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Students' Subject-Specific Achievement Goal Orientation Profiles, Perceived Cost, and Academic Wellbeing

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Tiivistelmä - Referat - Abstract

Tavoitteet. Tavoiteorientaatioita on usein tutkittu suhteellisen yleisinä taipumuksina suosia tiettyjä tavoitteita, tuloksia ja seurauksia, mutta tavoiteorientaatioissa voi myös olla oppiainekohtaisuutta. Erityisesti henkilösuuntautunutta menetelmää hyödyntäviä tutkimuksia, jotka tarkastelevat samanaikaisesti useita oppiaineita, on kuitenkin vain vähän. Oppiainekohtaiset arvostukset (kiinnostus, tärkeys, hyödyllisyys ja kustannukset) taas viittaavat nimenomaan oppiainekohtaisiin uskomuksiin, jotka vaikuttavat opiskelijoiden opiskeluun liittyviin valintoihin ja suorituksiin. Opiskeluun liittyvän hyvinvoinnin on tutkimuksissa todettu olevan keskeistä opiskelumotivaation kannalta, mutta on tarpeellista ymmärtää paremmin myös samanaikaisia tavoitteita eri oppiaineissa sekä niiden yhteyksiä opiskeluun liittyviin koettuihin kustannuksiin ja hyvinvointiin. Tämä tutkimus tarkastelee lukiolaisten oppiainekohtaisia tavoiteorientaatioprofiileja matematiikassa ja englannissa sekä niiden yhteyksiä koettuihin kustannuksiin (ts., vaadittu vaivannäkö, emotionaaliset kustannukset ja mahdollisuuksiin liittyvät kustannukset) ja opiskeluun liittyvään hyvinvointiin (ts., opiskeluinto ja koulu-uupumus).

Menetelmät. Aineisto kerättiin kyselylomakkeilla. Yhteensä 434 opiskelijaa yhdestä lukiosta osallistui tutkimukseen. Alustavat analyysit rakenteellisesta pätevyydestä suoritettiin konfirmatorisella faktorianalyysillä (CFA). Opiskelijat ryhmiteltiin tavoiteorientaatioiden perusteella hyödyntäen henkilösuuntautunutta lähestymistapaa ja latenttia profiilianalyysia (LPA). Ryhmien välisiä eroja koetuissa kustannuksissa ja hyvinvoinnissa tarkasteltiin varianssianalyysin (ANOVA) avulla.

Tulokset ja johtopäätökset. Viisi erilaista tavoiteorientaatioprofiilia tunnistettiin: oppimisorientoituneet (24,9%), menestysorientoituneet (25,8%), englantiorientoituneet, matematiikkaa välttelevät (14,3%), sitoutumattomat (28,8%) ja välttämisorientoituneet (6,2%). Tavoiteorientaatiot olivat suurella osalla lukiolaisista samankaltaisia molemmissa oppiaineissa, mutta joillakin tavoiteorientaatiot erosivat selkeästi kahden oppiaineen välillä. Eri tavoin motivoituneet opiskelijat erosivat koetuissa kustannuksissa ja opiskeluun liittyvässä hyvinvoinnissa. Hyvinvointi oli myönteisintä oppimisorientoituneilla ja kielteisintä välttämisorientoituneilla. Menestysorientoituneet, joilla kaikki tavoiteorientaatiot olivat suhteellisen korkeita, kokivat myös kustannukset korkeiksi ja olivat innostuneita opinnoissa mutta myös suhteellisen uupuneita. Tulokset osoittavat, että opiskelijoiden moniulotteisen saavutusmotivaation tutkiminen oppiainekohtaisesti voi olla arvokasta motivaationaalisen dynamiikan ymmärtämiseksi sekä opiskelijoiden oppimista ja hyvinvointia vaarantavien tai edistävien tekijöiden tunnistamiseksi.

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Aims. Achievement goal orientations have often been studied as rather general individual tendencies to favour certain goals, results and consequences, but they may also demonstrate subject-specificity. Studies taking several academic subjects into account simultaneously, and by utilising a person-oriented approach in particular, are still scarce. Task values (i.e., intrinsic, attainment, utility, cost), in turn, refer specifically to subject-specific beliefs that influence students' choices and performance. There is a need to understand patterns of subject-specific goal orientations as well as their relations to perceived subject-specific cost and to more general academic well-being better. This study examined upper secondary school students' subject-specific (mathematics and English) goal orientation profiles and how students with different profiles differ in subject-specific cost (i.e., effort, emotional, and opportunity cost) and academic wellbeing (i.e., schoolwork engagement and school burnout).

Methods. Data were collected by questionnaires. Altogether, 434 students from one general upper secondary school in Finland participated in the current study. Preliminary analyses concerning structural validity were conducted using confirmatory factor analysis (CFA). Regarding motivational profiles, students with similar patterns of achievement goal orientations were identified utilising a person-oriented approach and latent profile analysis (LPA). After establishing groups, analyses of variance (ANOVA) were conducted to examine group differences.

Results and Conclusions. Five distinct goal orientation profiles were identified: mastery-oriented (24,9%), success-oriented (25,8%), English-oriented, math-avoidant (14,3%), indifferent (28,8%), and avoidance-oriented (6,2%). Evidence for both domain-generality and -specificity of goal orientation profiles was found. These profiles differentiated in cost and academic wellbeing. Overall, mastery-oriented showed the most adaptive wellbeing and avoidance-oriented the most maladaptive. Success-oriented group, characterised by high multiple goals, also scored high on cost and both adaptive (i.e., engagement) and maladaptive (i.e., burnout) academic wellbeing indicators. The findings indicate that examining students' multidimensional achievement motivation in different subjects may be valuable for comprehending the motivational dynamics and in recognising the factors endangering and fostering student learning and wellbeing.

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1 Introduction

Students' achievement motivation plays an essential role in everyday school life. The school environment often places emphasis on performance as students are confronted with different types of tasks and communicated expectations, by some of which they are also graded and reviewed. As children and adolescents move through the educational system, the emphasis on performance seems to increase. In Finland, performance is especially important in the general upper secondary school, where success is measured by matriculation examination at the end of the studies. An upcoming change in the application system, in order to speed up the transition from upper secondary school to higher education (Ahola, Asplund & Vanhala, 2018), will place even more emphasis on grades from this examination, and, thus, also increase the emphasis on performance and achievement behaviour from an earlier stage. As the students' achievements can have a great impact on their future in the long term, it would be important to understand the underlying reasons for a student to engage in academic tasks, and also the reasons to disengage (see Eccles & Wigfield, 2002), and whether these motivational patterns are general orientations, or can they also differ between subjects. School environment is an important developmental and social context for an adolescent, the feedback received, and self-made observations of one's own and others' abilities, in educational contexts can significantly affect students' motivation, and also their wellbeing. This thesis aims to understand how different motivational orientations in relation to two important domains, mathematics and languages, in general upper secondary school combine to shape motivational profiles, and how they relate to perceiving a subject as costly in relation to effort, emotions or other opportunities, and to feelings of engagement or burnout in relation to school and schoolwork in general.

Learning and the demonstration of learning are focal interests of education due to their noticeable importance both for an individual as well as for the wider society. Yet, students demonstrate different motivational patterns; one desires to learn, another one is only interested in getting good grades and being better than others, and one is simply trying to avoid making an effort. In order to better comprehend these different patterns, it has shown to be valuable to look at the different achievement goals students hold and adopt. These goals affect the direction (i.e., what the student wants to achieve) and the energisation (i.e., why the student wants to achieve) of an individual's behaviour (Sommet & Elliot, 2017). In order to understand more general tendencies to prefer certain goals and related outcomes (Niemivirta, 2002; see, Niemivirta, Pulkka, Tapola & Tuominen, 2019), achievement goal orientations have proven to be a prominent way towards understanding students' achievement

behaviour beyond situation- or task-specific goals. The widely studied achievement goal orientations have often been researched as general orientations towards school related tasks and subjects (e.g., Niemivirta, 2002; Pintrich, 2000b; Tuominen-Soini, Salmela-Aro & Niemivirta, 2008; 2011; 2012) but it could be assumed that individuals may naturally still demonstrate some variance in their preferences related to studying and learning in respect to different subjects.

Together with achievement goal orientations, the expectancy-value theory (Eccles et al., 1983) has been often utilised in achievement motivation research. Regardless of similar, yet complementary, focuses of these two prominent theories, the research on achievement goal orientations and task values has previously been rather separate. In contrast to the achievement goal orientations, task values (i.e., utility, attainment, intrinsic, and cost) have functioned as a framework for research on task- and subject-specific motivation. Together the findings from these studies seem to suggest that individual achievement motivation is somewhat a general tendency to favour certain goals and consequences but is also affected and susceptible to subject-specific factors, such as the perceived cost of a subject.

The perceived cost has been often neglected in previous research despite having been shown to be a salient factor in student motivation (Flake, Barron, Hulleman, McCoach & Welsh, 2015). Furthermore, it has been found to be related to avoidance behaviour and drop-out intentions (Perez, Crompley & Kaplan, 2014). Consequently, the perceived cost may explain students' achievement behaviour beyond positive purposes (Conley, 2012; Jiang, Rosenzweig & Gaspard, 2018). By combining the achievement goal orientations with the perceived subject-specific cost, it may be possible to grasp the variation between subjects within the framework of achievement goal orientations.

Achievement motivation is a creation of the interaction of social environment, individual emotions, and cognitive processes and is, thus, also inseparably related to an individual's wellbeing. Achievement goals have indeed been found to have implications on the individual's learning, academic performance, and different aspects of wellbeing. Student wellbeing and social exclusion are major concerns nowadays. According to a recent publication the prevalence of burnout amongst Finnish upper secondary school students has increased during the past decade and almost one out of five girls and 10% of boys experience burnout (National Institute for Health and Welfare, 2017). There is a strong evidence for the positive correlation between burnout, disengagement, and depressive symptoms, whereas school engagement has been proven to be an important predictor of

wellbeing, academic success, and staying in school (Rautapuro & Väisänen, 2002). Studies have also found that the more students experience burnout the less engaged they are in their studies (Salmela-Aro, Kiuru, Leskinen & Nurmi, 2009), confirming the importance of understanding the relationship between different goal orientation profiles and both positive and negative indicators of academic wellbeing.

This thesis, firstly, aims to understand what kind of patterns of different subject-specific achievement goal orientations can be identified among upper secondary school students in Finland. Secondly, I wish to explore how students with diverse achievement goal orientation profiles differ with respect to perceived subject-specific cost (i.e., effort, emotional cost, and opportunity cost) and academic wellbeing (i.e., schoolwork engagement and school burnout).

2 Achievement Goal Orientations

In recent decades, there has been a great effort in research in order to understand achievement motivation. The current widely accepted social-cognitive models of achievement motivation stress that achievement motivation is a creation of the interaction of social environment, individual emotions, and cognitive processes, instead of being an innate state (for a review, see Wigfield & Cambria, 2010). These social-cognitive models consist of a variety of constructs, such as individuals' beliefs, achievement values, achievement goal orientations and interests, that are viewed as significant influencers on students' motivation and, thus, also achievement (Dweck & Leggett, 1988; Pintrich, 2003).

As researchers became more interested in the purpose of approaching and engaging in achievement-related tasks, the achievement goal and goal orientation research started to expand. Dweck and Leggett (1988) theorised that individuals hold subjective implicit theories that orient towards specific goals that arrange different patterns. According to the achievement goal theory, individuals' goals in learning and performance situations affect how they interpret and behave in varied situations; different goals produce their associated patterns of cognition, affect, and behaviour (for a review, see Senko, Hulleman & Harackiewicz, 2011; Dweck & Leggett, 1988). Therefore, even in an identical situation, students holding different theories are positioned towards different goals that set up different behavioural, emotional and cognitive patterns, often also leading to varied outcomes. Even

though not always explicitly, both achievement goals and achievement goal orientations have been widely studied in research; *achievement goals* are specific goals related to wanting to attain or demonstrate competence whereas *achievement goal orientations* refer to the more general individual tendencies to favour different goals, results and consequences (Niemivirta, 2002; Niemivirta et al., 2019).

Achievement goals or goal orientations are not mutually exclusive despite being independent dimensions (Meece, Blumenfeld & Hoyle, 1988; Miller, Behrens, Greene & Newman, 1993). A student can simultaneously aim for several goals and different types of tasks, and situations can lead to students adopting and activating different achievement goals (Niemivirta, 2002; for reviews, see Pintrich, 2000a; Senko et al., 2011). The dimensions of achievement goal orientations have been widely studied, and although many researchers agree on some dimensions, there are also some differences in the conceptualisation of goal orientations. Most research on achievement goal orientations has focused on the general achievement goals, and the domain-specific achievement goals have mostly either focused on a single domain, or one academic domain and sports. Few studies comparing different academic subjects have, however, provided strong empirical support for domain-specificity of achievement goals or goal orientations.

