective, social goals are viewed as social reasons why students engage in academic learning and performance.

Another line of research, referred to as the social achievement goal approach (Ryan & Shim, 2008; Shim & Finch, 2014), has applied the conceptual structure of the academic achievement goal approach to the study of social goals. This approach analyses achievement goals in the social domain, focusing on different orientations towards social competence. Specifically, a social development goal orientation is concerned with increasing social competence and developing relationships. Social demonstration goal orientations - approach or avoidance - focus on demonstrating social competence or avoiding social negative judgments. Social achievement goals have been related to academic variables such as help-seeking (Ryan, Hicks & Midgely, 1997) and students' prosocial and aggressive behavior (Ryan & Shim, 2008).

Finally, the present study used a goal-content approach that considers the social outcomes that students are trying to achieve. This conceptualization builds upon Wentzel's (2000) "goal-content" or "social outcomes" approach that focuses on students' social-relevant motivation within the school context. The goal-content approach has inspired a distinct line of research that has documented a wide set of social goals that students strive for in the school context, including goals such as responsibility, prosocial behavior and intimacy, popularity goals and competition, domination and control over others. In general, prosocial goals promote adaptive behaviors and social adjustment, whereas antisocial goal orientations lead to peer difficulties and social maladjustment (see for example Ryan, Jamison, Shin, & Thompson, 2012). However, most educational goal research focuses on Wentzel's social-responsibility (adhering to classroom rules) and prosocial (to help classmates with problems) goals, and their relations to academic adjustment. Wentzel (1993) further suggested the existence of two types of prosocial goals: prosocial friendship-oriented (involving students' efforts to share and to help peers with social problems) and prosocial learning-oriented (students' efforts to share and to help classmates with academic problems).

It has been argued that children and adolescents typically value prosocial goals to promote positive interaction with peers, which may play an important role in the shaping and development of student motivation (e.g., Ryan, 2001; Wentzel, 1992). Empirical literature has evidenced consistent relations between prosocial and social-responsibility goals and motivation, engagement, and achievement at school (see, for example, Urdan & Maehr, 1995; Wentzel, 2005). In general, a sense of school belonging, and the endorsement of social-responsibility goals have been positively associated with mastery orientation (e.g., Anderman & Anderman, 1999). For example, Wentzel (1996) reported that the social goal of sharing is positively related to mastery goals but not to performance goals, which may be interpreted as contrary to positive social values. Similarly, based on a large sample of students, Giota (2010) found high correlations between mastery and social-responsibility

¹ Nicholls actually did not use the terms mastery and performance, but used instead "task" and "ego" orientations (see Murphy & Alexander, 2000).

goals, while performance goals were weakly correlated with those two types of goals. Within other lines of research on social goals, recent studies also analysed profiles of students' academic and social goals and how they influence students' academic and social outcomes. Using a person-centered analysis, *Levy-Tossman, Kaplan, and Assor (2007)* suggested that profiles with a higher level of mastery goals, relative to profiles with a higher level of performance goals, also included higher levels of quality social relationships. *Shim and Finch (2014)* used a latent class approach to identify multiple goal profiles in middle school students, combining academic achievement goals (mastery, performance-approach and performance-avoidance achievement goals), and social achievement goals (social-development, social demonstration-approach, and social demonstration-avoidance goals). Results of that study suggested that academic and social goals are combined in students' profiles, mainly according to a similar goal nature (that is, showing mostly academic mastery-social development combinations and academic performance-social demonstration combinations). Moreover, the various goal profiles were differentially related to students' academic and social adjustment, with social goals playing a critical role only for the students who endorse moderate levels of academic achievement goals.

Theoretically, a conflicting relation between social goals and students' achievement may be posited, when the pursuit of social goals orients students away from academic activities, thereby inhibiting optimal performance (e.g., *Kozeki & Entwistle, 1984; McClelland, 1961*). However, social goals and social relationships may also have positive effects on school motivation and achievement, depending, for example, on whether social partners value academic achievement (*Epstein, 1983; Maehr & Nicholls, 1980*) and on the student's ability to coordinate different goals (*Dodge, Asher, & Parkhurst, 1989; Wentzel, 1989, 1991*). For example, Dodge and collaborators pointed to several reasons why it may be more difficult for low achievers to coordinate social and academic goals than for high achievers. One explanation is that low achievers may come to devalue academic goals, prioritizing social goals instead of pursuing both types of goals simultaneously. Regarding specific social goals, such as responsibility goals, they seem more clearly in line with academic outcomes. In fact, social goals such as being cooperative and complying with classroom norms may help to create the conditions for learning and are valued by teachers as indicators of student engagement, thereby being positively associated with academic success (*Wentzel, 1991*).

The present study adds to this discussion by looking at the configurations of students' multiple goals (combining achievement goals and social-responsibility and prosocial goals) and analyzing their implications for other motivational and achievement outcomes.

1.3. Goal profiles' adaptability across school levels

A significant body of research evidences the effects of achievement and of social goals on students' achievement motivation and performance, as summarized in the previous sections. However, a developmental perspective on individuals and contexts raises the additional question of possible differential goal effects according to age or grade level. In the specific domain of achievement goals, it has indeed been argued that a developmental perspective might contribute to the understanding of some mixed effects regarding performance-approach goals, namely, that their positive effects on achievement in older students that are not present in younger students (*Anderman, Austin, & Johnson, 2002; Fryer & Elliot, 2007; Midgley, Kaplan, & Middleton, 2001*). In fact, an increasing positive relation of performance-approach goals with other motivational measures was found in a cross-sectional study with students from 6th to 8th grade (*Pajares, Britner, & Valiante, 2000*). Further longitudinal research might evidence possible intra-individual developmental trends towards an increasing adaptive function of performance-approach goals, which would reconcile the findings from studies suggesting either neutral or negative motivational effects of these goals in younger students (e.g., *Middleton & Midgley, 1997*) and positive effects on college students (e.g., *Elliot & Harackiewicz, 1996*). However, no longitudinal analysis of

changes in the effects of multiple achievement and social-goal profiles across school grades has yet been conducted.

Moreover, there is a particular interest in identifying the degree of stability or change in goal preferences over time. There is a lack of longitudinal studies on goal changes along schooling, and research analyzing stability and change of multiple-goals profiles is even scarcer. Such research can reveal possible changes in the contextual sensitivity of goals, and it can illuminate differential goal effects according to age or grade level.

