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Year 7 and Year 10 pupils' perceptions of classroom goal structures

for Maths, English, Science, Art and Geography

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Abstract

Goal theorists suggest that classroom environments can affect pupils' approaches to studying. Classes that emphasise the importance of grades are likely to be experienced as performance-approach or performance-avoidance focused whilst those that emphasise understanding are likely to be experienced as mastery focused. Some subject areas e.g. Maths, Science, English might lend themselves to emphasise performance or mastery. In addition, as students near important exams, classes may start to emphasise performance more than mastery. In this fully orthogonal study, 400 pupils studying Maths, English, Science, Geography and Art in year 7 and year 10 (n=20 per group) completed the Patterns of Adaptive Learning Styles (PALS) questionnaire to assess their perceptions of the culture in their classrooms. Results from the factorial ANOVA revealed that contrary to expectations, pupils in Year 7 perceived their classes to be significantly more performance-avoidance focused relative to pupils in Year 10. In terms of subjects, pupils studying Science and Geography perceived their classes to be significantly *less* mastery focused relative to the other subjects whilst pupils studying Art perceived their classes to be *less* performance-approach focused. The implications of the findings are discussed in terms of the effects of pedagogy on pupils' perceptions of classroom environments.

Introduction

The purpose of this study was to examine whether there were differences in pupils' perceptions of the goal structures in their classrooms based on the subjects they studied (Maths, English, Science, Geography, Art) and their year of study (year 7 vs. year 10).

Achievement-goal theorists suggest that pupils approach achievement-related tasks with a variety of goals. For example, pupils may place an emphasis on understanding and learning as much as possible about the subject they are studying. Goal theorists refer to this approach as a mastery approach. Sometimes pupils focus on performing well or more precisely, demonstrating ability to others. This approach has been labeled a performance-approach. However, sometimes in trying to demonstrate ability, pupils may focus on simply trying not to demonstrate low ability and this approach has been labeled a performance-avoidance approach. Evidence has consistently shown that operating with different goal orientations influences pupils' ongoing motivation and the grades they achieve.

Some theorists suggest that pupils' perceptions of the contexts they are in strongly determine the approaches they adopt. For example, if a pupil perceives that their teachers are placing an emphasis on grades, pupils may adopt performance-approach or performance-avoidance approaches to their studies. Teachers can also emphasise the importance of understanding and mastering the subject and when such messages predominate, pupils are more likely to adopt mastery approaches to their studies.

Other factors may also play a role in determining the ways that pupils perceive their classes. For example, some subjects may lend themselves to be taught in a more performance or mastery-orientated fashion. For example, because of time constraints to achieve full understanding, some rote learning may be beneficial for future understanding and in these cases pupils may adopt a more performance-based approach. Learning passages from Shakespeare might give pupils examples to work from without them fully understanding the import of the quotes. In this study, we examine whether there may be subject differences in the way that pupils perceive the goal orientations of their classes.

Another factor that may influence teaching styles is when pupils are taught. As pupils approach important exams, teachers may focus more features of tasks that promote performance and less

on features that promote understanding. In this study, we examined whether year of study might affect pupils perceptions of their classes.

Achievement-goal theory

Promoted initially by Murray (1938) and popularized by McClelland and colleagues in the 1950's (McClelland et al., 1953) achievement motivation is the term used to broadly describe the findings that supported a claim that individuals had a fundamental desire to achieve. By the late 70's, theorists began offer suggestions what and why individuals were trying to achieve. These theories came under the rubric of what became known as Achievement Goal Theory (AGT) and over the last thirty years have emerged as one of the most prominent theories of academic motivation.

Early research on achievement goals focused on two types of motivational objectives. The first was known as task-involved goals whilst the second had differing labels such as performance (Dweck & Elliot, 1983), ego involved (Nicholls, 1984), or ability focused (Ames & Archer, 1988; Ames, 1992) goals. The different labels are indicative of different conceptualisations, though over time these ideas condensed into a mastery and performance goal model. By the 1990's, mastery and performance goals had been separated out into approach and avoidance. Performance approach goals focused on demonstrating ability relative to others whilst performance avoidance goals focused on avoiding demonstrating low ability. Mastery-approach goals represent a desire to develop competence, improve skills and understand concepts (Elliot & Harackiewicz, 1996, Elliot & Church, 1997; see Elliot, 2005 for a review). A fourth goal, mastery-avoidance defined as the desire not to miss opportunities to learn (Elliot & McGregor, 2001) completed the matrix of achievement goals.