2.1 Dimensions of Achievement Goal Orientations

In the early years of achievement goal research, the view that gathered the most attention was the conceptualisation of two contrasting achievement goals: mastery goal and performance goals (Ames, 1992; Dweck, 1986; Dweck & Leggett, 1988; Elliot & Dweck, 1988). *Mastery goals* (also labelled as learning or task goal) have since been widely used in research to refer to a striving to learn, understand, and develop competence. *Performance goals* (also labelled as ego or ability goal), on the other hand, have been used to refer to a striving to outperform others and appear competent, often in relation to others. Both mastery and performance goal orientations refer to an approach towards either learning or success, but Nicholls, Pataschnick and Nolen (1985) suggested that avoidance can also be a dominant goal characteristic - challenging the mastery-performance dichotomy and leading to the identification of avoidance goal. *Avoidance goals* refer to avoiding putting in an effort and challenging tasks and escaping teacher restrictions. The conceptualisation of avoidance as an achievement goal has, however, received some criticism too as the goal is neither learning nor performance but avoiding them.

Another view regarding avoidance, suggests that avoidance should be incorporated in the mastery and performance goals alongside approach, and not seen as a goal itself (Elliott, 1999). This view indicates that both mastery and performance goals consist of two interdependent approach-avoidance elements (e.g., superiority and avoiding inferiority in performance goal; learning and avoiding not learning in mastery goal) (e.g., Elliot & Harackiewicz, 1996). Although, mastery-avoidance dimension has still not gathered much empirical support among researchers due to the unclarity of its exact meanings and outcomes (see Bong, 2009), performance-approach and performance-avoidance dimensions have been widely accepted and empirically supported (see e.g., Bembenutty, 1999; Murayama, Elliot & Yamagata, 2011; Lee, Wormington, Linnenbrink-Garcia & Roseth, 2017; Niemivirta, 2002; Shih, 2005; Tuominen-Soini et al., 2008; 2012). Many researchers have also found empirical support for the distinctiveness of avoidance goals and for being separate from performance-avoidance goals (e.g., King & McInerney, 2014).

Mastery goals refer to aiming towards learning and developing competence; learning is valuable in itself for students with high mastery goals. Consequently, mastery goals have been shown to be related to various adaptive educational outcomes, such as use of adaptive help-seeking strategies (Tanaka, Murakami, Okuno & Yamauchi, 2002), effective learning strategies, positive attitude towards schoolwork, and preferring challenging tasks (e.g., Ames & Archer, 1988), and problem-focused coping strategies (Skaalvik, 2018). Mastery goals can also refer to aiming towards success but the criteria for success is in reference to individual's development, not to others. In the studies focusing only on mastery and performance goals, the mastery goals has been linked with adaptive outcomes whereas the performance goals with both adaptive and maladaptive outcomes (Ames, 1992; Dweck, 1986; Pintrich, 2000b; Skaalvik, 2018).

The reason why some of the research on achievement goals and goal orientations, and especially the adaptiveness of performance goals, is rather inconclusive is partly due to the different understandings of performance goal and whether there is a need to make a distinction between the approach and avoidance dimensions. These mixed results have led many researchers to test the two-dimensionality of performance goal orientation, and empirical research has indeed discovered that there are some distinct differentiating factors related to these dimensions (e.g., Murayama et al., 2011). For example, performance-approach goals are, in some ways, closer to mastery goals than performance-avoidance goals are due to both often manifesting intrinsic motivation (Elliot & Church, 1997; Elliot & Harackiewicz, 1996). An underlying factor that combines these two performance goals may be fear of failure, but competence expectancies may separate them; performance-approach goals have been

linked with high competence expectancies whereas performance-avoidance goals with low competence expectancies (Elliot & Church, 1997). Furthermore, in comparison with the effective deep learning strategies of mastery goals, both performance goals have been found to often demonstrate surface processing (Elliot, McGregor & Gable, 1999). Regardless of the differences in meanings and implications, these two performance goals do correlate strongly (Bong, 2001; Murayama et al., 2011) and are often intertwined (Schwinger & Wild, 2012).

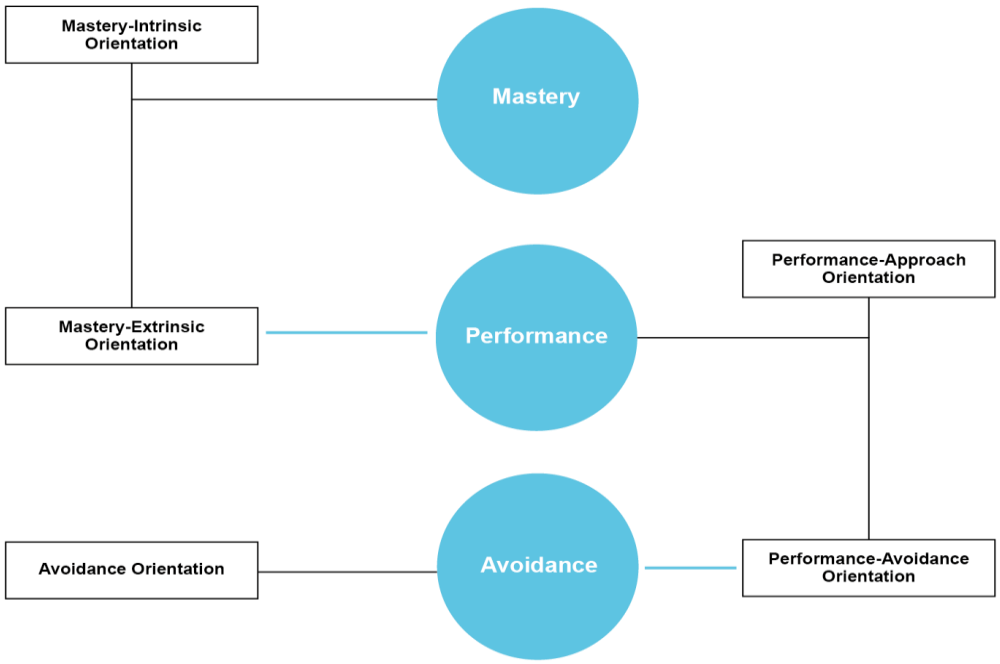

Figure 1. Conceptual Model of Achievement Goal Orientations (applied from Tuominen-Soini, 2012; see also Niemivirta et al., 2019)

Studies also including avoidance goals seem to suggest that actively avoiding making an effort is indeed a pattern demonstrated by students both in terms of specific tasks as well as school in general. The most maladaptive motivational pattern seems to be the adoption of avoidance goals as they have often been found to be negatively linked to task orientation, beliefs about success following interest, effort, cooperative work and understanding instead of memorising (e.g., Meece et al. 1988; Nicholls et al., 1985; Tuominen-Soini et al., 2008).

The concepts of mastery and performance have, thus, formed the core of research on achievement goal orientations that has expanded in the last decades. Even though these two goals together with avoidance are still as current as before, due to the complexity of achievement motivation, there has

been a need to move towards an understanding of the rich spectrum of different goals and goal orientations (Tuominen-Soini et al., 2012; see also Niemivirta et al., 2019). For example, in addition to differentiating between performance-approach and -avoidance, Niemivirta (2002; see also Tuominen-Soini et al., 2008; 2011) also differentiated two kinds of achievement; the absolute that does not relate to other students' achievement, and achievement in relation to how others succeed. Thus, Niemivirta developed an instrument assessing altogether five types of achievement goal orientations: (1) mastery-intrinsic, (2) mastery-extrinsic, (3) performance-approach, (4) performance-avoidance, and (5) avoidance orientation (see Figure 1). *Mastery-intrinsic* orientation refers to a focus on learning, understanding, and gaining competence. *Mastery-extrinsic* orientation refers to students' aspiration on getting good grades and succeeding in school. *Performance-approach* orientation refers to students' focus on relative ability and judgments of competence. *Performance-avoidance* orientation refers to avoidance of demonstrating normative incompetence and *avoidance* orientation (referring to work avoidance; Nicholls et al., 1985) to students' desire to avoid achievement situations and to minimize the effort and time spent on studying. This framework has been utilised also in this study, as it allows to explore the multidimensionality of students' achievement goal orientations

2.2 Person-Oriented Approach and Goal Orientation Profiles

Variable-oriented perspective (i.e., aiming to establish generalised relations between studied variables), has been more common in motivational research than person-oriented approach (i.e., aiming to find how studied variables together form different patterns). The variable-oriented perspective utilises a variable as the main conceptual and analytical unit which enables to find unique effect and relations between constructs and the findings can be widely generalised (Bergman & Magnusson, 1997; see Linnenbrink-Garcia & Wormington, 2019). Although this theoretical knowledge of variable relations is important, it can also ignore how academic outcomes are shaped by various forms of motivation. Thus, when thinking of the applicability into practice of these results, motivational constructs are not isolated in the classroom and a teacher cannot control other variables when trying to promote a certain form of motivation (see, Linnenbrink-Garcia & Wormington, 2019).

Research has widely supported the notion that students can hold multiple goals at the same time (e.g., Barron & Harackiewicz, 2001, Niemivirta, 2002; Pintrich, 2000b). Therefore, it is important to also look at different combinations of achievement goals and their relations to academic behaviour and

implications on wellbeing. Some studies looking at students' multiple goals, have suggested that some goal combinations seem to be more adaptive than others, such as pursuing both performance and mastery goals may be even better than pursuing mastery alone in terms of educational outcomes (Bong, 2001; Hornstra, van der Veen, Peetsma, 2016; Lau & Lee, 2008; Pintrich, 2000b; Pintrich, 2003; Tuominen-Soini et al., 2012). For example, a study found that students with both high mastery goals as well as performance, reported more use of cognitive strategies and achieved better academic performance (Bouffard, Boisvert, Vezeau & Larouche, 1995) but high performance goals coupled with low mastery goals have shown to lead to more maladaptive pathways in terms of motivation (e.g., Pintrich, 2000b).

In contrast with variable-oriented approach, person-oriented approach focuses on the person as a whole by operating with patterns of individual characteristics that are relevant in relation to the problem under consideration (Bergman & Magnusson, 1997). By simultaneously considering variations of several different motivational indicators, a person-oriented approach allows to capture students' multifaceted motivation and to explore how motivational processes combine to shape learning, engagement and achievement; in other words, student's multiple reasons for being motivated in a situation. The foundation for a valid, reliable and informative study is the appropriate matching of research problems and methods (Bergman & Magnusson, 1997). Previous research has found that when looking at achievement goal orientations and their outcomes, studying how different goal orientations are emphasised in students and forming groups or profiles based on this can be a prominent approach (e.g. Niemivirta, 2002; for reviews, see Niemivirta et al., 2019; Linnenbrink-Garcia & Wormington, 2019). Achievement goal orientation profiles have been studied abundantly in recent years and a variety of goal orientation profiles have been identified in previous studies.

Most commonly found groups in goal orientation research are predominantly learning- or mastery-oriented (high mastery / low performance), predominantly performance-oriented (high performance / low mastery), combined mastery and performance (high or moderate both mastery and performance), moderate multiple goals, and low both goals or avoidant, when avoidance goals have been included in grouping (e.g., Tuominen-Soini et al., 2008; 2011; 2012; Wormington & Linnenbrink-Garcia, 2017; for a review, see Niemivirta et al., 2019). These grouping solutions are dependent on the variables chosen for classification and, therefore, there is a variation in the number and nature of identified groups. The profiles studied are most often general or in relation to a single domain, and fewer studies have focused on multiple subjects. For example, Tuominen-Soini and her colleagues (2008; 2011; 2012) studied achievement goal orientations in relation to studying in

general, but in a Finnish general upper secondary school context as the current study, and identified different goal orientation patterns; profiles with a dominant tendencies to strive towards mastery (mastery-oriented), both mastery and performance (success-oriented), avoidance goals (avoidance-oriented), and a group that did not emphasise any particular goals (indifferent).

Furthermore, these achievement goal orientation profiles have been found to be relatively stable over time, even across educational transition (Tuominen-Soini et al., 2012; for a review, see Niemivirta et al., 2019). This shows that it is useful to look at differences and similarities between individuals as well as groups, instead of merely looking at the relationships between variables. Tuominen-Soini and her colleagues (2012) followed students across the transition to upper secondary education and found four groups of students with different achievement goal profiles. These profiles stayed relatively stable and most of the changes that occurred in the group membership were directed towards groups with similar motivational beliefs. The groups of students with different achievement goal profiles also differed significantly on school value, school burnout, schoolwork engagement, and satisfaction with educational choice. Stability over time can, therefore, also mean long-term consequences on an individual's wellbeing. However, comprehending whether students demonstrate subject-specificity may enable the understanding of an individual's goal orientations and their indications on wellbeing in more depth.

2.3 Subject-Specific Achievement Goal Orientations

Achievement goal orientation profiles have been found to be rather stable both over time (e.g., Tuominen-Soini et al., 2011; 2012) as well as across domains (e.g., Jansen in de Wal, Hornstra, Prins, Peetsma & Van Der Veen, 2016). Thus, it has been proposed that students' goal orientation profiles may represent relatively stable personal dispositions (e.g., Jansen in de Wal et al., 2016). Recent research has, however, found some domain-specificity in goal orientations.

Jansen in de Wal and his colleagues (2016) examined the prevalence and domain-specificity of achievement goal profiles in primary school students in language and mathematics. They distinguished three different profiles in both domains: *multiple goals*, *approach-oriented* and *indifferent*. Multiple goals profile was characterised by similar scores on all achievement goals. Approach-oriented and indifferent profiles had medium performance-approach goals and medium to high mastery-approach goals, but the approach-oriented group also had lower performance-avoidance

and higher mastery-approach goals than the indifferent group. Almost 60% of the students had similar profiles in both domains, but there was also a significant number of students demonstrating different profiles for language and mathematics. Other research on subject-specific goal orientation profiles has predominantly been in relation to only one subject, mainly to mathematics (e.g., Conley, 2012; Schwinger, Steinmayr & Spinath, 2016; Schwinger & Wild, 2012). In some mathematics-focused studies, similarly to those identified by Jansen in de Wal et al. (2016), three profiles have been distinguished: *primarily mastery*, *high multiple goals*, and *moderate multiple goals* (Schwinger & Wild, 2012; Schwinger et al., 2016). In addition to these three, Schwinger et al. (2016) also identified two other profiles: *moderately performance* and *amotivated* groups.