1.4. Goals of the study

This study seeks to integrate the above lines of research in an attempt to look at the joint configurations of academic and social goals and their relationships with other educationally relevant student outcomes. For this purpose, using a sample of students with repeated measures at 9th and 10th grades, we first sought to identify profiles of achievement and social goals, examining how students can be classified according to their multiple achievement and social orientations. Such an analysis will reveal the typical combinations of achievement and social goals that adolescent students actually show, and thus will contribute to a clearer understanding of how social goals relate to achievement goals. Moreover, individual stability and change in students' goal profiles encompassing the transition from middle school to secondary school (that is, from 9th to 10th grade) was also analysed. Second, we investigated the adaptability of the diverse goal profiles through analyzing how each profile relates to outcome variables, including other motivational variables, engagement, and achievement. This allows the identification of the goal profiles that characterize students who are either well adapted or maladapted to school, and helps to establish discriminant validity of the various goal profiles. Finally, we analysed the adaptability of goal profiles at different grade levels, across the transition into secondary school (9th to 10th grade).

As previously noted, the use of person-centered approaches to investigate how multiple goals combine to form individual goal profiles and to analyse their joint effects has been limited.

In this study, we used latent class clustering (LCC), which is a probabilistic or model-based variant of cluster analysis, in order to identify the smallest number of latent classes (groups) that adequately describe the associations among the observed variables based on statistical criteria (*Vermunt & Magidson, 2002*), rather than the arbitrary solutions most commonly used in traditional cluster analysis. This method allows the emergence of naturally-occurring combinations (profiles) of multiple individual goals, instead of forcing them through a priori categories (as in median split techniques).

In order to analyse the differential adaptability of the various goal profiles, students' motivational beliefs, teacher-reported engagement, and students' academic achievement were considered as outcome variables. Besides engagement and achievement, of central interest were also the relationships between specific control beliefs (agency beliefs for effort and for ability, and means-ends beliefs for effort and for ability) and goal profiles. Agency beliefs refer to the student-perceived access to a variety of important means (e.g., effort or ability) for school performance. Means-ends (causality) beliefs refer to the student expectancies about the extent to which certain causes or means (e.g., effort and ability) produce a given outcome, such as school performance. The consideration of these distinct control beliefs has received consistent support (*Lopez, 1999; Skinner, Chapman, & Baltes, 1988*) and allows a better understanding of the specific links between beliefs and performance.

The literature has consistently shown that control beliefs (in particular agency beliefs for effort and ability) are one of the strongest motivation predictors of academic success (see *Skinner, Zimmer-Gembeck, & Connell, 1998*). Moreover, research has tried to establish relations between goals and competence-related beliefs suggesting that there might be differentiated links between specific goals and students' beliefs (*Conley, 2012; Elliot & Church, 1997; Lopez, 1999; Maehr & Meyer, 1997*). However, evidence concerning the relations of goals with the

specific agency and means–ends beliefs as assessed in the present study is limited. Existing research (Dweck, 1996; Dweck & Leggett, 1988; Gonçalves & Lemos, 2007; Lopez, 1999; Niemivirta, 1998) shows that mastery goals are linked to agency beliefs, in particular to agency beliefs for effort and ability, while performance–approach goals are related only to agency for ability. By contrast, performance–avoidance goals have been negatively related to the different dimensions of perceived control. Concerning causality beliefs (assessed under various names, such as means–end beliefs, attributions, a “malleable versus fixed” view of ability), mastery goals have been associated with a focus on effort, and performance goals have been related to causality beliefs focused on ability.

Finally, the present study extends previous research by using longitudinal data (specifically, a two-wave descriptive longitudinal design) from a person-centered perspective. This approach adds to the specific contributions of this study, by examining the stability of students' goal profiles as well as their differential adaptability across the transition into secondary school (from 9th to 10th grade).

2. Methods

2.1. Participants

A repeated sample of students was assessed at 9th grade ($N = 394$) and again at 10th grade ($N = 386$). The students' mean age was 14.53 years ($SD = 1.04$), and they were approximately equally divided by gender (51% girls, 49% boys). The students attended five public schools (by 10th grade, six public schools) in the north of Portugal, located in socio-economically homogeneous middle-class areas.

2.2. Procedures

After informed consent for data collection was obtained, students answered the two sets of goal scales and the school-related control-beliefs questionnaire in their classrooms. Teachers reported on students' engagement, and students' academic achievement was retrieved from the school records. The data were collected twice, at the beginning of the 9th and the 10th grades, following the same procedure.

2.3. Measures

2.3.1. Achievement and social goals

This study looked at the classroom as a multidimensional context that incorporates both academic expectations and engagement, and social demands and opportunities. Thus, besides assessing students' achievement goals (which fall under the category of goals in the academic domain), this study also assessed students' goals in the social domain, using Wentzel's (1993) conceptualization.

Achievement goals were assessed using the Personal Goals scale of PALS (Midgley et al., 2000) which originally includes three subscales, but which was here divided into four subscales as suggested by a confirmatory factor analysis of the data: Mastery goals ($\alpha = 0.80$) with 5 items (e.g., One of my goals in class is to learn as much as I can); Performance–Avoidance goals ($\alpha = 0.61$) with 4 items (e.g., One of my goals is to keep others from thinking I am not smart in class); Performance–Approach goals were further divided into Performance–Approach Self-Presentation goals ($\alpha = 0.80$) with 2 items and Performance–Approach Competitive goals ($\alpha = 0.91$) with 3 items.² An example item of a

Performance–Approach Self-Presentation goal was “One of my goals is to show others that class work is easy for me”, and an example item of a Performance–Approach Competitive goal was “One of my goals is to look smart in comparison to the other students in my class”. The fit of the four-factor models was acceptable, $\chi^2(59)_{9th} = 202.66$, $p = 0.000$, CFI = 0.94, RMSEA = 0.07, and, $\chi^2(59)_{10th} = 178.16$, $p = 0.000$, CFI = 0.97, RMSEA = 0.07, respectively.

Social goals were assessed using Wentzel's Social Goals Scale (Wentzel, 1993), including a Social Responsibility subscale ($\alpha = 0.72$) with 7 items (e.g. How often do you try to keep promises that you've made to other kids) and two Prosocial subscales. The original Prosocial subscale was further divided into a Prosocial friendship oriented subscale ($\alpha = 0.81$), with 4 items (e.g. How often do you try to be nice to kids when something bad has happened to them) and a Prosocial learning oriented subscale ($\alpha = 0.77$) with 3 items (e.g., How often do you try to share what you've learned with your classmates), as previously suggested by Wentzel (1993), and further supported by factor analysis of the data $\chi^2(31)_{9th} = 39.92$, $p = 0.130$, CFI = 0.99, RMSEA = 0.03, and $\chi^2(31)_{10th} = 90.81$, $p = 0.000$, CFI = 0.95, RMSEA = 0.07, respectively.