One of the main reasons achievement-goal theories have been so popular is because studies have consistently shown that operating with different orientations results in different academically-related outcomes. For example, students who focus on mastery goals report high levels of effort and persistence when faced with difficult problems and more frequent use of deep cognitive strategies (Ames & Archer, 1988; Grant & Dweck, 2003; Miller et al., 1996; Harackiewicz et al., 2000; Elliot & McGregor 2001, Wolters, 2004; Linnenbrink, 2005). Task mastery goals have also been associated with indices of well being, positive perceptions of academic ability and

higher levels of self efficacy (Kaplan & Maehr, 1999; Roeser, Midgley & Urdan, 1996; Linnenbrink, 2005). Kaplan & Maehr, (1999) found that whilst ego involved goals were positively related to disruptive behaviour, task mastery goals had a negative relationship. Furthermore, students who employ mastery goals are less likely to engage in self handicapping behaviours (Midgley & Urdan, 2001; Pintrich, 2000).

However, and somewhat counter-intuitively, mastery goals consistently fail to predict levels of achievement for both samples of college students (Barron & Harackiewicz, 2001; Elliott & Church, 1997; Elliot, McGregor & Gable, 1999; Elliot & McGregor, 1999, 2001; Harackiewicz et al., 1997, 2000) and younger adolescents (Skaalvik, 1997; Wolters 2004). Instead, it has been performance-approach goals that correlate with achievement (Elliot & McGregor, 1999; Harackiewicz et al., 2000; Skaalvik, 1997; Wolters, Yu & Pintrich, 1996; Wolters, 2004). The downside has been that performance-approach goals are associated with surface level cognitive strategies such as rote memorisation, lower levels of self regulation, seeking immediate assistance or giving up when confronted with difficulty and attributing failure to lack of ability rather than effort (Ames, 1992; Dweck & Leggett, 1988; Elliot & Harackiewicz, 1996; Grant & Dweck, 2003; Meece, Glienkie & Burg, 2006). Other studies have linked performance goals with self handicapping strategies such as procrastination and withdrawal of effort (Midgley & Urdan, 1995; Midgley, Arunkumar & Urdan, 1996). Anderman, Griesinger & Westerfield, (1998) also found links with cheating behaviour amongst middle school students.

Perceptions of classroom goal structures

Ames (1992) asserts that goal-related messages in the classroom influence the personal goal orientations that students adopt. She suggests that goal structures encompass instructional practices and classroom discourse that convey goal related messages to students. For example, a mastery goal structure stresses an incremental view of learning and improving, focusing on the acquisition of skills and understanding. On the other hand, performance structures emphasise levels of achievement in approach or avoidance terms such as achieving high grades or avoiding failure. Evidence has shown that prevailing goal structures are determined by a range of practices such as types of assignments, assessment procedures, the degree of choice and autonomy, classroom discourse and seating arrangements (Ames, 1992; Kaplan et al., 2002, Linnenbrink, 2005; Patrick et al., 2001; Urdan, 1997). In addition, studies have shown that correlations exist

between salient goal structures and the goal orientations students adopt (Anderman & Midgley, 1997; Anderman & Young, 1994; Kaplan & Maehr, 1999; Midgley & Urdan, 1995, 2001; Roeser, Midgly & Urdan,1996; Urdan, 2004; Urdan & Midgley 2003; Wolters 2004).