It has been suggested that beliefs about own abilities and intelligence, and views about whether abilities and intelligence are fixed (i.e., entity view) or open to improvement (i.e., incremental view) may also influence goal orientations (see, Nicholls, 1990, for a review). For example, children holding an entity view are more likely to hold performance goals, whereas incremental view may promote mastery goals (Dweck & Leggett, 1988; Dweck & Master, 2009; Schwinger et al., 2016; see Wigfield & Cambria, 2010, for a review). The different kinds of beliefs may be influenced by close social environment or the larger cultural environment. Some have proposed that the prevalence of different achievement goal orientations is also tightly linked with the cultural environment. For example, the stronger endorsement of mastery goals in New Zealand could reflect the mastery-oriented education system (Meissel & Rubie-Davies, 2016). Meissel and Rubie-Davies also found differences in achievement goal orientations between cultural groups within a nation. A strong emphasis on mastery goals was also found in a sample of primary school pupils within the Dutch educational system which may be more focused on improvement rather than demonstrating performance (Jansen in de Wal et al., 2016).

Differences between goal orientations in variety of subjects may also derive from how schools and teachers possibly communicate different goal-related messages for different subjects (Jansen in de Wal et al., 2016; see also Matos, Lens, Vansteenkiste & Mouratidis, 2017). For example, often more domain-general goal orientations found in primary school samples may have been influenced by how primary school children are usually taught all lessons in the same class and by the same teacher (Jansen in de Wal et al., 2016). A study also found that primary school teachers focus on mastery-oriented goals more than teachers in secondary schools do, and that secondary school students perceive school as more performance-oriented than do primary school pupils (Midgley, 2002; see Wigfield & Cambria, 2010, for a review). Thus, different kinds of instructional contexts and activities

can also influence the goal orientations, and changes in the school culture may be tightly connected to the changes in goal orientations. Also, general social interdependence (i.e., the degree to which individuals' actions influence those of others) attitudes in school have been suggested to be one of the antecedents of individuals' situation-specific achievement goal adoption as it has been found that cooperative and individualistic attitudes positively predicted mastery goals whereas competitive attitudes predicted performance goals (Elliot et al., 2016).

Another interesting aspect regarding the domain-specificity of achievement goals and goal orientations is not only to which degree they are domain-specific, but also what kind of differentiations there are between the goal orientations, and between goal orientations in different phases of education, regarding their domain-generality or -specificity. Bong (2001) studied between- and within-domain relations of academic motivation in Korean secondary and high school students and found relatively strong between-domain correlations of performance goals and weaker correlations in mastery goals. In other words, students who showed performance goals were more likely pursue similar goals in different contexts. In line with these results, Sparfeldt and his colleagues (Sparfeldt, Brunnemann, Wirthwein, Buch, Schult & Rost, 2015) found mastery goals to be more context-dependent than other goals in high school students in Germany. This might suggest that adopting performance goals may depend largely on individual susceptibility to normative concerns. There were also differences between the student groups and especially high school students demonstrated clearly domain-specific mastery goals.

Also, as achievement goal orientations are impacted by different achievement goals, there is a reason to believe that older students in particular, show some cross-domain variance. For example, it has also been argued, that the long-term goals valued by students could be one of the antecedents of achievement goal adoption (Miller & Brickman, 2004; see also Liem, Lau & Nie, 2008). It is likely that there are some between-domain differences due to the perceived instrumentality of different school subjects. This may also influence the differences between different age groups, as older students may have more experience in the subjects and their abilities in them, received feedback on their performances and the future goals being more present in school life and also older students may have a more distinct understanding of their interests, importance of the subject for themselves, their future needs and the possible costs of investing time and energy studying the subject.

Collating the previous research together, it is not clear from empirical results to what extent achievement goal profiles are domain-general or domain-specific. In particular, there is especially a

gap in studies looking at achievement goals simultaneously across different academic domains, such as mathematics and a language, as many studies have primarily researched differences in achievement goal orientations between an academic discipline and sports (e.g., Duda & Nicholls, 1992). The strong cross-domain correlations as well as considerable domain-specificity (e.g., Bong, 2001) found in studies would suggest that students' goal orientations are formed by a combination of more general personal tendencies to favour certain goals and also domain-specific components (see Jansen in de Wal et al., 2016), such as student's perceived competence regarding the domain, personal interest, perceived utility, or cost of the domain.

3 Achievement Goal Orientations and Expectancy-Value Theory

Achievement goal orientations and task values have previously mainly been utilised separately despite of being dominant theories in motivational research with a similar focus of achievement motivation. Goal orientations, and goal orientation profiles in particular, have often been researched in relation to studying in general or in one subject only, whereas task values in relation to different subjects as beliefs that influence students' determination, performance, and choices. Relatively few studies have attempted to explicitly integrate them, and most of these have focused primarily on the positive task values. Combining the two theories of achievement goal orientations and expectancy-value and viewing students' subject-specific motivational orientations with the help of these two frameworks can provide complimentary insight into the complex construct of student motivation. Linnenbrink-Garcia and Wormington (2019; see also Conley, 2012) argue that researchers should use more analytical approaches that model how different combinations of motivation predict student engagement and learning and this would enable a better understanding of how to support multiple beneficial patterns of motivation also in practice. To compliment prior research, in this study, the cost component is utilised from the expectancy-value theory together with achievement goal orientations, to understand how different goal orientation profiles are related to perceived cost of effort required, or opportunity or emotional cost.

3.1 Expectancy-Value Theory of Motivation

Eccles' expectancy-value theory (EVT; Eccles et al., 1983) is widely used to understand and explain students' educational choices and academic behaviour. According to the theory students' subjective

beliefs, expectancies and value beliefs influence their effort, persistence, performance and what kind of choices a student makes. The EVT, therefore, suggests that students are motivated to excel in subjects that they value and in which they expect to succeed (Eccles et al., 1983; Leaper, Farkas & Brown, 2012). In order to gain a deeper understanding of subject-specific student motivation, task values can offer a valuable framework combined with achievement goals.

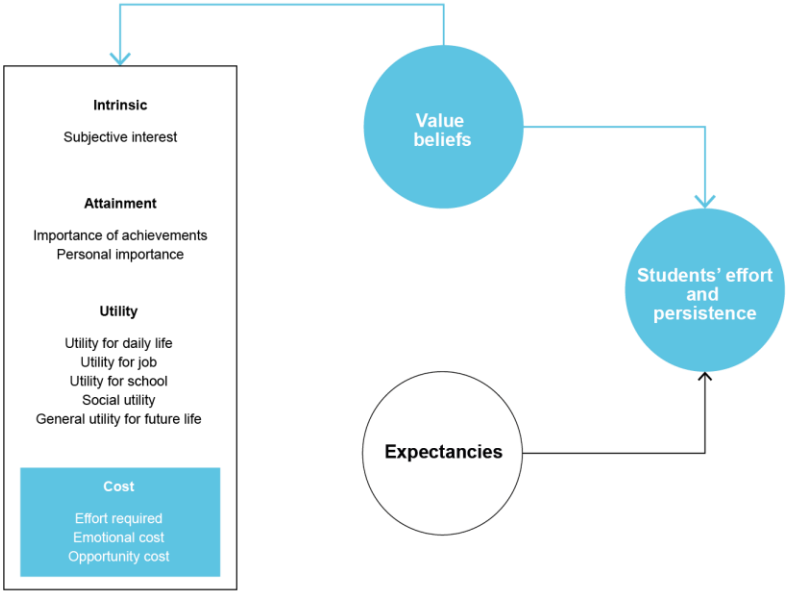

Figure 2. Conceptual Model of Task Values and Subfacets (applied from Gaspard, Dicke, Flunger, Schreier, Trautwein & Nagengast, 2015)

Task values refer to why and how much a student is drawn to and engaged in a subject (for a review see Eccles & Wigfield, 2002). These values include three positive and one negative value: (1) intrinsic value, (2) utility value, (3) attainment value and (4) cost (see Figure 2). In recent studies some researchers have also differentiated qualitatively different aspects of values into separate value subfacets (e.g., Gaspard, Dicke, Flunger, Schreier, Trautwein & Nagengast, 2015). *Intrinsic value* is linked to student's subjective interest and refers to the enjoyment a person gets from engaging in a task. This value is strongly connected to construct of flow (for a summary see Nakamura & Csikszentmihalyi, 2014) and intrinsic motivation (Deci & Ryan 1985; Harter, 1981). *Utility value* refers to how useful engaging in a task is perceived as in terms of individual's current and future goals. This value component can, therefore, capture both extrinsic and intrinsic reasons as it facilitates to both important personal goals but also goals such as pleasing others. With regards to the subfacets postulated in recent research, this value is the most multidimensional compared to other task values with five subfacets: utility for daily life, utility for job, utility for school, general utility for future life

and social utility (Gaspard et al., 2015). *Attainment value* describes the relevance of a task for a person's identity and the subjective importance attributed to succeeding on a given task. Gaspard and her colleagues (2015) suggested this division of attainment value into two subfacets of importance of achievement and personal importance. *Cost*, the only negative value, indicates the perceived negative consequences and requirements of engaging in a task: effort, emotion and opportunity cost (Gaspard et al., 2015). These negative aspects could mean for example performance anxiety, amount of effort required to do well in the task or loss of another opportunity (Eccles & Wigfield, 2002).

Expectancies and values are traditionally conceptualised and measured as domain-specific (Eccles, Wigfield, Harold & Blumenfeld, 1993; Trautwein et al., 2012). Recently it has been suggested that some values may be more domain-general than others due to high correlations between domains (e.g., Gaspard et al., 2018). However, most values display variance between subjects. Consequently, task values are always measured in relation to a subject. Much of the previous research of task values has not measured the four components separately despite of them being theoretically distinct according to EVT (for exceptions see Conley, 2012; Gaspard, Häfner, Parrisius, Trautwein & Nagengast, 2017; Trautwein et al., 2012). Studies that separate the subfacets of these task values (see Gaspard et al., 2015; 2017) have been even scarcer, even though they can offer a detailed framework for motivational research and also a more in-depth understanding of achievement goal orientations.

3.2 Task Values and Achievement Goal Orientations

The relationship between achievement goals and task values has previously been discussed in some studies. It has been suggested that achievement goals can function as frameworks within which individuals perceive task value in activities (Hulleman, Durik, Schweigert, & Harackiewicz, 2008). Plante, O'Keefe and Théorêt (2013) compared different theoretical approaches to the relationship between task values and achievement goals and found that expectancy-value variables both directly and indirectly predicted the achievement-related outcomes through mastery goals. The link between task values and mastery goals has also been found in other studies. For example, Pintrich (2000b) found that students low in mastery goal also showed lower levels of task value (utility) when compared with students high in mastery goal. Both mastery-approach goals and initial interest have been found to predict subsequent interest (Hulleman et al., 2008). Previous research (Bong, 2001; Liem et al., 2008) has found that all positive task values, attainment, utility and intrinsic values, may have a significant role in students' adoption of mastery goals, suggesting the perceived

instrumentality of a subject to motivate students to develop their competence. Also, Elliot and Harackiewicz (1996) found that mastery and performance-approach goals were both linked with intrinsic motivation, which is rather similar to intrinsic value. Previous studies regarding goal orientations and task values have often focused on the positive task values and, consequently, neglected the cost component even though it has been proven to be a unique factor in discriminating adaptive and maladaptive motivational patterns and outcomes (e.g., Conley, 2012; Jiang et al., 2018; for a review, see Barron & Hulleman, 2015).

3.3 Perceived Cost and Motivation

Task values, especially the positive values, have been widely utilised in empirical research to explain variance between individuals' motivation and academic outcomes. In recent years researchers have noticed that the positive components alone do not fully explain students' goals and behaviour and have started to pay attention to the cost and its implications on motivation. The only negative component, cost, refers to the perceived negative consequences and requirements of engaging in a task (e.g., Wigfield & Eccles, 1992; Gaspard et al., 2015). Some researchers have attempted to distinguish the qualitatively different subfacets within different value facets and, consequently, three subfacets of cost have been differentiated: (1) effort required, (2) emotional cost, and (3) opportunity cost (e.g., Gaspard et al., 2015; see also Wigfield, Rosenzweig & Eccles, 2017). *Effort* subfacet refers to students' perceptions of how much effort is required to succeed in a task or subject. *Emotional cost* refers to the negative affective states a student may encounter in relation to different subjects and its demands. *Opportunity cost* refers to students' perceptions of whether engaging in the subject means having to give up on other activities they value. These subfacets are separate in meaning but recently, it has been discovered, however, that the effort and emotional cost may still be inseparable after all (Gaspard et al., 2017; 2018).