Students reported on their achievement and social goals on a five-point Likert type response scale.

2.3.2. Control beliefs, engagement and academic achievement

Control beliefs were assessed using the Control, Agency, and Means–Ends Interview (CAMI) instrument (Skinner et al., 1988), which was developed based on an action-theoretical framework, and focuses on several aspects of control, namely control expectancy, agency beliefs and means–ends beliefs. For the present purposes, our assessment included scales for Agency for Effort and Agency for Ability beliefs (representing the beliefs about the access of the self to effort and to ability as potentially effective causes; e.g., Do you try as hard as you can in school?; If you want to do well in school, can you?, respectively) and Means–Ends for Effort and Mean–Ends for Ability beliefs (referring to the expectancies about the extent to which certain causes or means produce outcomes; e.g., When a student does well on school work, is it because the student works very carefully?; When a student is good at school, is it because the student is just smart?, respectively). Students answered on a four-point Likert type response scale. Reliabilities at 9th and 10th grade were acceptable, ranging from 0.72 to 0.83, except for Means–Ends for effort at 10th grade, which was low ($\alpha = 0.55$).

Teachers reported on students' academic engagement ($\alpha = 0.94$) through completing the Student's Achievement–Relevant Actions in the Classroom (SARAC) inventory by Wellborn and Connell (Skinner, Wellborn, & Connell, 1990; Skinner et al., 1998). This is a 16-item inventory tapping students' academic engagement (e.g., “In my class, this student works as hard as he/she can”) and disaffection (e.g., “In my class, this student is bored”).

School grades for Portuguese language and Mathematics were averaged as an index of academic performance ranging from 1 to 5 ($M = 3.04$, $SD = 0.77$) at 9th grade, and from 1 to 20 ($M = 11.55$, $SD = 2.72$) at 10th grade.

2.4. Analyses

First, longitudinal confirmatory factor analysis was conducted as a hierarchical analysis of invariance to test structural stability, stability in mean levels, and normative stability of the goal orientation measures (e.g., Vandenberg & Lance, 2000).

Second, latent class clustering analysis (LCCA; cf. Vermunt & Magidson, 2002) with the Bayesian information criterion (BIC; with lower value implying better fit to the data) was used to form groups of students based on their goal profiles. In order to take into account the non-independence of the measures, we used the students' composite scores for the clustering simultaneously from both measurements by

² The fit of the original three-factor models was rather poor, $\chi^2(62)_{9th} = 363.18$, $p = 0.000$, CFI = 0.88, RMSEA = 0.10, and $\chi^2(62)_{10th} = 377.69$, $p = 0.000$, CFI = 0.88, RMSEA = 0.11, respectively. Since modification indices suggested considerable dependency between two items referring to more competitive goals, we tested whether including an additional factor would improve the model fit. This proved to be the case; the improvement from three- to four-factor models was significant at both measurement points: $\Delta\chi^2(3)_{9th} = 160.52$, $p = 0.000$ and $\Delta\chi^2(3)_{10th} = 199.53$, $p = 0.000$, respectively.

employing the I-States as Objects Analysis (ISOA) procedure (cf. Bergman & El-Khoury, 1999; Bergman & Nurmi, 2010).

Third, to validate the classification of students, the links of goal profiles to measures of control beliefs, academic engagement and achievement were examined by a series of analysis of variance (ANOVAs).

Finally, the stability of goal profiles was examined with configural frequency analysis (von Eye, 1990, 2002). The configural frequency analysis was used to identify “types” and “antitypes” of configurations of group memberships to establish whether the change of membership between measurements consisted of frequent patterns or less frequent patterns of changes in students’ orientation profiles.

3. Results

This study sought to identify typical profiles of students’ multiple achievement and social goals in the school context. First, in order to ensure that identical constructs were measured over time, we tested for measurement invariance. Due to space constraints, we will report these results briefly. A series of longitudinal confirmatory factor analysis with increasingly more strict restrictions to the model (by fixing factor loadings, item intercepts, error terms and factor correlations to be equal across the two measurement points) indicated sufficient measurement invariance and construct stability over time (see Table 1 for a summary of the various models). The fit was acceptable for a partially invariant (i.e., with four pairs of error terms, an additional pair of item intercepts, and one factor variance estimated freely) model, $\chi^2(1035) = 1477.93, p = 0.000, CFI = 0.95, RMSEA = 0.05$, thus supporting sufficient invariance of the measures over time.

The latent correlations across measurements, ranging from 0.49 (Performance-Approach Competitive) to 0.86 (Social responsibility), indicated moderate to high rank-order stability over time (see Appendix A). As to changes in latent means over time, a significant yet rather small decrease was found in Performance-Approach Self-Presentation goals ($d = 0.22$), Performance-Approach Competitive goals ($d = 0.14$), and in Performance-Avoidance goals ($d = 0.24$).

Next, we classified students into homogenous groups based on a series of latent class cluster analyses. According to the results, the best fitting solution included six groups, all representing different goal profiles (see Table 2 for statistical criteria).

As evidenced by ANOVAs, the groups differed significantly from each other across all goal variables, with effect sizes (η^2) ranging from 0.37 to 0.68 (Table 3).

These groups were labelled after the configuration of the various goals in each profile (see Fig. 1). Group 1 ($N_{t1} = 102, 26\%; N_{t2} = 89, 23\%$) showed moderate levels of achievement and social goals and was thus labelled the Overall-Moderate group. Group 2 ($N_{t1} = 63, 16\%; N_{t2} = 73, 19\%$) displayed overall low achievement and social goals, with slightly higher prosocial friendship oriented goals, and was labelled the Disaffected group. Group 3 was labelled the Performance-oriented group ($N_{t1} = 75, 19\%; N_{t2} = 59, 15\%$) due to its focus on academic success, with high levels of all performance goals and low levels of mastery and social goals. Group 4 ($N_{t1} = 43, 11\%; N_{t2} = 83, 22\%$) showed

Table 2
BIC values for different cluster solutions.