So do goal structures have similar effects as individual goal orientations? The evidence suggests that they do. Taking mastery structured learning environments first; studies have shown that pupils who perceived the climate in their classroom stressed effort and understanding were less likely to adopt avoidance behaviours and self handicapping strategies (Midgley & Urdan, 2001; Turner, Thorp & Meyer, 2002; Wolters, 2004). Young (1997) found that mastery goal structures in Maths and English classrooms positively predicted students' use of cognitive learning strategies whilst Kaplan, Urdan & Midgley (2002) found that perceptions of mastery structures correlated with lower incidences of disruptive behaviour in ninth grade students. On the other hand, performance goal structures have been shown to positively predict self handicapping strategies such as procrastination and disengaging from challenging tasks (Urdan, 2004; Midgley & Urdan 1995, 2001; Wolters, 2004). Indeed Lam et al., (2004) found that students in a performance orientated environment would sacrifice learning opportunities when they encountered a problem, have lower self efficacy after failure and more negative self evaluation than students in a mastery structured environment. In addition, Ryan, Geen & Midgley (1998) discovered that students in performance structured classrooms were less likely to ask questions than those in mastery structured classrooms.

In short, it seems that the perception of goal structures have important effects on students subsequent learning behaviours.

Year 7 (Key Stage 3, age range 11-12) and Year 10 (Key Stage 4, age range 14-15)

In the U.K. key stage 3 and key stage 4 represent two significant performance-measurement points both for schools and pupils. For schools, Year 10 represents the start of preparation for GSCE exams, a key set of national standardized tests. In a systematic and detailed set of studies Gallagher and Smith (2000) examined the effects of impending examination on pupils, teachers, and parents attitudes and behavior. In one section of the Gallagher and Smith study, Johnston & McClune (2000) found that when exams were impending, teachers changed their style of teaching to ones that optimized performance outcomes even when such styles were contrary to

their preferred mode of teaching. For pupils, building on work by anxiety theorists (e.g. Speilberger & Vagg, 1995; Sarason & Sarason, 1990) and intrinsic motivation theorists (e.g. Deci & Ryan, 1985; 2002), Remedios, Ritchie and Lieberman (2005) found that when faced with an important exam, pupils motivation decreased from pre to post exam, even when students had met their grade expectations. Given that the move to Year 10 represents an analogous situation e.g. the expectation of an impending exam, it was hypothesized that pupils in Year 10 would perceive their classrooms to be more performance-orientated relative to Year 7.

Subject differences

The second issue addressed by this study is the degree of variation that students perceive in goal structures and orientations across different subjects within the same institution. Research that has investigated classroom level differences in goal structures and orientations is often restricted to a single subject domain, often incorporating data from different schools (Turner et al., 2002; Wolters, 2004). Wolters, Yu and Pintrich (1996) studied seventh and eighth grade pupils taking Maths, English and Social Science. They demonstrated that goal orientations operated in the same way in each subject. However, they did not refer to any specific differences between subjects or the effects that variation might have on the adoption of achievement goals. Anderman et al., (2001) measured students valuing of tasks and competence beliefs across a variety of subjects and found significant differences in the valuing of reading and maths. This demonstrates that students' beliefs vary between domains but the finding does not allow us to conclude anything about goal orientations or structures. There are very few studies which have examined variations in goals structures and orientations across different subjects. A study by Lieberman & Remedios (2007) with university students found significant differences between achievement goals and different groups of university subjects (i.e. Arts, Science, Other) but the effect sizes were minimal.

In terms of expectations, the evidence is insufficient for us to develop specific hypotheses and at this point, we prefer to remain circumspect and treat the findings as exploratory.

The current study

The objective of the study was to examine whether there was variation in pupils (a) perceptions of classroom goal-structure based on two factors, (b) the subject students study and (c) the year of study they are in.

(a) The current study focuses on student perceptions for several reasons. Although Urdan & Schoenfelder (2006) query whether teachers are well equipped to create mastery orientated, autonomous, supportive learning environments, this claim may do a disservice to many. Schunk (2002) suggests that teachers and administrators often have an intuitive sense of concepts such as goals and efficacy and consider ways to integrate them into their teaching interactions. But even when practices are implemented well, as the evidence on classroom structure indicates, in the end it is *how pupils perceive* the climate that influences their subsequent behaviours.

(b) Research that has investigated classroom level differences in goal structures and orientations is often restricted to a single subject domain (Turner et al., 2002; Wolters, 2004). A study by Wolters, Yu and Pintrich (1996) that focused on pupils taking Maths, English and Social Science examined students' personal goals but not their perceptions of the classroom goal structures. The current study fills the gap in the literature by focusing on students perceptions of goal structures across five different subjects, three core subjects (Maths, Science, English) and two optional subjects (Art and Geography).