There have been some debates over the role of cost in the expectancy-value model in terms of its effect on students' motivation. Some researchers have also suggested that cost cannot be described as task value or a component of values but rather as a factor that influences the other values (e.g., Flake et al., 2015; see also Wigfield, Rosenzweig & Eccles, 2017) whereas others suggest that both positive task values and cost are distinctly separate factors and can independently have an effect on motivation (Conley, 2012; Trautwein et al., 2012). These different views have led some researchers to explicitly refer to the expectancy-value-cost model (e.g., Barron & Hulleman, 2015; Jiang et al.,

2018) although Wigfield et al. (2017) do not support renaming the theory. Thus, it has not been concluded whether cost affects students' choices, behaviours and outcomes through influencing the other positive task values or independently.

Even though studies including cost are still scarce, there is a strong support for going beyond positive task values and paying more attention to cost to understand motivation and academic outcomes. Furthermore, it has been suggested that cost may be able to explain the variance that the positive task values cannot (Conley, 2012; Jiang et al., 2018). For example, Conley (2012) found cost to have an essential role in discriminating students' motivational patterns, and also in predicting achievement, in mathematics. It has also been found that cost could predict students' drop-out intentions (Perez et al., 2014) and that it may be a significant factor in predicting the adoption of avoidance goals (Jiang et al., 2018), suggesting that cost can also play a part in student engagement. Taken previous research together, it seems probable that cost is an important factor influencing student motivation, behaviour, and academic consequences, and might be particularly relevant when investigating emotional and other wellbeing outcomes.

4 Achievement Goal Orientations and Academic Wellbeing

4.1 Goal Orientations and Wellbeing

Achievement goal orientations have been found to be connected to both individual's learning and academic performance (Boekaerts, 1993; King & McInerney, 2014; Mouratidis, Michou, Demircioğlu & Sayil, 2018; Pintrich, 2000b; Wolters, 2004) as well as many aspects of individual's wellbeing such as emotions, self-perceptions, school engagement, burnout and depressive symptoms (Meece & Holt, 1993; Tian, Yu & Huebner, 2018; Tuominen-Soini et al., 2008; 2012) indicating that different patterns of coping and emotion are connected to the endorsement of particular goals (see Table 1). The learning and achievement outcomes of achievement goal orientations have previously been studied thoroughly but the relations between achievement goal orientations and wellbeing are less understood. Given the centrality of school experience in students' lives (Eccles & Roeser, 2009; 2011), some recent studies have emphasised the importance to give more attention to the wellbeing outcomes (e.g., Tuominen-Soini et al., 2012).

Table 1. Summary of most commonly identified achievement goal profiles and their associations with wellbeing (applied from Niemivirta, Pulkka, Tapola & Tuominen, 2019).

Predominantly Mastery	**Predominantly Performance**	**High Mastery and High Performance**	**Moderate All**	**Low mastery and Low Performance**	**Predominantly Work-Avoidant**
Positive self-perceptions	Moderate self-perceptions	Positive self-perceptions	Moderate self-perceptions	Moderate self-perceptions	Relatively negative self-perceptions
High intrinsic motivation	High fear of failure	High intrinsic motivation	High academic withdrawal and fear of failure	Low self-efficacy	Relatively high academic withdrawal
High self-efficacy	Relatively low self-efficacy	High fear of failure	Moderate negative affect	Low positive and relatively high negative affect	High negative affect
High positive and low negative affect	High negative affect	High self-efficacy	Relatively low engagement and school value	Relatively low engagement	Low engagement
High engagement	Moderate Engagement	High positive and high negative affect	Moderate wellbeing	Moderate wellbeing	Low school value
High school value	Moderate wellbeing	High engagement			High school cynicism
Low burnout		High school value			Depressive symptoms
Low depressive symptoms		High school exhaustion			

Previous research has found goals related to self-improvement and growth to be positively associated with an adaptive pattern of subjective wellbeing (e.g., Tuominen-Soini et al., 2008). Consequently, mastery-oriented profiles have commonly been found to be positively related to a variety of wellbeing indicators, such as high intrinsic motivation, high self-efficacy, high positive and low negative affect, high task-engagement, low burnout and low depressive symptoms (e.g., Haydel & Roeser, 2002, Pintrich, 2000b; Schwinger et al., 2016; Shih, 2005; Tuominen-Soini et al., 2008; 2012). Mastery goals often promote the adaptive patterns of learning as well as wellbeing, even when functioning together with high other goals, such as a strive to succeed (e.g., Tuominen-Soini et al., 2012). For example, Shih (2005) found that regardless of children's level of performance-approach orientation,

mastery goals were positively associated with their motivation, cognitive engagement, and academic performance. Some studies utilising the multiple goals perspective have, thus, postulated that certain achievement goal combinations, such as relatively high mastery and performance, are more adaptive than others (Harackiewicz, Barron, Tauer & Elliot, 2002). Similar results have been found in studies looking at goal orientation profiles (Hornstra, Majoor & Peetsma, 2017). However, there seem to be some mixed views about the role of high performance goals and their adaptability. For example, in the study by Tuominen-Soini and her colleagues it was found that even though the mastery- and success-oriented students were highly engaged, the success-oriented were also susceptible to exhaustion at school due to their strong focus on performance (Tuominen-Soini et al., 2012).

Predominantly performance goal profiles have been found to be related to more moderate wellbeing. According to Dweck (1986; Dweck & Leggett, 1988) adopting performance goals may lead to a manifestation of helpless pattern of responses when encountering failure. In order to understand the implications of performance goal orientation better, there is a need to distinguish between emphasis on either the approach- or avoidance-orientation, as it has been found that performance-approach and performance-avoidance goals may lead to diverse consequences for motivation, cognition, and achievement (Shih, 2005). Furthermore, it has also been found that children high in performance-avoidance orientation reported greater use of self-handicapping strategies, the use of motivational strategies that will serve as ready excuses for potential failure to deflect others' perceptions away from lack of ability (Midgley & Urdan, 2001; Urdan & Midgley, 2001), than did children low in performance-avoidance orientation, regardless of performance-approach goals (Shih, 2005).

Both performance-avoidance and avoidance goal orientations have been found to be mostly more maladaptive than the other orientations in terms of learning and wellbeing outcomes. By looking at relations between the constructs of avoidance goals and different implications of wellbeing (e.g., engagement, achievement and affect), King and McInerney (2014) found avoidance goals to have a negative impact on engagement, grades as well as positive affect. Additionally, by utilising a person-oriented approach, Tuominen-Soini and her colleagues (2008; 2012) found avoidance goal orientations to be associated with relatively low levels of engagement and high levels of cynicism and inadequacy.

Taken together, the previous research suggests that mastery and performance-approach goal orientations seem to relate to better learning outcomes, as well as better wellbeing, whereas avoidance goal orientations seem to relate to more maladaptive wellbeing, such as burnout and depressive

symptoms. The relationship between goal orientation, wellbeing, learning and performance can be seen as interactional by its nature. Therefore, despite not being often studied, there is relatively strong and coherent indication for achievement goal orientations to be connected with different aspects of individual's general and academic wellbeing.

4.2 Conceptualisation of Academic Wellbeing

Academic wellbeing consists of have differed from different combinations of positive and negative aspects of individual wellbeing in relation to school and its demands (see e.g., Korhonen, Linnanmäki & Aunio, 2014; Tuominen-Soini et al., 2012). In line with this perspective, academic wellbeing is here conceptualised as consisting of schoolwork engagement and school burnout due to their often demonstrated relations and their significance for students' motivation and overall wellbeing.

Schoolwork engagement and school burnout represent significant indicators of positive and negative aspects of student's wellbeing. The multidimensional construct of schoolwork engagement describes student's energy, positive cognitive attitude toward studying, and being absorbed in studying (Salmela-Aro & Upadyaya, 2014). Previous research has shown low engagement to be linked with experiencing more depressive symptoms and school burnout (Salmela-Aro, Savolainen & Holopainen, 2009). School burnout has been defined as exhaustion at school, a cynicism towards the meaning of school, and feelings of inadequacy (Salmela-Aro, Kiuru et al., 2009).

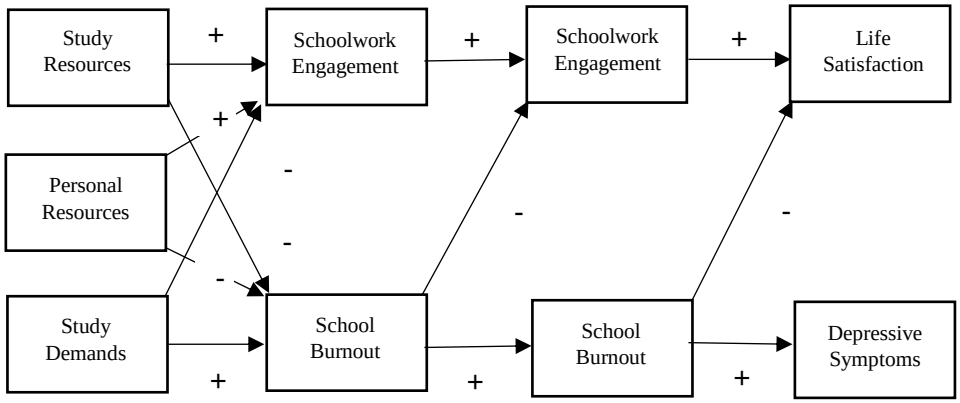

Figure 3. Conceptualisation of Demands-Resources-Model (applied from Salmela-Aro and Upadyaya, 2014)

Both school burnout and schoolwork engagement have originally been used in work environment but are also applicable in school context as it has often been argued that school is the place where students *work* (i.e., finish assignments, attend classes, pass exams) (Kiuru, Aunola, Nurmi, Leskinen, & Salmela-Aro, 2008; Salmela-Aro, Kiuru et al., 2009). Despite the existing distinct differences between a workplace and school, the requirements and demands are rather similar. Consequently, it can be assumed that the phenomena of engagement and burnout are also rather similar.

Both school burnout and engagement can also have long term effects; burnout has been found to be related to depressive symptoms later in life whereas engagement to life satisfaction (Salmela-Aro & Upadyaya, 2014). This has been found when school burnout and schoolwork engagement have been studied in the context of demands-resources model (see Figure 3), that comprises the *energy-depleting process* (i.e., too high demands and lack of sufficient personal resources lead to school burnout) and the *motivational process* (i.e., both study and personal resources promote schoolwork engagement) (Salmela-Aro & Upadyaya, 2014; based on Demerouti, Bakker, Nchreiner & Schaufeli, 2001). The model postulates that environmental characteristics can be divided into the categories of demands and resources. *Demands* are assumed as challenging achieving study-related goals whereas *resources*, both study and personal, as functional in achieving these goals (Salmela-Aro & Upadyaya, 2014). Furthermore, schoolwork engagement and school burnout are independent concepts yet can affect student's wellbeing and each other significantly. The model emphasises the importance of studying burnout and engagement together. Some previous studies have indeed utilised these two frameworks together and found that students demonstrate various patterns of simultaneous schoolwork engagement and school burnout (e.g., Salmela-Aro, Muotka, Alho, Hakkarainen & Lonka, 2016; Salmela-Aro & Upadyaya, 2014; Tuominen-Soini & Salmela-Aro, 2014; Widlund, Tuominen & Korhonen, 2018).

4.2.1 Schoolwork Engagement

Engagement has been found to be linked with better academic performance as well as student wellbeing (e.g., Upadyaya & Salmela-Aro, 2013) and it has important effects both on the individual as on the community. Student engagement is a complex construct and can also be seen to be directed towards not only different subjects but also different aspects of education. It has been suggested that a student can exhibit different levels on engagement within or to a particular task, classroom, module, programme of study, university or higher education (Bryson & Hand, 2007).

Student engagement is a multidimensional construct (Fredricks, Blumenfeld & Paris, 2004) and is often seen to encompass behavioural, emotional and cognitive dimensions. Engagement has been widely studied internationally and yet there is no unanimous understanding of it. According to Kahu (2013), based on the aspects emphasised, the current research on engagement can be divided into four categories: *behavioural* (i.e., focus on student behaviour and institutional practice), *psychological* (i.e., engagement distinctly as an individual psycho-social process), *sociocultural* (i.e., emphasises the critical role of the socio-political context), and *holistic* (i.e., more comprehensive view of engagement). Cultural and structural differences influence on which aspects are emphasised in the research on student engagement. Despite the differences there is a commonality in the views of the importance of engagement on wellbeing, motivation, study paths and learning.

Representing the psychological approach to engagement, Salmela-Aro and Upadyaya (2012) developed a Schoolwork Engagement Inventory EDA measuring energy, dedication and absorption with respect to schoolwork. In line with previous research in engagement (e.g., Schaufeli, Martinez, Pinto, Salanova & Bakker, 2002), the EDA comprises emotional (energy), cognitive (dedication) and behavioural (absorption) components. The main strength of the psychological approach is the affective dimension (Kahu, 2013). Despite focusing on the individuals and their subjective schoolwork engagement, this approach does not exclude the importance of the environment (Kahu, 2013). Although, it has been argued that self-reported engagement may not reflect how behaviourally engaged a student actually is (Linnenbrink-Garcia & Wormington, 2019). However, as the focus is subjective wellbeing, the reported engagement may very well represent the true experienced engagement and, thus, students' academic wellbeing. Engagement towards schoolwork was reported by 37,5% of all Finnish general upper secondary school students recently (National Institute of Health and Welfare, 2017).