Clusters	BIC(LL)	BIC(L ²)
1-Cluster	16,923.1700	1481.5115
2-Cluster	16,353.7146	912.0562
3-Cluster	16,074.1348	632.4764
4-Cluster	15,894.0520	452.3936
5-Cluster	15,836.2637	394.6053
6-Cluster	15,830.7497	389.0912
7-Cluster	15,846.1899	404.5315

Note: Lower values indicate better fit with the data.

exclusively high mastery and social goals, and very low (the lowest) levels of performance goals, and was labelled the Mastery-Social oriented group. Group 5 was labelled the Overall-High non-competitive group ($N_{t1} = 56, 14\%; N_{t2} = 49, 13\%$) due to its very high pursuit of all goals except for performance-competitive goals. Group 6 showed a focus on achievement, with high performance and mastery goals and relatively lower social goals, and was thus labelled the Performance-Mastery oriented group ($N_{t1} = 55, 14\%; N_{t2} = 33, 9\%$).

Next, students’ multiple achievement and social profiles were further validated by looking at how they linked to other motivational, engagement, and achievement outcomes. The results pointed to relatively consistent differences across the measures of control beliefs, which imply that the various profiles showed different adaptability. When contrasted across control beliefs (see Table 4), the groups showed more differences in agency beliefs (effect sizes ranging from 0.04 to 0.13) than in means-ends beliefs (effect sizes ranging from 0.03 to 0.05). More specifically, concerning agency for effort, Disaffected and Performance-oriented students showed significantly lower scores, and compared to the others, students in groups emphasizing mastery (Mastery-Social, and Overall-High non-competitive) had highest scores. Students in groups emphasizing high mastery and performance concerns (Overall-High non-competitive, and Performance-Mastery) had highest scores on agency beliefs of ability. With respect to means-ends beliefs, Performance-oriented students emphasized effort less, when compared to Overall High non-competitive students; and emphasized ability more, when compared to Mastery-Social oriented students.

Differences in goal profiles were also analysed at the 10th grade (Table 5), revealing patterns of differences similar to those found at the 9th grade. Both at the 9th and the 10th grades, the Disaffected group had the lowest scores in agency for effort and agency for ability. At the two measurement points, the highest scores in those variables were held by students with a mastery focus (Mastery-Social, Overall-High non-competitive, and Performance-Mastery oriented).

Concerning means-ends beliefs, some similarities were also found between the 9th and the 10th grades. Students with a Performance-oriented profile had the higher mean score on ability attributions relative to the other profiles, while students with a Mastery-Social profile had the lower score in that variable both at the 9th and the 10th grades. Students with an Overall-High non-competitive profile showed the highest score on effort attributions at the two grade-levels.

Table 1
Goodness of fit statistics for alternative models.

Model	χ^2	df	p	CFI	RMSEA	Model comparison	$\Delta\chi^2$	Δdf	Δp	ΔCFI
M1 Configural invariance	1370.17	961	<0.001	0.95	0.04					
M2 Metric invariance	1397.14	978	<0.001	0.95	0.05	M2-M1	26.98	17	0.06	0.00
M3 Equivalence of error variances	1480.93	1002	<0.001	0.94	0.06	M3-M2	83.79	24	0.00	-0.01
M3b Equivalence of error variances + four pairs or error terms free	1434.46	998	<0.001	0.95	0.05	M3b-M2	37.32	20	0.01	0.01
M4 Scalar invariance	1514.01	1016	<0.001	0.94	0.06	M4-M3b	79.55	18	0.00	-0.01
M4b Scalar invariance + two additional item intercepts free	1450.56	1008	<0.001	0.95	0.05	M4b-M3b	16.10	10	0.10	0.01
M5 Equivalence of factor variances	1473.03	1015	<0.001	0.95	0.06	M5-M4b	22.47	7	0.00	0.00
M5b Equivalence of factor variances + one factor variance free	1459.43	1014	<0.001	0.95	0.05	M5b-M4b	8.87	6	0.18	0.00
M6 Equivalence of factor correlations	1477.93	1035	<0.001	0.95	0.05	M6-M5b	18.50	21	0.62	0.00

Table 3
Group differences in achievement goals and social goals at both measurement points.

	Overall-Moderate (N _{t1/t2} = 102/89)		Disaffected (N _{t1/t2} = 63/73)		Performance oriented (N _{t1/t2} = 75/59)		Mastery-Social oriented (N _{t1/t2} = 43/83)		Overall-High (non-compet) (N _{t1/t2} = 56/49)		Performance-Mastery oriented (N _{t1/t2} = 55/33)		F	p	η ²
	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD			
Variable t1															
Mastery	4.31	0.47	3.81	0.52	4.01	0.52	4.78 ab	0.29	4.87 a	0.21	4.63 b	0.41	58.24	0.000	0.43
Pappr-Self	3.00	0.44	2.14	0.56	3.36 a	0.46	1.70	0.59	3.44 a	0.57	4.07	0.47	166.60	0.000	0.68
Pappr-Comp	2.21 a	0.83	1.56	0.66	3.11	0.73	1.14	0.37	2.46 a	0.92	3.88	0.61	98.92	0.000	0.56
Pavoid	3.35	0.55	2.63 a	0.62	3.64 b	0.51	2.44 ab	0.68	3.73 b	0.59	4.30	0.45	75.96	0.000	0.50
Prosoc Friend	4.52 a	0.44	4.17 b	0.60	3.77	0.57	4.78 a	0.35	4.90	0.24	4.33 b	0.60	46.61	0.000	0.38
Prosoc Learn	3.85 a	0.44	3.24 b	0.54	3.17 b	0.46	4.10	0.54	4.35	0.44	3.64 a	0.59	55.34	0.000	0.42
Social Resp	3.75 a	0.42	3.19 b	0.44	3.31 b	0.46	3.97	0.42	4.25	0.33	3.75 a	0.55	47.73	0.000	0.38
Variable t2															
Mastery	4.26	0.51	3.82 a	0.52	3.96 a	0.60	4.78 b	0.26	4.90	0.20	4.64 b	0.45	62.25	0.000	0.45
Pappr-Self	2.99	0.44	2.12	0.59	3.32 a	0.42	1.75	0.61	3.44 a	0.61	4.19	0.49	161.23	0.000	0.68
Pappr-Comp	2.24 a	0.82	1.55	0.60	3.06	0.63	1.16	0.40	2.55 a	0.87	3.85	0.67	114.99	0.000	0.60
Pavoid	3.31	0.49	2.56 a	0.66	3.60 b	0.50	2.34 a	0.66	3.67 b	0.69	4.28	0.51	85.43	0.000	0.53
Prosoc Friend	4.54 a	0.45	4.21 b	0.58	3.80	0.66	4.83 c	0.31	4.89 c	0.23	4.46 ab	0.56	44.48	0.000	0.37
Prosoc Learn	3.86 a	0.45	3.24 b	0.55	3.23 b	0.46	4.08	0.54	4.35	0.45	3.72 a	0.46	51.68	0.000	0.41
Social Resp	3.75 a	0.43	3.18 c	0.46	3.27 c	0.38	3.95	0.40	4.20	0.29	3.81 ab	0.53	56.09	0.000	0.43

Note: Means within a row sharing the same subscripts are not significantly different at $p < 0.05$ (with Games-Howell correction).