(c) Studies that investigate differences between goal structures and year of study tend to focus on the transition to middle school (Kaplan & Maehr, 1999; Kaplan & Midgley 1999; Urdan & Midgley 2003). This study focuses on the period after transition. Year 7 and Year 10 have been chosen because these two years represent significant achievement points for pupils (and teachers). Year 7 pupils start at 11-years old and KS3, Year 10, 14-years old, pre-KS4 exams.

Research questions and developing hypotheses

The main research question was whether there would be differences in pupils' perceptions of their classes depending on the subjects they studied and the year of study they were in. Three main dependent variables in the study were pupils perceptions of how performance-approach, performance-avoidance and mastery structured their classes were. The independent variables were year of study (year 7 vs. year 10) and subjects studied (Maths, English, Science, Geography

or Art). The analysis would be conducted using a fully between-subjects design ANOVA so the hypotheses are stated in terms of main effects and interactions.

In terms of hypotheses, some of the extant research does not offer substantial evidence to allow predictions to be made whilst other evidence does seem to be more indicative of direction of effects. For example, because year 10 students were nearing their key-stage four tests, it is suggested that this experience might cause teachers to emphasise grades more than understanding. This conclusion suggests that there would be significant main effects for year of study whereby students in year 10 would perceive their classes to be more performance-focused and less mastery focused relative to year 7. For subject type, Anderman et al., (2001) measured students valuing of tasks and competence beliefs across a variety of subjects and found significant differences in the valuing of reading and maths. It was therefore likely that there would be subject differences but it is unclear whether those differences would be uniform across subjects for all measures. For example, we may intuitively expect Art classes to be perceived as more mastery-focused relative maybe Science or Maths classes but the extant literature does not provide a strong enough base from which to derive specific conclusion.

In terms of interaction effects, we speculate that core curriculum subjects Maths, Science and English are likely to be experienced as increasingly more performance-focused and less mastery-focused in Year 10 compared to Art and Geography which we suggest will be perceived with the same orientation across Years 7 and Year 10.

Methods

Participants and institution

400 pupils from a large school in the North East of England took part in the study. Pupils were aged between 11 and 18 years old. The gender split was 47% male, 53% female in year seven and 42% male, 58% female in year ten. The school has approximately 1700 pupils has a comprehensive intake drawing students from a wide area encompassing a broad range of social and economic backgrounds. The school has a low proportion of students who speak English as an additional language and an average number of students who are eligible for free school meals (Ofsted, 2004).

Research instrument

The research instrument was the Patterns of Adaptive Learning Scales devised by Midgley et al. (2000). The scales consist of a series of statements followed by a five point likert scale. The respondent indicates how true the statement is for them; 5 is coded as "very true," and 1 as "Not at all true".

Procedure

A small scale pilot study was conducted with one year seven class and one year ten class. No students in either class were to participate in the main study. The purpose of the pilot study was to test data collection procedures, identify any problems and train a research assistant to deliver the questionnaire. The pilot study prompted the following alterations. Many students particularly in year seven did not understand the term "concepts" and were unfamiliar with the term "Neighbourhood". Subsequently these terms were changed on the audio recording to "ideas" and "the place where I live".

The final study was conducted in a one-week period dictated by times that were mutually convenient for the classroom teacher, and the researcher or research assistant. Care was taken not to disrupt exam preparation or coursework lessons. The questionnaire was completed during the first twenty minutes of the respondents' normal lesson. For each class, the researcher introduced themselves and a copy of the survey was given out to all pupils. The survey was then introduced and the copies of the questionnaire distributed to students. Students were asked to write their

subject, year group and class on the top of the booklet and told that they must not write their name or start to answer the questionnaire until prompted to do so. The instructions were then read aloud from a script or played on the audio recording. An example question was demonstrated and students were given the opportunity to ask questions. Once students began the questionnaire the researcher would remain silent except to answer respondents' questions. When the whole group had finished the responses would be collected and the class returned to the subject teacher. The instructions made it clear that answering the questions was entirely voluntary but all pupils chose to answer the questions.