Tuominen-Soini and Salmela-Aro's (2014) study on schoolwork engagement and school burnout among Finnish general upper secondary school students found that both students of engaged and engaged–exhausted profiles were engaged and doing well in school whereas cynical and burned-out students were less engaged, valued school less, and had lower academic achievement. The engaged–exhausted students were more stressed and preoccupied with possible failures than engaged students. Burned-out students were more stressed, exhausted, and depressed than cynical students. Six years later, these profiles had stayed relatively stable and the highest temporal stability was found in the engaged group but engaged–exhausted students typically moved into a more disengaged group (Tuominen-Soini & Salmela-Aro, 2014). Thus, even though previous research has been relatively

consistent in finding negative correlations between burnout and engagement, students also can simultaneously demonstrate both burnout and engagement.

4.2.2 School Burnout

Burnout has often been viewed as a work-related syndrome and defined as a disorder of emotional exhaustion, cynicism or depersonalisation, and reduced professional efficacy (Maslach, Schaufeli & Leiter, 2001; see also Salmela-Aro, Kiuru et al., 2009). Students' difficulties in coping with the pressures of achievement in school can lead to burnout when ongoing. Burnout has been found to be closely related with depressive symptoms both in work (Ahola & Hakanen, 2007) and school environments (Salmela-Aro, Savolainen & Holopainen, 2009). Longitudinal study has shown that school burnout can also lead to depressive symptoms later in life (Salmela-Aro, Savolainen & Holopainen, 2009) and it is, therefore, important to understand what predicts and fosters school burnout.

Burnout is a psychosocial condition that is believed to arise predominantly as the result of stress related processes and is associated with motivational, performance and psychological difficulties (Hill & Curran, 2016). One of the most influential models for burnout is the Maslach Burnout Inventory (Maslach & Jackson, 1981) that defines burnout as a three-dimensional construct. According to the model the three core symptoms of burnout are emotional exhaustion, cynicism and decreased personal accomplishment (Maslach et al., 2001). Salmela-Aro's School Burnout Inventory (SBI) (Salmela-Aro, Kiuru et al., 2009) also comprises three closely related yet separate dimensions: (1) exhaustion at school, (2) cynicism toward the meaning of the school and (3) sense of inadequacy as a student. According to them, burnout can be measured by these three positively correlated factors or as a summary score indicating overall school burnout.

Social environment can have an important role in the experienced school burnout. For example, studies have found that school, peer group and home are all important social contexts for a student in terms of prevalence of school burnout (Salmela-Aro, 2010). School is a structured environment where competition and power relations are continuously present, and students are required to for example follow the instructions, perform and succeed in given tasks and respect the deadlines. The social support from school can, therefore, be vital for student's wellbeing. For example, a study showed teachers' positive feedback to have a negative impact on students' burnout (Salmela-Aro, 2010). However, school burnout has been shown to increase in upper secondary school and that girls

experience burnout significantly more than boys. For example, it was recently reported 17 % of girls and 7,9% of boys experienced burnout in the first and second years of general upper secondary school (National Institute of Health and Welfare, 2017).

Prior research on the relations between goals and goal orientations, and burnout seems to suggest avoidance orientation is related to feelings of cynicism and inadequacy, performance-avoidance to all dimensions of burnout, performance-approach seems to be related to exhaustion whereas mastery goals seem to be related to low levels of burnout altogether (e.g., Tuominen-soini et al., 2008; 2012). Collating these results together, it seems that avoidance tendencies are related to a lack of interest and experiencing schoolwork as meaningless, and a susceptibility to normative standards, in other words performance goals, to worrying over schoolwork and feeling pressure in relation to school. Salmela-Aro, Kiuru et al., (2009) also found that more cynicism toward the meaning of school and sense of inadequacy at school also meant lower levels of academic achievement and school engagement. This emphasises the importance of viewing both burnout and engagement as indicators of students' academic wellbeing. When studying student motivation and learning, it seems probable that different academic wellbeing factors are related to general motivational orientations, and also be related to more subject-specific motivational constructs. Furthermore, it would also seem likely that the cost required to succeed in a subject would influence student's motivation, learning and wellbeing.

5 Aims and Hypotheses

5.1 Aims of the Study

The present study investigated domain-specific achievement goal orientations to identify patterns of individual motivation and their implications on student's wellbeing both in terms of a subject-specific element of perceived cost (i.e., how exhausting it is to engage in a task, how much emotional costs are related to it, and how much it requires giving up other valued alternatives), as well as more general indicators of academic wellbeing; school burnout (i.e., how exhausted, cynical or inadequate a student feels in relation to school demands) and schoolwork engagement (i.e., how engaged a student is in their schoolwork). This thesis aimed to add to the current knowledge about goal orientations by looking at their domain-specificity, and relations to perceived cost and academic wellbeing.

Goal orientations (i.e., individual tendencies to favour certain goals, results and consequences; Niemivirta, 2002) have predominantly been researched in relation to studying in general or in one subject only. Recent studies comparing goal orientations in different subjects have found goal orientation profiles to show both stability across domains as well as some domain-specificity (e.g., Jansen in de Wal et al., 2016), suggesting that goal orientations are formed by a combination of more general personal tendencies to favour certain goals and domain-specific components. These studies examining students' goal orientation profiles in different subjects are still scarce, however. Task values (i.e., personal beliefs of a subject's utility, intrinsic, and attainment value, and cost; Eccles et al., 1993) on the other hand have been studied as beliefs that influence students' determination, performance, and choices in relation to different subjects. Regardless of a similar focus on achievement motivation, the two dominant theories of goal orientations and task values have to date been utilised mainly separately. Incorporating goal orientations and the perceived cost facet can enable a more comprehensive understanding of intricate motivational processes, domain-specificity of achievement motivation, and the implications on wellbeing.

In the empirical research of task values the cost facet has often lacked attention. However, the perceived cost has been shown to be a significant factor in discriminating adaptive and maladaptive motivational patterns and outcomes (e.g., Conley, 2012), suggesting that the perceived cost required to succeed in a subject is likely to have a role in student's motivation, learning and wellbeing. In addition to the subject-specific components, also the more general academic wellbeing has been recognised as essential when researching student motivation (Tuominen-Soini et al., 2012). School burnout and schoolwork engagement represent both positive and negative aspects of student's emotional, behavioural and cognitive school wellbeing.

The objective of this thesis was to examine:

1. What kind of subject-specific (English and mathematics) achievement goal orientation profiles can be identified among general upper secondary school students?

2. How students with different achievement goal orientation profiles differ with respect to perceived subject-specific cost (i.e., effort required, emotional cost and opportunity cost) and general academic well-being (i.e., schoolwork engagement, school burnout)?

5.2 Hypotheses

Based on theoretical considerations and prior research in similar contexts (Jansen in de Wal et al., 2016; Niemivirta, 2002; Tapola & Niemivirta, 2008; Tuominen-Soini et al., 2008; 2011; 2012; Schwinger et al., 2016) several distinct achievement goal orientation profiles were expected to be identified. In line with previous research, I expected to identify at least four kinds of achievement goal orientations profiles; profiles with a strong emphasis on mastery, both mastery and performance, avoidance, and a profile with average scores on all profiles. Due to the scarcity of prior research on subject-specific goal orientations, the study is partly exploratory in terms of to which degree the orientations demonstrate subject-specificity. Nevertheless, it can be assumed that these orientations demonstrate some domain-specificity (Jansen in de Wal et al., 2016).

Furthermore, I expected the profiles to differ in terms of perceived cost and academic wellbeing. Mainly drawing from Tuominen-Soini et al. (2008; 2011) and Jiang et al. (2018), profiles high in mastery are anticipated to demonstrate adaptive wellbeing (e.g., low cost, high engagement, low burnout), profiles high in mastery and performance to demonstrate both maladaptive and adaptive wellbeing (e.g., high cost, high engagement, high exhaustion, and inadequacy), profile with scores relatively close to medium to show mediocre wellbeing (e.g., mediocre cost, engagement and burnout), and profile high on avoidance goals to demonstrate a maladaptive academic wellbeing (e.g., high cost, low engagement and high cynicism).

6 Methods

6.1 Participants and Procedure

Data were collected by questionnaires in the autumn of 2013, and to complement the data, the questionnaires were also filled in by new students in the autumn of 2014 (Tuominen, 2015). Altogether, 434 students participated in the current study. Participants were from all grades of one general upper secondary school in Southern Finland. The sample comprised 53,2% first-year students, 24,7% second-year students, 18,9% third-year students and 1,8% fourth- or fifth-year students. It is important to notice that the completion of Finnish upper secondary school usually takes three years.

However, due to the course-based syllabus it may also take less or longer time. Participants were 41,2% girls (n = 179) and 58,8% boys (n = 255). On average, students were 16.7 years old (SD = 0.94). Questionnaire included questions regarding different aspects of student motivation and wellbeing, such as schoolwork engagement, school burnout, self-worth contingency, achievement goal orientations, task values and perfectionism. Data collection took place mainly during regular classes. Only students who were absent during those classes filled in the questionnaires on their free time. Participation was voluntary, and the participants were assured of the confidentiality of their responses.

6.2 Measures

Subject-Specific Achievement Goal Orientations. Students' achievement goal orientations in mathematics and English were assessed by using an instrument originally developed by Niemivirta (2002; see also Niemivirta et al., 2019). The instrument comprises 15 items measuring five separate domain-specific achievement goal orientations: mastery-intrinsic, mastery-extrinsic, performance-approach, performance-avoidance and avoidance. Each goal orientation dimension was measured with three items. The achievement goal orientations in both domains were measured by a questionnaire, which presented the item stems on the left and the subjects (mathematics and English) on the right in separate columns. Students answered on two separate Likert-type scales from 1 (not at all true) to 7 (completely true) for both domains. The *mastery-intrinsic* orientation scale consisted of items measuring the students' goals to learn, develop competence and to gain new knowledge (e.g., "An important goal for me in my studies is to learn as much as possible"). The *mastery-extrinsic* orientation scale measured the students' focus to learn as well as to perform successfully based on an extrinsic criteria (e.g., "It is important to me that I get good grades"). The *performance-approach* orientation scale consisted of items measuring the students' desire to outperform other students (e.g., "An important goal for me in school is to do better than the other students"). The scale measuring the *performance-avoidance* orientation consisted of items regarding the students' aim to avoid situations where failure is perceived possible (e.g., "I try to avoid situations in which I may fail or make mistakes"). The final scale measuring the *avoidance* orientation focused on students' aim to avoid all schoolwork and minimise effort (e.g., "I am particularly satisfied if I don't have to work much for my studies").

Table 2. Descriptive Statistics and Cronbach's Alphas

Variables	***M***	***SD***	α	***M***	***SD***	α
Achievement Goal Orientations	**Mathematics**			**English**		
Mastery-Intrinsic	4.89	1.47	.90	5.50	1.26	.87
Mastery-Extrinsic	5.20	1.43	.91	5.66	1.20	.85
Performance-Approach	4.09	1.45	.74	4.47	1.48	.73
Performance-Avoidance	4.19	1.55	.82	4.35	1.58	.81
Avoidance	4.85	1.34	.72	4.67	1.35	.71
Perceived Cost	**Mathematics**			**English**		
Effort & Emotional	4.03	1.51	.88	2.99	1.36	.87
Opportunity	3.52	1.58	.81	2.86	1.47	.82
Academic Wellbeing	***M***	***SD***	α			
Engagement	3.23	1.34	.92			
Exhaustion	3.17	1.08	.78			
Cynicism	2.78	1.22	.83			
Inadequacy	3.33	1.13	.56			

Subject-Specific Cost. Students' perceived subject-specific cost was assessed by utilising a subscale of an instrument (Gaspard et al., 2015) developed to capture the multidimensionality of value beliefs as defined in the expectancy-value model (Eccles et al., 1983). In the questionnaire, the perceived cost item stems were presented on the left and the subjects (mathematics and English) on the right in separate columns. The cost scale consisted of nine items, and each subfacet was measured with three items. Thus, the cost subscale measured three separate subfacets: *effort required* (e.g., "Dealing with math/English drains a lot of my energy"), *emotional cost* (e.g., "Doing math/English makes me really nervous") and *opportunity cost* (e.g., "I have to give up a lot to do well in math/English"). Students answered all items on a 7-point Likert-type scale from 1 (not at all true) to 7 (completely true).

Schoolwork Engagement. Students' schoolwork engagement was assessed by utilising the schoolwork engagement inventory (EDA) by Salmela-Aro and Upadyaya (2012). The EDA consists of nine items measuring student's energy (e.g., "At school I am bursting with energy"), dedication (e.g., "I find the schoolwork full of meaning and purpose") and absorption (e.g., "Time flies when I am studying") with respect to schoolwork. The instrument suits well for both one factor and three factor solutions (Salmela-Aro & Upadyaya, 2012). Students answered on a Likert-type scale from 0 (never) to 6 (everyday).

School Burnout. School Burnout was assessed with the School Burnout Inventory (SBI; Salmela-Aro, Kiuru et al., 2009), originally developed by Salmela-Aro and Näätänen (2005). The SBI consists of 10 items measuring three dimensions of burnout: exhaustion at school, cynicism toward the

meaning of schoolwork, and sense of inadequacy as a student. *Exhaustion* at schoolwork was measured with four items (e.g., "I feel overwhelmed by my schoolwork"), *cynicism* toward the meaning of school with three items (e.g., "I'm continually wondering whether my schoolwork has any meaning") and sense of *inadequacy* as a student with three items (e.g., "I often have feelings of inadequacy in my schoolwork"). Students answered on a Likert-type scale from 1 (completely disagree) to 6 (completely agree).