Differential relations of goal profiles with engagement and achievement showed no differences in engagement at the 9th grade, but at grade 10, Mastery-Social oriented and Overall-High non-competitive groups scored significantly higher than students in the Disaffected group. As to achievement, only Mastery-Social oriented and Disaffected groups differed from each other, and this held at both measurement points.

Finally, we examined the extent to which the group memberships were stable over time, and what sorts of patterns of change were considered as “types” (i.e., observed frequency significantly higher than expected frequency) or “antitypes” (i.e., observed frequency significantly lower than expected frequency). For this, we used configural frequency analysis (CONFA; Von Eye, 1990). Among all the possible time 1/time 2

combinations (see Table 6), five were flagged as types, which all referred to cells representing stability in group membership (i.e., same group at both measurement points). That is, the five types indicate that more frequently than expected, the students display the same goal profile across the two measurement points, and this applies to all groups except for Group 1 (Overall-Moderate group). Although the percentage of students displaying identical profiles over time was only 36%, no group membership changes were significantly more frequent than expected. Also, no antitypes were identified, meaning that no changes in group memberships were less frequent than would be expected by chance alone. Thus, despite no significant overall changes in group memberships, the pattern of frequencies nevertheless revealed individual changes (see Table 6). In order to better understand these changes,

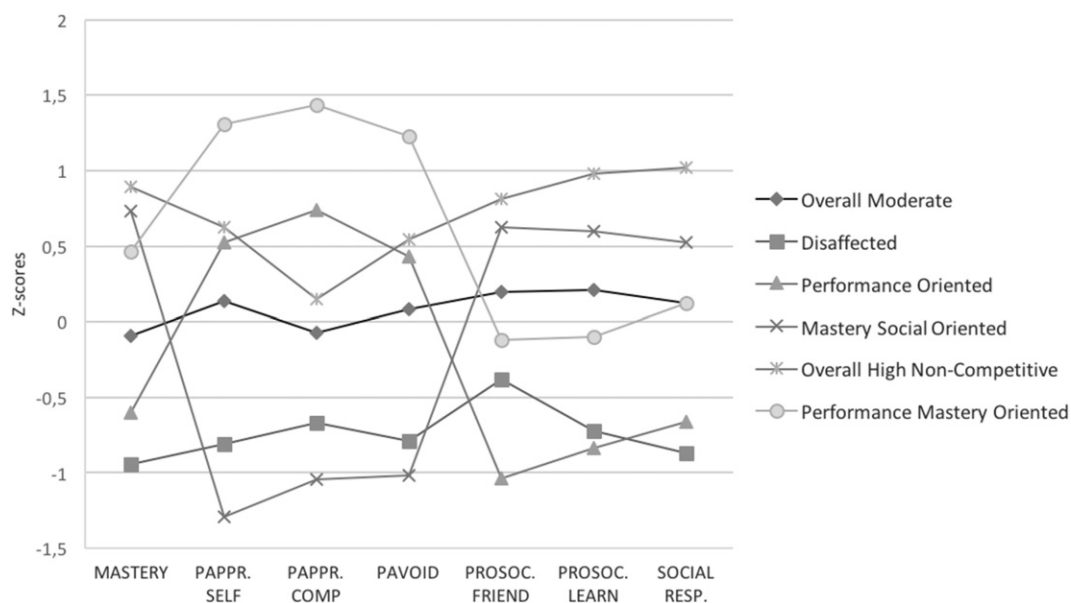


Fig. 1. Standardized mean score profiles on goal scales as a function of group membership. Note. MASTERY = Mastery Goals; PAPP.R. SELF = Performance-Approach Self-Presentation Goals; PAPP.R. COMP = Performance-Approach Competitive Goals; PAVOID = Performance Goals; PROSOC. FRIEND = Prosocial Friendship Oriented Goals; PROSOC. LEARN = Prosocial Learning Oriented Goals; SOCIAL RESP = Social Responsibility Goals.

Table 4
Group differences in control beliefs, engagement and achievement at 9th grade.

Variable	Overall-Moderate		Disaffected		Performance oriented		Mastery-Social oriented		Overall-High (non-compet)		Performance-Mastery oriented		F	p	η ²
	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD			
Agency-Effort	3.10 _{ac}	0.46	2.75 _b	0.44	2.95 _{ab}	0.45	3.30 _c	0.44	3.29 _c	0.39	3.10 _{ac}	0.47	F(5388) = 12.32	0.000	0.13
Agency-Ability	2.67 _{ab}	0.49	2.41 _a	0.54	2.63 _{ab}	0.62	2.66 _{ab}	0.70	2.78 _b	0.64	2.82 _b	0.66	F(5388) = 3.47	0.004	0.04
Means-Ends-Effort	3.07 _{ab}	0.40	2.93 _{ab}	0.44	2.91 _a	0.50	3.08 _{ab}	0.36	3.18 _b	0.33	3.08 _{ab}	0.41	F(5388) = 3.73	0.003	0.04
Means-Ends-Ability	2.24 _{ab}	0.43	2.28 _{ab}	0.57	2.47 _b	0.55	2.11 _a	0.54	2.40 _{ab}	0.53	2.41 _{ab}	0.55	F(5388) = 3.66	0.003	0.04
Engagement	1.44 _a	0.53	1.32 _a	0.52	1.44 _a	0.48	1.56 _a	0.41	1.40 _a	0.60	1.50 _a	0.50	F(5333) = 1.19	n.s.	
Achievement	3.00 _{ab}	0.72	2.87 _a	0.69	2.98 _{ab}	0.77	3.36 _b	0.83	3.01 _{ab}	0.72	3.14 _{ab}	0.86	F(5388) = 2.45	0.033	0.03

Note: Means within a row sharing the same subscripts are not significantly different at $p < 0.05$ (with Games-Howell correction).

we took a broader look at whether changes occurred between extreme groups, that is, between maladaptive profiles (Disaffected and Performance-oriented) and adaptive profiles (Overall-Moderate, Overall-High non-competitive, Mastery-Social, and Performance-Mastery). For this, we ad hoc evaluated the types of changes taking place across the different profiles. According to this descriptive examination, among students with a maladaptive profile at 9th grade, 41% moved to a more adaptive profile at 10th grade, and among students with an adaptive profile at 9th grade, only 21% moved to a maladaptive profile at 10th grade. Thus, although <40% of the students exhibited an identical motivational profile over time, only 28% displayed a clear qualitative change from either an adaptive profile to a maladaptive one or vice versa.