Ethical Considerations

It was important that teachers were blind to purpose and nature of the study. Teachers were given the information sheet and consent form a day prior to the scheduled data collection. This allowed time for questions or objections but meant that teachers would not see their class again until the survey was administered. If the teacher objected, the class was not surveyed. To allay teachers' fears that the study was an assessment of themselves, teachers were informed that all data collected was anonymous and would not be used without their consent. The teacher was given the option to remain in the room whilst the survey was administered or return once it was complete. If they had any reservations teachers were aware that they could withdraw at any time and without consequence.

Results

In the first stage of the analysis, reliability analyses were conducted for the three constructs related to pupils' perceptions of classroom structure. The alpha for the three-item performance approach construct was .72, for the five performance avoidance construct was .81 and for the six item mastery construct was .82. The items were then averaged for each pupil to give a single score for each construct for each pupil. A five (subject: Maths v Science v English v Art v Geography) by two (Year of Study: Year 7 v Year 10) factorial analyses of variance was conducted for each measure. Table 1 shows a summary of the main effects and interactions. Olejnik and Algina (2000) recommend using partial eta-squared ($\acute{\eta}^2$) to measure the size of the treatment effect and Cohen (1988) suggests that values of .01, .06, and .14 be used to indicate small, medium and large effects.

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Insert Table 1 about here

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The findings summarised in Table 1 reveal that the pattern of effects differed by type-of-structure. For the two approach forms of classroom structure, main effects were observed for Subject but not for Year. For performance-avoidance, there was a main effect of Year only. None of the interactions were significant. The findings are described in more detail in Tables 2, 3 and 4.

Perceptions of Classroom Mastery Goal Structure

Six items were used to measure respondents' perceptions of the mastery goal structures in their classrooms. The means for each subject and year group are shown in Table 2.

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Insert Table 2 about here

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The means in Table 2 were analysed using a factorial ANOVA. The analysis revealed that there were no significant main effects for year of study $F(1, 390) = 0.05, p = .83$, but that there was a

significant main effect for subject $F(4, 390) = 3.74, p < .005,$. $ή^2 = .06$. Science and Geography were the lowest rated subjects and in terms of significance, post-hoc comparisons revealed that pupils perceived Science to have a significantly lower mastery structure than Maths, English and Art. In addition, Geography was perceived to have a significantly lower mastery structure than Maths and English classes (but not Art). These findings were contrary to hypotheses because it was tentatively suggested that core subjects (Maths, Science and English) might be more experienced in a less mastery focused manner relative (Geography, Art).

Perceptions of Performance Approach Goal Structures

Perceptions of performance approach goal structures operating in the classroom were measured by a series of three items. The means for each subject and year group are shown in Table 3.

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Insert Table 3 about here

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The means in Table 3 were again analysed using a factorial ANOVA. The analysis again revealed significant main effects for subject $F(4, 390) = 3.67, p < .006,$ $ή^2 = .06$. but not for year group $F(4, 390) = 0.95, p = .33$. As hypothesized, Art was perceived to be the least Performance-focused and post hoc comparisons revealed that classrooms in Art were less performance approach structured relative to classrooms in Maths and English. Classrooms in Geography were less performance structured than English ones. Science classrooms were not significantly different in their performance approach structures than any other subject.

Perceptions of Performance Avoidance Goal Structure

Perceptions of classroom performance avoidance goal structures were measure by a series of six items. The means for each subject and year group are shown in Table 4.

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Insert Table 4 about here

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The means in Table 4 were again analysed using a factorial ANOVA but this time the findings revealed a significant main effect was found for year group *F(1, 390) = 24.77, p < .00, ή² = .08.* but not for subject *F(1, 390) = 1.03, p = .39.* Counter to hypotheses, it was year seven students who we thought would experience their classrooms as less pressuring who perceived their classes to have a significantly higher performance avoidance goal structure relative to year ten.

DISCUSSION

The findings from the study varied with three of the six hypotheses relating to the main effects supported and three not. Somewhat surprisingly, there were no interaction effects. The findings are discussed in turn.