6.3 Data analysis

Confirmatory Factor Analysis. Preliminary analyses concerning structural validity were first conducted using confirmatory factor analysis (CFA). A model was specified in which all items for each scale were set to load on the corresponding factor only. Maximum likelihood (ML) estimation was used to generate all solutions. The two-index presentation strategy, more specifically relying on a combination of fit indices with different measurement properties, was followed as suggested by Hu and Bentler (1999). The comparative fit index (CFI) was used with a cut-off value of ≥ .95 for excellent fit and the standardised root mean square residual (SRMR) with a cut-off value of < .08 to evaluate model fit. This part of the analysis was performed using the Jamovi statistical package (Jamovi Project, 2018). After conducting the CFA, composite scores were formed and correlations between variables were examined by using the SPSS (IBM SPSS Statistics for Windows, 2016, Version 24.0).

Latent Profile Analysis. The first research question aimed to understand what kind of subject-specific achievement goal orientation profiles can be identified among students. Thus, students with similar patterns of achievement goal orientations were identified through probabilistic model-based variant of traditional cluster analysis (Vermunt & Magidson, 2002), the latent profile analysis (LPA) using the Mplus (Muthén & Muthén, 1998-2017). The LPA was used to identify the smallest number of latent classes (groups) that adequately describe the associations among observed continuous variables of five achievement goal orientations in two different subjects (i.e., 10 variables). Akaike Information Criterion (AIC), Bayesian Information Criterion (BIC), Lo-Mendell-Rubin likelihood ratio test (LMR), and the Vuong-Lo-Mendell-Rubin likelihood ratio test (VLMR), as implemented in the Mplus statistical program, were used as the statistical criteria for choosing the best-fitting model. The model with lower AIC and BIC values is considered to provide a better fit to the data, and a low p-value for VLMR suggests that the model with one less class should be rejected in favour of the estimated model.

Analysis of Variance. The second research question aimed to explore how students with diverse achievement goal orientation profiles differ with respect to perceived subject-specific cost and academic well-being. Therefore, after establishing groups, analyses of variance (ANOVA) were conducted to examine group differences in perceived subject-specific cost, schoolwork engagement and school burnout. Post hoc comparisons using the Games-Howell and Bonferroni corrections were also carried out. This part of the analysis was performed using the SPSS

7 Results

7.1 Preliminary Results

Confirmatory Factor Analysis. The initial CFA on achievement goal orientations in mathematics and English described the data rather well, $\chi^2(80) = 312.0 / 281.0$, $p < .001$, CFI = .937 / .928, SRMR = .064 / .060 (for mathematics and English, respectively). However, error covariances between one pair of similarly worded items were freed. Consequently, the modified model provided better fit, $\chi^2(79) = 262.0 / 261.0$, $p < .001$, CFI = .950 / .936, SRMR = .060 / .060, thus, verifying the hypothesised structures. Composite scores were computed separately for the five orientations in both domains.

The CFA on cost was started by including three different aspects of perceived cost; effort required (3 items), emotional cost (3 items) and opportunity cost (3 items). Models described the data rather well, $\chi^2(24) = 181.0 / 152.0$, $p < .001$, CFI = .928 / .944, SRMR = .056 / .039 (for mathematics and English, respectively). However, in line with Gaspard et al. (2017; 2018), the confirmatory factor analyses showed that the value facets of cost were separable in the sample except for effort required and emotional cost. A combined measure of effort and emotional cost was used. One item was excluded from further analysis. Error covariances between one pair of similarly worded items were freed. These modifications improved the model fit $\chi^2(18) = 48.8 / 54.0$ (English), $p < .001$, CFI = .983 / 980, SRMR= .026 / .027 (respectively). Thus, two composite scores were computed of two separate factors measuring opportunity cost, and combined cost of effort required and emotional cost.

Table 3. Confirmatory Factor Analysis

Factors	**χ^2**	**df**	**p**	**CFI**	**TLI**	**SRMR**	**RMSEA**
Achievement Goal Orientations M[1]	262.0	79	< .001	.950	.934	.060	.073
Achievement Goal Orientations E[1]	261.0	79	< .001	.935	.914	.060	.073
Cost M[2, 3]	48.8	18	< .001	.983	.973	.026	.063
Cost E[2, 3]	54.0	18	< .001	.980	.969	.027	.068
Engagement	116.0	27	< .001	.963	.950	.032	.087
Burnout[4]	99.9	24	< .001	.948	.921	.045	.086

Note. Error covariances between two pairs of similarly worded items were freed: [1] = Items 3 ("I try to avoid situations in which I may appear dumb or incompetent") and 6 ("I try to avoid situations in which I may fail or make mistakes"); [2] = Items 11 ("I have to give up other activities that I like to be successful at math/English") and 22 ("I have to give up a lot to be good at maths/English"); Items deleted: [3] Item 26 ("Dealing with math drains a lot of my energy") and [4] Item 7 ("I feel that I have less and less to give in my schoolwork"); CFI = comparative fit index; TLI = Tucker Lewis index; SRMR = standardised root mean square residual; RMSEA = root mean square error of approximation.

The initial CFA on schoolwork engagement with one-factor solution fit the data well, $\chi^2(27) = 116.0$, $p < .001$, CFI = .963, SRMR = .032. Thus, due to the strong correlation between all three subdimensions a composite score was computed from all nine items to indicate overall schoolwork engagement in this study.

The CFAs on school burnout were started by including all 10 items measuring three different aspects of burnout; exhaustion (4 items), cynicism (3 items), and inadequacy (3 items). The model fit the data rather well $\chi^2(32) = 161.0$, $p < .001$, CFI = .928, SRMR = .057. However, an examination of modification indices suggested a minor change to the model. In line with previous research (Salmela-Aro, Kiuru et al., 2009), the results showed that the third inadequacy item ("I feel that I have less and less to give in my schoolwork") did not fit the model tested and loaded strongly on both exhaustion and cynicism factors. By deleting the third inadequacy item, the data fit the model well, $\chi^2(24) = 99.9$, $p < .001$, CFI = .948, SRMR = .045. Thus, composite scores were computed separately for exhaustion (4 items), cynicism (3 items) and inadequacy (2 items). All goodness of fit statistics are gathered in Table 3 and factor loadings are presented Appendix A.

Correlations between Variables. The correlational results (see Table 4) between achievement goals within a subject, between subjects, in relation to cost and wellbeing variables as well as between cost, engagement, and burnout showed meaningful and expected relations.

Achievement Goal Orientations in mathematics and English. Subject-specific mastery-intrinsic, mastery-extrinsic and performance-approach goal orientations were all positively correlated. In mathematics, mastery-intrinsic, mastery-extrinsic, performance-approach, and performance-avoidance orientations were all significantly positively correlated. In English, mastery-intrinsic and -extrinsic and performance-approach orientations were positively related to each other. Avoidance orientation was also negatively correlated with mastery-intrinsic orientation, within a subject, in both subjects. However, avoidance orientation in one subject was not related to mastery-intrinsic orientation in another subject. There was a strong positive correlation also between avoidance orientation in both subjects. All goal orientations showed correlations between the same orientation in a different subject.

Achievement Goal Orientations, Perceived Cost and Academic Wellbeing. Goal orientations were related to cost subfacets and academic wellbeing variables in different ways. Mastery goal orientations in mathematics were negatively related to effort and emotional cost. Similar relations were not demonstrated in English. In both subjects, mastery goal orientations were negatively related to cynicism, performance goal orientations positively to exhaustion, and both performance-avoidance and avoidance orientations to inadequacy. Cynicism was correlated with all goal orientations other than performance-approach orientation. Cynicism correlated negatively with mastery orientations and positively with performance-avoidance and avoidance orientations. All cost subfacets were related to performance-avoidance orientation. Engagement was related to mastery goal orientations in both subjects and showed negative correlations with avoidance orientations.

Cost Subfacets and Academic Wellbeing. All burnout dimensions were positively correlated but showed some difference in how they were related to other variables. For example, engagement was negatively correlated with cynicism and inadequacy, but not with exhaustion. Engagement was also negatively correlated with effort and emotional cost in mathematics, but not with the other cost subfacets. All cost subfacets were positively correlated with the other cost subfacets and with all burnout dimensions.

Table 4. Correlations between Variables

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1	-																	
2	.77**	-																
3	.47**	.59**	-															
4	.18**	.20**	.43**	-														
5	-.27**	-.13**	.09	.16**	-													
6	.51**	.36**	.12*	.09	-.09	-												
7	.34**	.44**	.22**	.06	.05	.66**	-											
8	.12*	.19**	.63**	.32**	.21**	.28**	.51**	-										
9	.08	.10*	.33**	.79**	.11*	.08	.11*	.34**	-									
10	-.09	.02	.22**	.14*	.73**	-.23**	-.02	.22**	.15**	-								
11	-.25**	-.26**	-.04	.24**	.28**	.04	.00	.17**	.26**	.08	-							
12	.07	-.01	.16**	.35**	.08	.07	-.04	.21**	.25**	.01	.59**	-						
13	.06	.03	.17**	.24**	-.02	-.08	-.29**	-.06	.24**	.04	.41**	.35**	-					
14	.10*	.06	.22**	.28**	-.06	-.03	-.22**	.04	.25**	-.03	.30**	.59**	.72**	-				
15	.46**	.39**	.24**	.10*	-.31**	.37**	.26**	.09	.06	-.26**	-.14**	.03	.01	.08	-			
16	-.01	.00	.20**	.39**	.01	.07	.02	.19**	.38**	-.02	.42**	.43**	.31**	.35**	.02	-		
17	-.36**	-.27**	-.01	.19**	.33**	-.28**	-.20**	.09	.19**	.26**	.39**	.26**	.23**	.19**	-.4**	.44**	-	
18	-.13**	-.11*	.09	.31**	.22**	-.06	-.02	.16**	.33**	.13**	.40**	.37**	.24**	.24**	-.20**	.58**	.57**	-

Note. *p <.01, **p <.001

Note. 1 = Mastery-Intrinsic M, 2 = Mastery-Extrinsic M, 3= Performance-Approach M, 4 = Performance-Avoidance M, 5 = Avoidance M, 6 = Mastery-Intrinsic E, 7 = Mastery-Extrinsic E, 8 = Performance-Approach E, 9 = Performance-Avoidance E, 10 = Avoidance E, 11 = Effort and Emotional Cost M, 12 = Opportunity Cost M, 13 = Effort and Emotional Cost E, 14 = Opportunity E, 15 = Engagement, 16 = Exhaustion, 17 = Cynicism, 18 = Inadequacy; M = mathematics, E = English.

7.2 Achievement Goal Orientation Profiles

The first main goal of the study was to examine the kinds of goal orientation profiles that can be found among Finnish general upper secondary school students in mathematics and English. The results from latent profile analyses showed that the five-class solution fit the data best. The results from the series of LPAs (see Table 5 for fit indices) showed that AIC and BIC decreased when additional latent classes were added, up to the six-class solutions. However, after the four- and five-class solutions the decrease stabilised. The *p*VLMR, *p*LMR, and high entropy provided support for the five-class solution. Furthermore, the group sizes were reasonable, and profiles were qualitatively informative. The solutions were also considered in relation to previous research and theory. Thus, five distinct groups were identified and labelled according to the score mean profiles: (1) *mastery-oriented*, (2) *success-oriented*, (3) *English-oriented, math-avoidant*, (4) *indifferent* and (5) *avoidance-oriented*. The standardised mean score profiles are presented in Figure 4. For illustrative purposes the score mean profiles are also displayed separately by subject in Figure 5.

Table 5. Information Criteria Values for Different Class Solutions

k	AIC	BIC	SABIC	p_{VLMR}	p_{LMR}	Entropy	Group sizes
1	15242.607	15324.068	15260.599	–	–	–	434
2	14584.561	14710.825	14612.448	0.0000	0.0000	.841	204, 230
3	14286.987	14458.055	14324.770	0.1278	0.1309	.835	111, 197, 126
4	14000.328	14216.200	14048.007	0.0131	0.0140	.864	61, 132, 116, 125
5	**13830.896**	**14091.571**	**13888.469**	**0.0375**	**0.0391**	**.884**	**27, 108, 125, 62, 112**
6	13695.104	14000.583	13762.573	0.1129	0.1164	.884	66, 25, 60, 120, 109, 54

Note. k = number of latent profiles in the model; AIC = Akaike information criterion; BIC = Bayesian Information Criterion, SABIC = sample-size adjusted BIC; p_{VLMR} = Vuong–Lo–Mendell–Rubin likelihood ratio test, p_{LMR} = Lo–Mendell–Rubin adjusted likelihood ratio test. Values in bold indicate the best-fitting model.