4. Discussion

4.1. Profiles of multiple achievement and social goals

The aim of this study was to expand research on students' motivational goals, by jointly investigating their various goal strivings in the school context. To our knowledge, no existing empirical research has analysed students' profiles of achievement and social goals. Hence, the first aim was to describe how students could be classified according to their achievement and social goals, and to identify students' more typical multiple goal profiles.

The largest group (26%) was characterized by an overall moderate level of the various goals (Overall-Moderate profile). Two other groups also exhibited a rather “flat” profile consisting of a mostly uniform pursuit of the various goals, but at different goal levels: an overall high profile (Overall-High non-competitive profile) and a generally low-level profile (Disaffected profile).

These three “flat” goal profiles (representing over 50% of the sample) describe a typical motivational configuration (at three distinct goal levels), evidencing an equivalent relevance of the academic and social dimensions of the school contexts in organizing and directing these students' motivation and behavior. While displaying very similar goal configurations, the three profiles show quantitative differences, which

would probabilistically imply different levels of motivation and involvement in the school setting (as was found particularly for the Disaffected profile).

Students in the Performance-oriented and in the Performance-Mastery profiles (approximately 28% of the students) also share a similar goal configuration, predominantly focused on academic achievement, especially on performance goals, over social concerns.

In line with the school priorities, no profile focused on high social goals over achievement goals. Indeed, while students in the Mastery-Social profile (representing 11% of the students) showed very high social goals and very low performance goals, they were nonetheless strongly mastery-oriented.

The description of these multiple goal profiles also allowed understanding the ways in which academic and social motivations in school may be connected. Results of this study support the expectation that mastery goals should be associated with having friends and social responsibility (e.g., Anderman & Anderman, 1999; Levy-Tossman et al., 2007; Levy-Tossman, Kaplan, & Patrick, 2004; Nicholls, 1992; Wentzel, 1996, 2000). Theoretically, one would expect that social goals and mastery goals might share a common underlying general motive of growth and development in both the academic and social school domains. Supporting, in part, this suggestion, Nicholls (1992) has associated mastery goals with the belief that learning and development are achieved through collaboration with others. Some other studies have also associated mastery goals with the social goals of adhering to social norms and expectations and the desire to have friends (Anderman & Anderman, 1999; Hinkley, McInerney, & Marsh, 2001).

Conversely, high social goals seem difficult to reconcile with high performance goals (see the Performance-oriented, Mastery-Social, and Performance-Mastery profiles). It is possible that the focus of Performance-oriented students on social comparison and self-presentation concerns may lead them to avoid personal exposure and sharing of difficulties, and such self-focused orientation might even undermine the social skills necessary for making friends (see for example Kaplan, 2004). These findings support, in part, the suggestion put forward by some researchers that goal profiles with a higher level of performance

Table 5
Group differences in control beliefs, engagement and achievement at 10th grade.

Variable	Overall-Moderate		Disaffected		Performance oriented		Mastery-Social oriented		Overall-High (non-compet)		Performance-Mastery oriented		F	p	η ²
	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD			
Agency-Effort	2.94 _a	0.43	2.65 _b	0.47	2.91 _{abd}	0.48	3.22 _c	0.47	3.28 _c	0.48	3.12 _{acd}	0.42	F(5379) = 16.82	0.000	0.18
Agency-Ability	2.63 _{ab}	0.44	2.46 _b	0.48	2.59 _b	0.40	2.68 _{ab}	0.54	2.92 _a	0.63	2.77 _b	0.57	F(5379) = 5.31	0.000	0.06
Means-Ends-Effort	2.98 _{ab}	0.42	2.84 _a	0.44	2.99 _{ab}	0.43	2.98 _{ab}	0.43	3.16 _b	0.41	2.90 _{ab}	0.50	F(5379) = 3.37	0.005	0.04
Means-Ends-Ability	2.32 _{ab}	0.44	2.24 _{ab}	0.43	2.47 _a	0.50	2.14 _b	0.47	2.28 _{ab}	0.46	2.39 _{ab}	0.57	F(5379) = 3.73	0.003	0.04
Engagement	1.31 _{ab}	0.71	1.07 _a	0.62	1.33 _{ab}	0.64	1.57 _b	0.50	1.54 _b	0.47	1.39 _{ab}	0.52	F(5202) = 3.52	0.004	0.08
Achievement	11.55 _{ab}	2.9	10.80 _a	2.83	10.88 _{ab}	2.49	12.28 _b	2.5	12.28 _{ab}	2.54	11.78 _{ab}	2.46	F(5379) = 3.86	0.002	0.04

Note: Means within a row sharing the same subscripts are not significantly different at $p < 0.05$ (with Games-Howell correction).

Table 6
Configural frequency analysis on Time 1 and Time 2 goal groups.

Configuration (T1/T2)	Observed <i>f</i>	Expected <i>f</i>	χ	<i>p</i>	
11	32	23.06	1.86	0.031	
12	16	18.91	-0.67	0.252	M
13	9	15.29	-1.61	0.054	M
14	20	21.50	-0.32	0.373	
15	17	12.69	1.21	0.113	
16	6	8.55	-0.87	0.192	
21	15	14.53	0.12	0.451	A
22	29	11.92	4.95	0.000	Type
23	9	9.63	-0.20	0.420	
24	8	13.55	-1.51	0.066	A
25	1	8.00	-2.47	0.007	A
26	1	5.39	-1.89	0.029	A
31	14	16.83	-0.69	0.245	A
32	18	13.81	1.13	0.129	
33	24	11.16	3.84	0.000	Type
34	6	15.70	-2.45	0.007	A
35	3	9.27	-2.06	0.020	A
36	8	6.24	0.70	0.241	A
41	6	9.68	-1.18	0.118	
42	5	7.94	-1.04	0.148	M
43	2	6.42	-1.74	0.041	M
44	25	9.03	5.31	0.000	Type
45	4	5.33	-0.58	0.282	
46	0	3.59	-1.90	0.029	
51	11	12.45	-0.41	0.340	
52	1	10.21	-2.88	0.002	M
53	3	8.25	-1.83	0.034	M
54	19	11.61	2.17	0.015	
55	15	6.86	3.11	0.001	Type
56	5	4.62	0.18	0.429	
61	11	12.45	-0.41	0.340	
62	4	10.21	-1.94	0.026	M
63	12	8.25	1.30	0.096	M
64	5	11.61	-1.94	0.026	
65	9	6.86	0.82	0.206	
66	13	4.62	3.90	0.000	Type