Perceived classroom goal structures by year of study

Taking the findings for the effects of year of study first, differences were not observed for the measures of mastery and performance-approach but differences were observed for the measure of performance-avoidance. For the mastery measure, the findings were contrary to hypotheses. However, the hypothesis was largely tentative and whilst contrary to hypothesis, the non-significant difference by year for perceptions of a mastery structure is not really surprising. Instead, what the findings importantly suggest is that teachers did not place *less* emphasis on the need for improvement and understanding in either year group. However, for the performance-approach structure, it was anticipated that as year ten was the beginning of their GCSE studies, the increased academic demands would result in greater perceptions of performance approach structure. Support for this hypothesis was not found. The surveys were administered from the end of March to the beginning of May. By this point year ten students had begun coursework in most subjects and had already taken some external modular examinations. Yet these factors did not significantly influence students' perceptions of performance approach structures. Even more encouragingly, absolute mean ratings for the perceptions of classroom structure were lower than

the mean ratings for perceptions of a mastery structure. The non-significant differences suggest again that teachers maintained a consistent approach to the way they taught their classes.

Unfortunately, the picture becomes muddier when the findings for the performance avoidance structures are taken into account. Not only was there a significant difference between the years, the direction was contrary to what was anticipated. Year seven students perceived a greater performance avoidance goal structure than students in year ten. Anderman and Midgley (1997) and Midgley, Anderman & Hicks (1995) have found that students report a greater emphasis on performance goal structures after their transition to middle school than before. This may account for year seven students being more inclined to view teaching practices in performance avoidance terms but does not explain the non-significant differences for the performance-approach goal structure. We offer the following explanation. Of the two types of performance structures, avoidance structures are readily acknowledged as more detrimental to adaptive learning behaviours (see Elliot, 2005 for a review). With ongoing pressure to perform well, it would be reasonable to expect pupils to experience classes as promoting some level of ability comparison and so it would be optimistic to expect ability comparison-related messages to decline. Indeed, Smith, Sinclair & Chapman (2002) found that Australian students nearing their final exams displayed increases in performance avoidance goals and decreases in performance approach goals. What the findings from this study suggest is an encouraging picture whereby teachers managed to overcome the avoidance-type messages. Given such messages are theoretically related to issues such as fear-of-failure, changing experiences to ones where pupils perceive their classes as less performance-avoidance structured should not be under-estimated.

To summarise the findings for the factor of year of study, we suggest that this study has shown that whilst teachers do not differentially promote mastery messages by year, in a schooling environment where grading is predominant, the messages teachers give about performance do not seem to be experienced as more pressurizing by pupils as they approach the more pressurized forms of testing. Instead, the findings suggest that it is testament to teachers (in this study) that any anxieties about their classes performing well had not transferred to their pupils.

Perceived classroom goal structures by subjects studied

The hypotheses related to subjects studied focused largely on the core subjects and suggested that the core subjects such as English, Maths and Science might be experienced more performance-approach and avoidance focused and less mastery focused. The findings provided a mix of results.

For the mastery goal structure, the results revealed a somewhat suprising picture whereby Arts, Maths and English classes were experienced with significantly higher mastery goal structures than Science and Geography. One suspicion was that arts-based subjects might be intrinsically experienced as more mastery structured relative to science-based subjects but the high ratings for Maths meant the arts vs. science categorization was not supported. One argument could be that the findings were a function of teacher effects. However, although the same teachers taught the year 7 and year 10 classes, the subject samples were made up of more than one teacher i.e. two different teachers taught fifteen pupils each in year 7 and year 10. It is unlikely the findings could be attributed to teacher effects.

In terms of performance goal structure, the picture was more in line with hypotheses; English and Maths were viewed as having a greater performance approach than Art; whilst English was also perceived has significantly more performance approach structured than Geography. Science was not significantly different from any other subject. These findings offer some support for the "core subjects" argument. However, for the measure of performance avoidance structures, no significant differences were found between subjects which neither supports a core subject nor a arts vs. science explanation for the pattern of findings.