In order to see how students with different goal orientation profiles differed in the clustering variables, a one-way ANOVA was carried out with goal orientation group as independent variable and goal orientations in both subjects as dependent variables. Results demonstrated that the groups differed with respect to all goal orientations in *mathematics*: $F(4, 429) = 170.92$, $p < 0.001$, $n^2 = .614$ in mastery-intrinsic, $F(4, 429) = 245.90$, $p < 0.001$, $n^2 = .696$ in mastery-extrinsic, $F(4, 429) = 105.78$,

$p < 0.001$, $n^2 = .497$ in performance-approach, $F(4, 429) = 42.14$, $p < 0.001$, $n^2 = .282$ in performance-avoidance, and $F(4, 429) = 34.63$, $p < 0.001$, $n^2 = .243$, in avoidance. Groups also differed with respect to all goal orientations in *English*: $F(4, 425) = 139.96$, $p < 0.001$, $n^2 = .568$ in mastery-intrinsic, $F(4, 426) = 156.31$, $p < 0.001$, $n^2 = .595$ in mastery-extrinsic, $F(4, 425) = 90.07$, $p < 0.001$, $n^2 = .456$ in performance-approach, $F(4, 425) = 33.17$, $p < 0.001$, $n^2 = .238$ in performance-avoidance, and $F(4, 425) = 29.52$, $p < 0.001$, $n^2 = .217$, in avoidance.

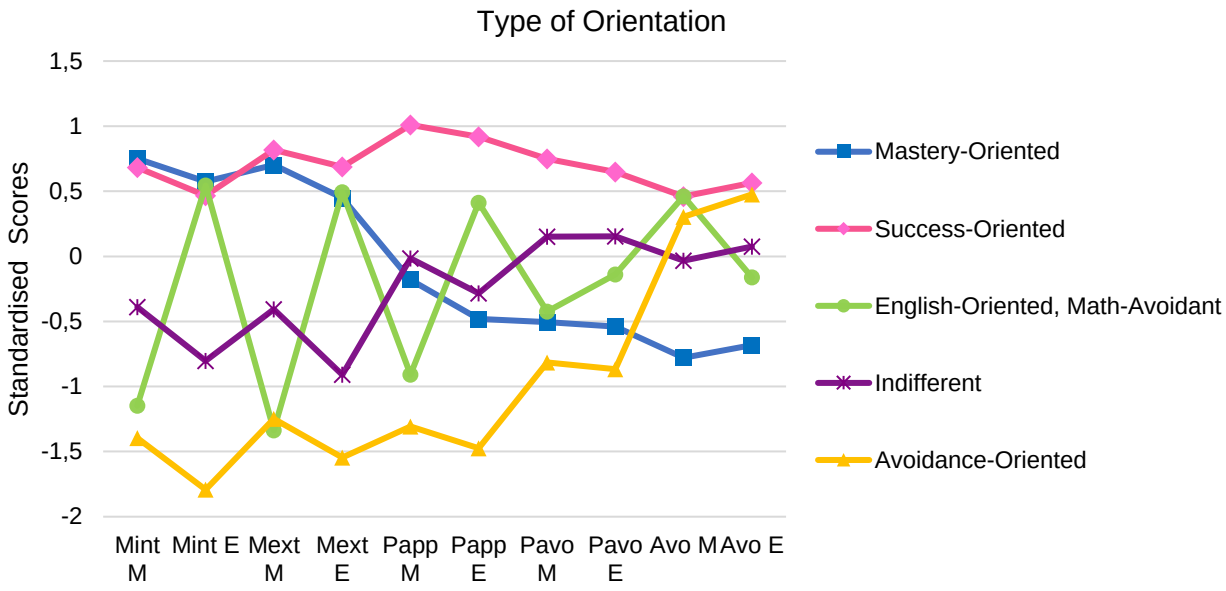

Figure4. Students' standardised mean scores on achievement goal orientation scales as a function of group membership.

Note. Mint = mastery-intrisic, Mext = mastery-extrinsic, Papp = performance-approach, Pavo = performance-avoidance, Avo = avoidance; M = mathematics; E = English.

The five identified groups differed in how they emphasised different goal orientations (see, Figure 4 for standardised mean scores and Table 6). *Mastery-oriented* students (24,9%) emphasised mastery-intrinsic and mastery extrinsic orientations in both mathematics and English and scored the lowest on avoidance. *Success-oriented* students (25,8%) demonstrated high multiple goals in mathematics and English as they expressed a strive for both absolute and relative success as well as for learning and gaining competence in both domains. Interestingly, they scored rather high also on avoidance orientation in both subjects. *English-oriented, math-avoidant* students (14,3%) showed the most distinct domain-specificity in the achievement goal orientations out of all the groups and were characterised by a profile that resembles a zigzag. This group demonstrated a strong strive for both

mastery and success in English but had very low aspirations towards learning and succeeding in mathematics. They also emphasised avoidance orientations only in mathematics. *Indifferent* students (28,8%) had scores relatively close to the scale mean on all orientations but reported lower mastery and performance-approach goals in comparison to the mean of the whole sample in both subjects, and particularly in English (see Table 6). The small group of *avoidance-oriented* students (6,2%) scored low on mastery and performance-approach orientations and high on avoidance in both domains. There were some differences in how girls and boys were distributed in the goal orientation groups, $\chi 2$ (4) = 11.04, p = .026, C = 0.16. Even though there were no standardised residuals above 2 or below -2, it seems that girls were slightly overrepresented in the English-oriented, math avoidant group (std. res. = 1.7). In the other groups girls and boys were relatively equally distributed.

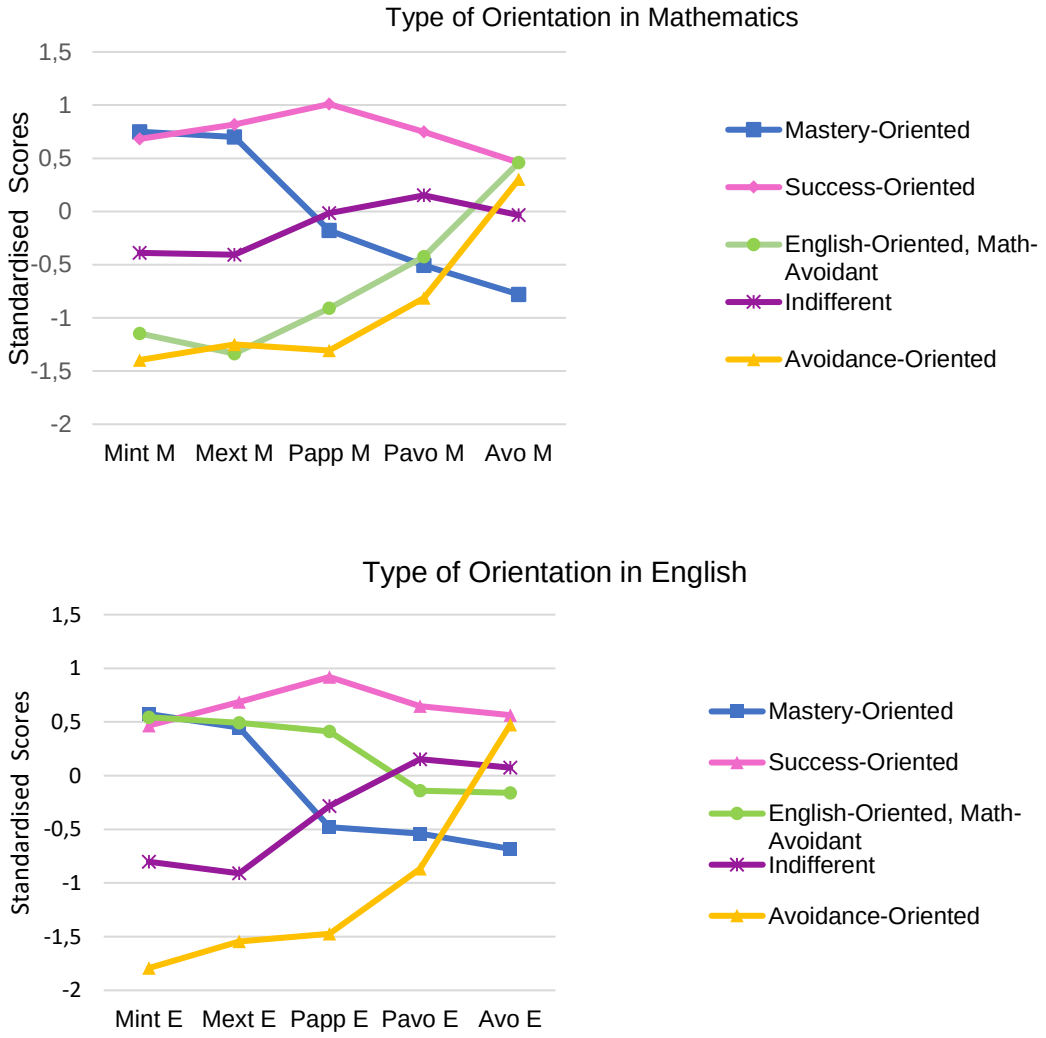

Figure 5. Illustration of students' goal orientation profiles in mathematics and English separately

Note. Mint = Mastery-Intrinsic, Mext = Mastery-Extrinsic, Papp = Performance-Approach, Pavo = Performance-Avoidance, Avo = Avoidance; M = mathematics, E = English.

Table 6. Mean Differences in Achievement Goal Orientations between Goal Orientation Groups

Variable		Achievement Goal Orientation Profile									
		Mastery-oriented		**Success-oriented**		**English-oriented, math-avoidant**		**Indifferent**		**Avoidance-oriented**	
		N = 108		*N* = 112		*N* = 62		*N* = 125		*N* = 27	
		M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Math	Mastery-Intrinsic	5.99 [a]	0.81	5.89 [a]	0.91	3.20 [b]	1.09	4.32	0.81	2.84 [b]	1.31
	Mastery-Extrinsic	6.21 [a]	0.68	6.37 [a]	0.65	3.30 [b]	1.04	4.62	0.83	3.42 [b]	0.90
	Performance-Appr	3.83 [a]	1.36	5.56	0.85	2.77 [b]	0.97	4.07 [a]	0.88	2.20 [b]	1.01
	Performance-Avoid	3.41 [a]	1.41	5.35	1.31	3.53 [a]	1.48	4.43	1.18	2.93 [a]	1.23
	Avoidance [1]	3.81	1.14	5.47 [a]	1.18	5.47 [a]	1.21	4.81 [b]	1.09	5.26 [a b]	1.47
English	Mastery-Intrinsic	6.23 [a]	0.64	6.09 [a]	0.90	6.19 [a]	0.79	4.49	0.87	3.24	1.14
	Mastery-Extrinsic	6.19 [a]	0.72	6.48	0.68	6.25 [a]	0.71	4.56	0.80	3.80	1.17
	Performance-Appr	3.76 [a]	1.30	5.83	0.86	5.08	1.25	4.05 [a]	1.00	2.28	1.08
	Performance-Avoid	3.50 [a b]	1.40	5.38	1.45	4.13 [a c]	1.75	4.60 [c]	1.09	2.98 [b]	1.38
	Avoidance [1]	3.81	1.14	5.43 [a]	1.21	4.45 [b]	1.29	4.77 [b]	1.06	5.31 [a b]	1.29

Note. Group means sharing the same superscripts are not significantly different at $p < 0.05$ level (with Games-Howell correction, [1] with Bonferroni correction).

7.3 Differences in Perceived Domain-Specific Cost

After establishing groups, in order to examine how students with different goal orientation profiles differed with respect to perceived cost, a one-way ANOVA was carried out with goal orientation group as independent variable and perceived cost factors as dependent variables. Results showed that the groups differed significantly in both opportunity cost in mathematics, $F(4, 426) = 9.40$, $p < 0.001$, $n^2 = .081$, and in English, $F(4, 424) = 15.26$, $p < 0.001$, $n^2 = .126$, as well as emotional cost and effort required in mathematics, $F(4, 426) = 13.98$, $p < 0.001$, $n^2 = .116$, and in English, $F(4, 425) = 12.11$, $p < 0.001$, $n^2 = .102$.

The results showed that the perceived emotional cost in mathematics very high in the English-oriented, math-avoidant group and low in the mastery-oriented students (see Figure 6 and Table 7). However, the opportunity cost in mathematics was relatively high in the success-oriented and low in the avoidance-oriented students. The highest perceived cost in relation to other cost facets within a

group was the emotional cost and required effort in mathematics for all groups. Overall, for every group the perceived cost was higher in mathematics than in English. There was not much difference between the two perceived cost facets in English within a group. The highest emotional cost and required effort in English was perceived by the indifferent students whereas the English-oriented, math-avoidant, and the avoidance-oriented students reported low cost.