Note. Numbers in "Configuration" refer to the group (i.e., 1 = Group 1). T1 = Time 1, T2 = Time 2. A = Adaptive change, M = Maladaptive change.

relative to mastery goals were associated with more mistrust among friends, in comparison to profiles with a higher level of mastery relative to performance goals (Giota, 2010; Levy-Tossman et al., 2007). Recently, it has also been suggested that competitive performance and cooperative social goals may be conflicting in predicting achievement (Luo, Lee, & Koh, 2015). In addition, the present study further raised the hypothesis that a strategy to reconcile a high performance goal orientation with high social goal pursuit may require putting aside the more competitive performance concerns (as illustrated by the lower level of performance-approach competitive goals observed in the Overall-High non-competitive profile).

4.2. Adaptability of goal profiles

The second aim of this study was to analyse the extent to which the various goal profiles showed a differential adaptability.

Findings suggested that certain profiles are significantly more adaptive in relation to other motivation outcomes. Taken together, the results showed that Mastery-Social focused students showed the highest level of agency beliefs for effort, and the lowest level of ability attributions. By contrast, Performance-oriented students showed the lowest level of effort attribution coupled with the highest level of ability attribution. These results partially confirm the assumption that a "fixed" view of ability (the conception of one's intelligence as a fixed entity) as a determinant of learning and achievement is more likely among students with performance-focused goals, whereas a more "malleable" view of effort (the conception of intelligence as a malleable quality) as a key contributing factor is more likely among students focusing on mastery goals (Dweck, 1996; Dweck & Leggett, 1988). Results also

support previous studies linking performance-focused goal profiles to lower perceived efficacy (assessed through agency for effort and for ability in the present study), as well as results showing the compensatory role of mastery goals when coupled with performance goals (Ainley, 1993; Bouffard et al., 1995; Pintrich, 2000).

Disaffected students showed significantly lower perceived access to effort than every other group, except for Performance-oriented students who also showed a very low level of agency for effort, as well as a similarly generally debilitating motivational pattern.

While achievement goal research has linked mastery and performance goals to contrasting patterns of beliefs about competence, success, and effort (see for example Maehr & Meyer, 1997), this study further specifies these relationships by considering two dimensions of competence beliefs. Results suggested that students' goal pursuits may be less contrasted in relation to their beliefs about the causes of school success (means-ends beliefs; effect sizes = 0.04), and more strongly differentiated in their perceived access to those causal factors (agency beliefs; effect sizes ranging from 0.04 to 0.18).

Yet, few significant differences were found in school achievement and engagement among the various goal profiles. However, in most cases the means were in the expected direction with the Mastery-Social focused students showing the highest levels of engagement and achievement, and the Disaffected group showing the lowest scores (see for example Midgley, Arunkumar, & Urdan, 1996; Pintrich, 2000).

Initial research on multiple goals was guided by the hypothesis that the combination of high performance and high mastery goals could be advantageous (e.g., Ainley, 1993; Bouffard et al., 1995; Pintrich, 2000; Pintrich & Garcia, 1991). In the present study, the Performance-Mastery oriented group showed a more adaptive pattern of academic motivation and achievement (higher agency beliefs, lower ability attributions, higher engagement and achievement) than the Performance-oriented group. However, the Mastery-Social oriented students showed an even more adaptive profile (higher agency for effort, lower ability attributions, higher engagement and achievement) than the Performance-Mastery oriented students. These results support, in part, some of the previous research on achievement goals (e.g., Pintrich & Garcia, 1991; Urdan, 1997; Wolters et al., 1996).

The two more maladaptive profiles were the Disaffected and the Performance-oriented groups, showing various additional motivationally debilitating variables: low agency beliefs, and a dysfunctional attributional profile (the lowest effort attributions and the highest ability attributions).

It should be noted that these two profiles are formed by the lowest levels of both mastery and of social goals, supporting the assumption that not only low interest in academic mastery, but also detachment from the school social goal structure may play a role in students' learning (Wentzel, 1996). By disregarding social relations, these students may miss important opportunities for learning and development. Indeed, investigators have recognized that social-responsibility goals and behaviors such as cooperating and complying with rules are important aspects of students' learning and performance (Wentzel & Wigfield, 1998). Moreover, feelings of belonging deriving from prosocial goal pursuit have also been viewed as playing a central role in school-related motivation (Connell & Wellborn, 1991; Covington, 2000). Further supporting this hypothesis, findings of the present study evidence that students who scored higher on academic achievement (Mastery-Social profile) also showed very high social goals.

Looking at the findings from the perspective of the level of motivation, it is interesting to note that the lowest-achieving students showed a generally low level of the various goals (Disaffected profile). These results suggest that the general level of motivation may also be relevant for learning and performance, supporting similar findings from previous studies in the social-motivation domain (Wentzel, 1989) and in the achievement-goals domain (e.g. Midgley et al., 1996; Pintrich, 2000). More generally, this finding points towards the adoption of combined qualitative (goal content) and quantitative (goal level) perspectives of

motivation, for a more complete understanding of students' school engagement and learning.

Findings pointed to differential adaptability of goal profiles across the school transition. Although the general pattern of relationships between the various goal profiles and the other motivational, engagement, and achievement outcomes was similar at the 9th and the 10th grade, by the 10th grade, the groups were more contrasted in their relations with agency beliefs (effect sizes ranging from 0.04 to 0.13 at time 1 and from 0.06 to 0.18 at time 2), with engagement (effect sizes *n.s.* at time 1 and 0.08 at time 2), and with achievement (effect sizes of 0.03 at time 1 and 0.04 at time 2). This finding suggests that at this grade level, goal orientations play a more critical role in students' motivation and achievement than at the 9th grade. The growing complexity of subject matters, and the increased requirement for independent mastery strivings and prosocial and socially responsible behavior, may explain why the Disaffected profile and the Performance-oriented profile become even more maladaptive at the 10th grade.

4.3. Stability and change in students' goal profiles

Finally, as a specific contribution, the present study used a longitudinal person-centered approach allowing analyzing changes in students' goal profiles over time. Results suggested that stability is more frequent than significant changes, supporting Tuominen-Soini et al.'s (2011) study. It should be noticed that the stability of students' group membership is not necessarily incompatible with changes in mean levels of specific individual goals (see Appendix A showing slight decreases in performance-avoidance, mastery, and social-responsibility goals).