So what can be reasonably concluded from the findings? Firstly, finding significant differences by subject at all is actually rare. A study by Wolters, Yu and Pintrich (1996) also found no significant variation of goal orientations between subjects with a sample of American junior high school students. Post hoc comparisons did reveal one significant difference but this was not sufficient to produce a main effect by subject. Students in Mathematics displayed significantly higher levels of mastery goals than students in Science and Geography. No significant

differences between subjects were found for performance approach or avoidance goals. This portrays students' goal orientations as relatively stable across subject domains despite differing perceptions of classroom goal structures. Some variation has been found between subjects in terms of mastery and performance approach goal structures but the range of subjects has been limited (Patrick et al., 2001; Turner et al., 2002; Turner et al., 2003; Urdan, 2004a; Wolters, 2004) to two subjects. Secondly, simultaneously controlling for subject and teacher effects (as we did in this study) is notoriously difficult both practically and pragmatically and subject effects have rarely been the focus of studies as they have been in this study. Thus the findings from this study are not only rare but the design has allowed some insight in the role that subject-type has on perceived classroom structures.

Our overall interpretation of the findings is that Arts and English are more likely to be experienced as mastery structured and science is likely to be experienced less so just because of the nature of these subjects. We suggest that performance-approach structures are likely to be determined by the importance of the subject i.e. a core subject classroom is likely to be experienced as focusing more on performance. In terms of performance-avoidance, there was no effect of subject suggesting, somewhat counter-intuitively, that pupils are equally avoidance orientated across the subject areas examined in this study.

Implications for Practice

The first point to mention is that it is recognized that this study is a single-school study and although we were able to make sure that the same teacher taught both Year 7 and 10 for each subject, there are obviously teacher effects that have not been controlled for given that different teachers taught different subjects. However, it worth mentioning that in a larger-scale study, it would be difficult to replicate the "same teacher across year" control we had on this study because schools operate different teaching plans/workload policies and structures. And because post-primary teachers mostly specialize in subjects, regardless of size of study, it would be almost impossible to control for teacher effects across subjects. So whilst the range of schools and teachers is limited in this study, the actual larger-scale version of the study would be extremely difficult to practically and pragmatically administer. Given that a year by (academic) subject design has not been studied systematically in the literature to date, the findings from this

study at least serve as a starting point for larger-scale studies and the results represent the first controlled examination of the year by subject main effects and interactions in terms of perceived classroom structures.

Having addressed the potential limitations of the findings, the take-home messages appear to be as follows. The significant findings from this study suggest that students do have different perceptions of classroom goal structures both at the level of year and of subject. Urdan and Midgley (2003) found that that participants low in mastery goal structures experience reduced motivation, levels of affect and greater incidence of maladaptive learning behaviours. So whilst it was encouraging to observe no differences at the year level, it was also disappointing that perceptions of mastery structures were not higher in year ten. In terms of practice, it may be useful to update teachers on recent thinking about highlight how to construct specific classroom goal structures and the motivational, cognitive and achievement outcomes that can result. The messages from goal theorists are relatively simple: mastery structures of classrooms may be increased by explicitly discussing goals with students and placing a strong emphasis on development and incremental improvement. Despite the simple messages, studies have shown that teachers rarely discuss learning goals with their pupils and often engage in contradictory practices (Patrick et al., 2001; Turner et al., 2003; Urdan, 2004). Furthermore, evidence has shown that young children who are concerned about ability and inclined towards social comparison are more likely to create problems in learning and develop behavioural problems and feelings of negative affect towards school (Kaplan & Maehr, 1999, Kumar 2006). As other studies have shown such motivational beliefs may result in increased procrastination and decreased persistence on difficult tasks (Urdan, 2004; Midgley & Urdan 1995, 2001; Wolters, 2004). Also evidence suggests that once students establish their motivational goals they remain fairly consistent for consecutive years (Lieberman & Remedios 2007; Meece & Miller, 2001). This implies that if students develop maladaptive motivational behaviours the problem may persist in subsequent years. Schools must be aware of this potential problem and make consistent, overt, regular attempts to encourage effort, improvement and developing skill whilst discouraging opportunities for social comparison. If successful, this may result in schools increasing the cognitive abilities and self regulatory strategies of their students.

Teachers are in the onerous position of having to be practitioners whilst trying to maintain and make sense of a myriad of new theories and findings related to practice. Our study did show variation in classroom structure across year and subject and these findings complement the extant research that highlights the importance of goal structures. It is perhaps over-simplistic to call for more attention to be made to the elements that affect classroom goal structures but the evidence from this and other studies suggest the call is supported by enough evidence not to be ignored.

Conclusions

In educational research, it is unlikely that one piece of research can tell a full story and the current study simply adds to the corpus of studies that recognize the importance of classroom goal structures. The effect sizes were medium rather than large or small suggesting that the influence of the independent variables were important but the effects were not dominating. The current study fills the gap in the literature by focusing simultaneously on year and subject effects across a range of subject domains, has evidenced differences in structures by year and subject (and structure type) and has offered a variety of theories that might explain why year and subject factors influence pupils' perceptions of classroom goal structures. Given the evidence examining the effects of classroom structures on student learning and motivation is consistent and robust, we suggest that the temporal stage of pupils' education and the subjects they study have important impacts on the goals they adopt. For reasons probably related to developing and pragmatically administering the appropriate research design, examination of year-of-study and subject studied across the various classroom structures has been limited. What the current study suggests is that further exploration of the two factors is warranted a) to develop our theoretical understanding of the relationship between perceived classroom structures, year-of-study and subject and b) as a diagnostic of where and when classroom structures might be operating at sub-optimal levels.

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Table 1: Summary of main effects and interactions for the three dependent variables in the study. Significances in **bold** and effect sizes in *italics*.

Perceived classroom structure	Main effect Year	Main effect Subject	Interaction
Mastery-approach	n.s	**p < .005,** *.06*	n.s
Performance-approach	n.s	**p < .005,** *.06*	n.s
Performance-avoidance	**p < .001,** *.08*	n.s.	n.s

N.S.= Not significant

Table 2: Mean ratings for **Perceptions of Mastery Goal Structure** by Year of Study and Subject. Means with common subscripts are not significantly different from each other (p < .05).

	Subjects Studied					
	Maths	English	Science	Geography	Art	**Total**
Year 7	3.95 (.56)	3.97 (.60)	3.75 (.82)	3.52 (.93)	3.81 (.66)	**3.80 (.74)**
Year 10	3.84 (.61)	3.95 (.69)	3.50 (.75)	3.76 (.67)	3.88 (.65)	**3.78 (.69)**
Total	**3.89$_a$(.58)**	**3.96 $_a$(.65)**	**3.62$_{bc}$(.79)**	**3.64 $_{cd}$(.81)**	**3.85 $_{ad}$(.65)**	

Table 3: Mean ratings for **Perceptions of Performance Goal Structure** by Year of Study and Subject. Means with common subscripts are not significantly different from each other ($p < .05$).

	Subjects Studied					
	Maths	English	Science	Geography	Art	**Total**
Year 7	3.31 (.70)	3.47 (.95)	3.28 (.95)	3.16(.98)	3.32 (.90)	**3.31 (.90)**
Year 10	3.54 (.73)	3.72 (.68)	3.43 (.95)	3.33 (.61)	2.92 (.85)	**3.39 (.81)**
Total	**3.43$_{ac}$(.72)**	**3.59$_c$ (.83)**	**3.35$_{acb}$(.94)**	**3.25$_{ab}$(.81)**	**3.12$_b$ (.89)**	

Table 4: Mean ratings for **Perceptions of Performance-Avoidance Goal Structure** by Year of Study and Subject. Means with common subscripts are not significantly different from each other (p < .05).

	Subjects Studied					
	Maths	English	Science	Geography	Art	**Total**
Year 7	2.45 (.79)	2.81 (.77)	2.57 (1.01)	2.50(.92)	2.69 (.94)	**2.60$_a$ (.89)**
Year 10	2.13 (.80)	2.16 (.89)	2.53 (.90)	2.06 (.82)	2.17 (.75)	**2.17$_b$ (.83)**
Total	**2.29 (.81)**	**2.49 (.89)**	**2.46 (.96)**	**2.28 (.89)**	**2.43 (.88)**	