Moreover, this study extended existing research by evidencing that a general trend for stability still holds for comprehensive profiles combining both achievement and social goals. In addition, students' goal profiles were found to be moderately stable, even across the school transition into secondary school.

Beyond the theoretical implications of the analysis of frequency and direction of goal change for understanding goal plasticity, it is also interesting to examine their functional implications. In fact, the consideration of the adaptability of the goal profiles evidenced that positive changes towards a more adaptive profile seem more likely than changing from adaptive to maladaptive profiles. Nonetheless, for the few students moving to a more maladaptive profile, the transition into the 10th grade seems to have implied a reorganization of goal pursuits that may negatively influence motivational and achievement outcomes.

The present study has some limitations that need to be considered when interpreting and generalizing from the results. It should be noted that the results on the differential adaptability of the various goal profiles might be specific to the age group and to the context of the middle-class Portuguese student sample, and one should be cautious of overgeneralized interpretations of the results.

Additionally, findings concerning the relations of social goals with achievement goals and with other motivational and achievement outcomes refer specifically to prosocial and social-responsibility goals. The advancement of our understanding of students' multiple goal profiles would be improved by the inclusion of other types of social goals, such as more competitive social strivings, in future research. Moreover, the distinction between social-development and social-demonstration goals (Shim & Finch, 2014) could provide a more nuanced understanding of social goals' effects.

Finally, this study relied mostly on self-report measures, which may have introduced some response biases. Future studies should combine self-report measures with the use of more direct methods, such as peer assessment of students' social behavior.

5. Conclusions

The person-centered analysis of achievement and social goals offered a more holistic view of students' motivation in the school context.

Six distinct combinations emerged, essentially invariant across school levels, indicating the goal profiles that are more representative of student's individual motivational orientations.

Results indicated that most students were not focused on achievement goals over social goals, highlighting the importance of the social dimensions of the school setting in determining students' motivation. This implies that the role of social goals in directing students' motivation and classroom behavior should be acknowledged in research and when planning classroom instruction, teaching methods, and classroom management.

The results of latent cluster analysis also revealed the ways in which students organize, coordinate, and prioritize multiple achievement and social goals, shedding some light on the possible transactions between academic and social motivations at school. Notably, social goal pursuits seem to be associated with mastery achievement goals, but social purposes seem difficult to reconcile with high competitive strivings.

Moreover, findings suggested a differential adaptability of the various goal profiles. First, it should be noted that the differential adaptability findings add external validity to the distinctiveness of the various goal profiles. Results suggested that performance goals when coupled with mastery goals may not have debilitating effects, and appear to be more adaptive than performance-focused profiles. However, performance and mastery combinations seem less advantageous than the Mastery-Social oriented profiles. In general, a high social and mastery orientation along with lower performance concerns seems a compatible and effective goal combination, ensuring good person-environment fit in the school context.

Besides goal content, this study highlighted that the level of goal pursuit is also likely to be related to achievement outcomes.

There were nevertheless four similarly adaptive profiles, supporting an equifinality perspective by showing that diverse profiles rather than a particular one can foster students' school motivation and achievement (e.g., Midgley et al., 2001; Pintrich, 2000). This also points out that the positive or negative role of one goal may depend on the overall individual goal profile, leading to possibly equivalent outcomes of different levels of any single goal.

The present study also examined stability and change in students' multiple goal profiles and in goal adaptability, complementing previous research based on mean-level changes on separate goals. Findings pointed mainly to stability over time, but suggested a growing differential adaptability of students' goal profiles across the transition into secondary school.

Finally, concerning the operational definition and assessment of students' goals, the results of this study suggested the use of a more differentiated approach. Distinct types of social goals and performance goals were apparent, suggesting the value of separately assessing prosocial-friendship goals, prosocial-learning goals and social-responsibility goals, as well as performance approach-self presentation, performance approach-competitive, and performance-avoidance goals. These results support previous arguments for the need to consider specific types of performance goals (Brophy, 2005; Elliot, 2005; Elliot & Murayama, 2008; Grant & Dweck, 2003; Hulleman, Schrage, Bodmann, & Harackiewicz, 2010; Lemos, 1996; Lemos, Gonçalves, Lens, & Rodrigues, 2014; Urdan & Mestas, 2006), and also suggest the existence of diverse components involved in school-related social goals, which may allow more precise links to diverse goal effects.

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Appendix A. Descriptive statistics and latent correlations (Time 1 and Time 2)

	M	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14
MASTERY	4.36	0.54	1.00													
PAPPR_SELF	3.00	0.87	0.08	1.00												
PAPPR_COMP	2.42	1.14	-0.02	0.82	1.00											
PAVOID	3.43	0.77	0.12	0.91	0.72	1.00										
PROSOC_FRIEND	4.34	0.61	0.45	-0.09	-0.18	-0.04	1.00									
PROSOC_LEARN	3.68	0.66	0.37	-0.15	-0.24	-0.10	0.72	1.00								
SOCIAL_RESP	3.68	0.58	0.69	0.01	-0.13	-0.01	0.65	0.49	1.00							
MASTERY_2	4.29	0.64	0.65	-0.02	-0.09	0.02	0.32	0.26	0.50	1.00						
PAPPR_SELF_2	2.80	0.94	0.07	0.58	0.53	0.47	-0.21	-0.25	-0.04	0.08	1.00					
PAPPR_COMP_2	2.30	1.09	0.03	0.46	0.49	0.34	-0.29	-0.32	-0.10	-0.02	0.82	1.00				
PAVOID_2	3.22	0.86	-0.02	0.46	0.44	0.50	-0.10	-0.17	-0.08	0.12	0.91	0.72	1.00			
PROSOC_FRIEND_2	4.35	0.63	0.44	0.03	-0.04	0.06	0.65	0.58	0.55	0.45	-0.09	-0.18	-0.04	1.00		
PROSOC_LEARN_2	3.67	0.64	0.34	-0.06	-0.15	-0.09	0.54	0.71	0.38	0.37	-0.15	-0.24	-0.10	0.72	1.00	
SOCIAL_RESP_2	3.63	0.57	0.61	-0.09	-0.15	-0.11	0.54	0.45	0.86	0.69	0.01	-0.13	-0.01	0.65	0.49	1.00

Note. All correlations above |0.10| are significant at $p < 0.05$. Small boxes refer to stability correlations over time.

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