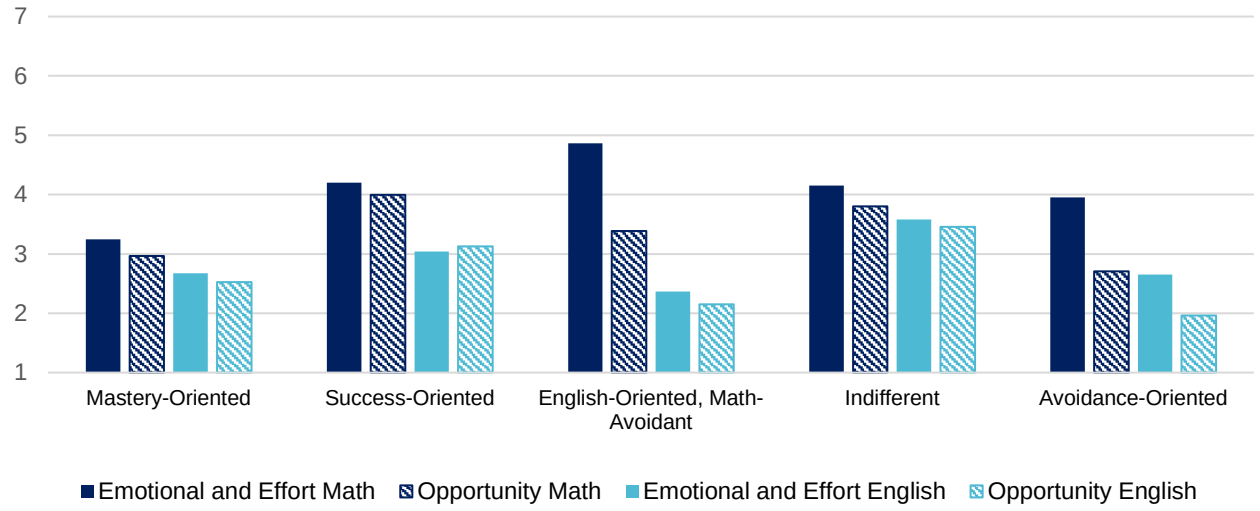

Figure 6. Group Differences in Perceived Cost in Mathematics and English

7.4 Differences in Academic Wellbeing

To investigate how students with different goal orientation profiles differed with respect to academic wellbeing, a one-way ANOVA was carried out with goal orientation as the independent variable and schoolwork engagement and school burnout as dependent variables.

7.4.1 Schoolwork Engagement

The results from one-way ANOVA showed that the goal orientation profile had a significant effect on schoolwork engagement, $F(4, 427) = 20.83$, $p < 0.001$, $n^2 = .163$. Engagement was the highest in the mastery-oriented students and success-oriented students (see Figure 7). All the other groups differed from these two groups by scoring noticeably lower. However, the English-oriented, math-

avoidant and the indifferent students scored relatively close to the middle of the scale, whereas the avoidance-oriented students were significantly least engaged.

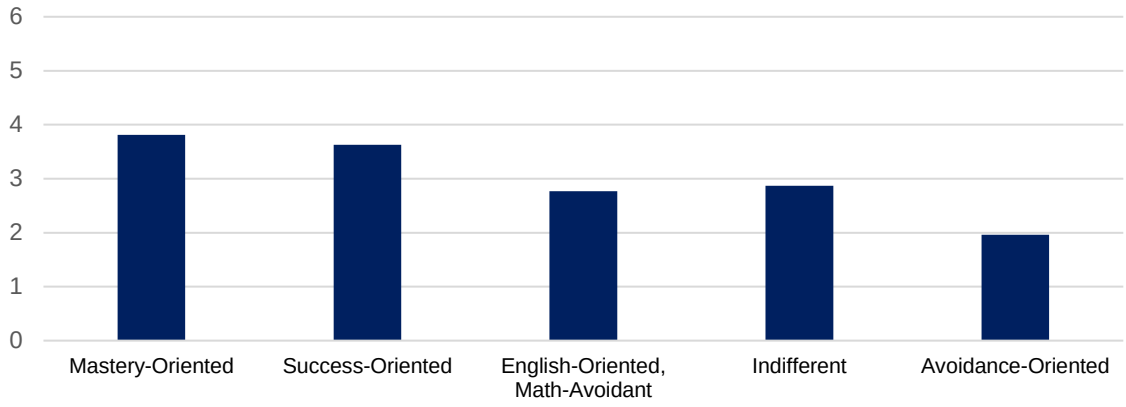

Figure 7. Group Differences in Schoolwork Engagement

7.4.2 School Burnout

The results from one-way ANOVA showed that the achievement goal orientation groups differed significantly also in all dimensions of school burnout: exhaustion, $F(4, 427) = 8.42$, $p < 0.001$, $n^2 = .073$; cynicism, $F(4, 427) = 21.93$, $p < 0.001$, $n^2 = .170$, and inadequacy, $F(4, 427) = 11.06$, $p < 0.001$, $n^2 = .094$. High exhaustion was expressed by the success-oriented students and the relatively low by the mastery- and avoidance-oriented students (see Table 7). Relatively high scored also the English-oriented, math-avoidant students and the indifferent group. Both indifferent and avoidance-oriented students scored the high in cynicism. The success-oriented and English-oriented, math-avoidant students expressed moderate cynicism by scoring relatively close but below the medium of the scale. The lowest cynicism was expressed by the mastery-oriented students. Inadequacy was relatively high in the success-oriented, English-oriented, math-avoidant and the indifferent students, and comparatively low in the mastery-oriented students.

Taken all three dimensions of burnout together, the indifferent students demonstrated the high overall burnout (see Figure 8). Also, success-oriented and English-oriented, math-avoidant students scored relatively high on burnout whereas the mastery-oriented and the avoidance-oriented students experienced low school burnout. However, the avoidance-oriented were rather highly cynical whereas the mastery-oriented scored relatively low on all burnout facet.

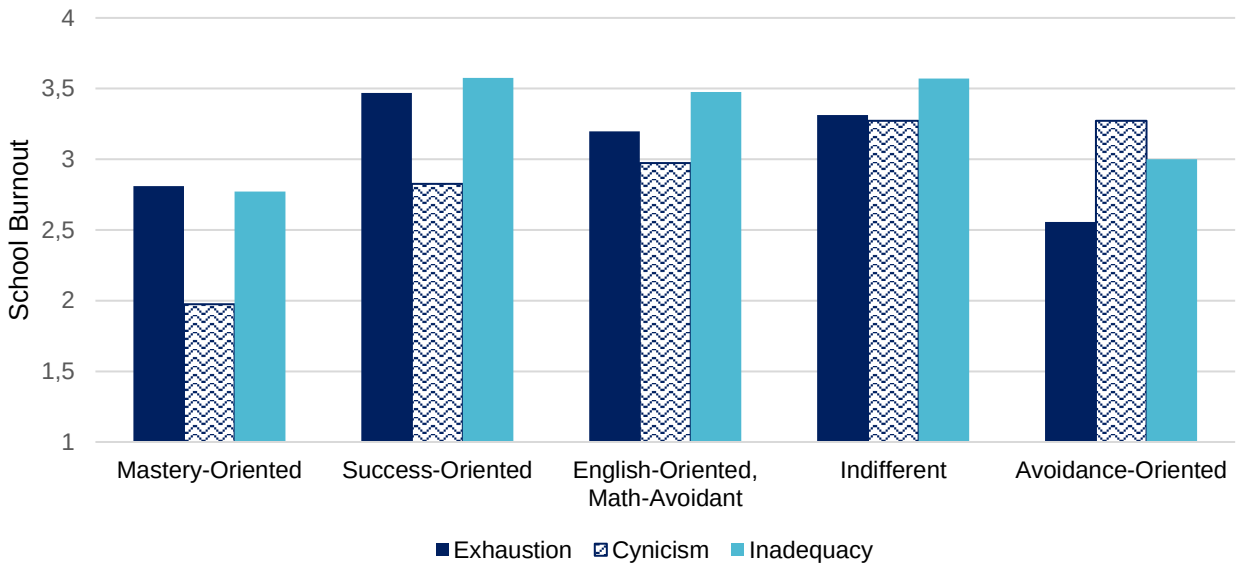

Figure 8. Group Differences in School Burnout

Table 7. Mean Differences in Perceived Cost and Academic Wellbeing between Goal Orientation Groups

Variable		Achievement Goal Orientation Profile									
		Mastery-oriented		**Success-oriented**		**English-oriented, math-avoidant**		**Indifferent**		**Avoidance-oriented**	
		N = 108		*N* = 112		*N* = 62		*N* = 125		*N* = 27	
		M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Perceived Cost	Effort & Emot Cost M	3.24 $^{a\,b}$	1.36	4.20 ^{b}	1.48	4.86 ^{a}	1.76	4.15 ^{a}	1.19	3.95	1.60
	Opportunity Cost M	2.97 $^{a\,b}$	1.47	4.00 $^{b\,c}$	1.71	3.39	1.66	3.80 $^{a\,d}$	1.26	2.71 $^{c\,d}$	1.64
	Effort & Emot Cost E	2.67 ^{a}	1.33	3.04 ^{b}	1.54	2.36 ^{b}	1.08	3.58 $^{a\,b\,c}$	1.16	2.65 ^{c}	1.12
	Opportunity Cost E	2.52 $^{a\,b}$	1.38	3.13 $^{a\,c}$	1.70	2.15	1.16	3.46 $^{b\,d}$	1.24	1.96 $^{c\,d}$	0.81
Academic Wellbeing	Engagement[1]	3.81 $^{a\,b}$	1.20	3.63 $^{c\,d}$	1.29	2.77 $^{a\,d}$	1.22	2.87 $^{b\,c}$	1.22	1.96 $^{a\,b\,c}$	1.23
	Exhaustion[1]	2.81 $^{a\,b}$	0.95	3.47 $^{a\,c}$	1.14	3.20	1.02	3.31 $^{b\,d}$	1.04	2.56 $^{c\,d}$	1.06
	Cynicism	1.98 $^{a\,b\,c}$	0.94	2.83 ^{a}	1.27	2.97 ^{b}	0.98	3.27 ^{a}	1.11	3.27 ^{c}	1.30
	Inadequacy[1]	2.77 $^{a\,b\,c}$	1.11	3.58 ^{a}	1.10	3.48 ^{b}	0.97	3.57 ^{c}	1.05	3.00	1.27

Note. M = mathematics, E = English; Group means sharing the same superscripts are significantly different at $p < 0.05$ level (with Games-Howell correction, [1] with Bonferroni correction)

8 Reliability and Validity

The reliability and validity of the results were ensured by a large enough population (i.e., a school), appropriate data collection and data analysis methods. The participation for the study was voluntary and the participants were informed about the purposes of the study as well as ensured about the anonymity of identities.

The findings from confirmatory factor analysis verified a five-factor model for achievement goal orientations (i.e., mastery-intrinsic, mastery-extrinsic, performance-approach, performance-avoidance, and avoidance) in both subjects and a two-factor model for the perceived domain-specific cost (i.e., opportunity cost, effort required and emotional cost), a three-factor model for school burnout (i.e., the SBI; exhaustion, cynicism, and inadequacy), and a one-factor model for schoolwork engagement (i.e., the EDA; energy, dedication, and absorption). These findings reflect that the chosen instruments are valid and accurately measure different aspects of the constructs and are in line with previous research and theory. The validity of the instruments is the basis to the validity of the findings.

The reliabilities of nearly all variables were high (>.80 or >.90). However, due to the unsuitability of one item ("I feel that I have less and less to give in my schoolwork") for students, as was also suggested by Salmela-Aro, Kiuru et al., (2009), this item was deleted. Students do not have the same kind of professionality or knowledge base to be utilised at work but instead they are expected to learn and grow during the studies. The results may indicate that it is not meaningful to try to find exactly the same phenomenon in school as in a work context. After deleting the item, the alpha of inadequacy was still low (α = .558), and the results related to inadequacy should be interpreted with caution. These findings may suggest that there is a need to develop an item that better grasps the phenomenon of feeling inadequacy of adolescent students' own emotional, behavioural and cognitive resources. It has been suggested that the SBI suits well for both one factor and three factor solutions (Salmela-Aro & Upadyaya, 2012). This study found cynicism to differ strongly from other dimensions suggesting that in order to understand the multidimensionality of burnout it is important to measure the three dimensions separately.

In this study, variable-oriented methods (e.g., confirmatory factor analysis and correlational analyses) and person-centred methods (i.e., latent profile analyses) were combined, which enabled to consider the relations between goal orientations, perceived cost and academic wellbeing beyond what only

variable-oriented methods would. In research, matching the scientific problem with the appropriate research method to elucidate the problem is a central issue (see Bergman & El-Khouri, 2003). The aims of this thesis were to examine the kinds of goal orientation profiles that can be found in general upper secondary school. The person-oriented approach enables to use an individual with many strivings, as a whole, as a unit. The LPA provides fit indices that facilitate the decision-making regarding the optimal number of groups, in terms of validity, reliability, and informativity. The chosen solution always includes an element of interpretation as the suggested solutions are also considered in relation to previous theory and research. Previous research has found this method to be appropriate for the problem, and the findings from this study provide additional support for this. The results were consistent with previous similar research (e.g., Jansen et al., 2016; Tapola & Niemivirta, 2008; Tuominen-Soini et al., 2008; 2011; 2012), which provides support for the validity of the groupings. The analyses are described in detail and are, thus, replicable.

9 Discussion

The main purpose of this study was to investigate what kind of achievement goal orientation profiles in mathematics and English can be identified in upper secondary school students, and how these profiles are related to perceived cost and academic wellbeing by using a person-oriented approach. As expected, several achievement goal orientation profiles were identified. The five identified groups were partly very similar as have been found in previous studies (e.g., see Tuominen-Soini et al., 2008; 2011; 2012). These profiles demonstrated some subject-specificity and differed significantly in perceived cost and academic wellbeing, as were hypothesised.

9.1 Achievement Goal Orientation Profiles

Next, the characteristics of the five identified achievement goal orientation profiles and profile differences in perceived cost and academic wellbeing are discussed in detail.

Mastery-oriented. Mastery-oriented students (24,9%) emphasised learning and developing competence as well as succeeding on an extrinsic criterion in both mathematics and English. In turn, they scored the lowest on avoidance orientation. This group demonstrated relatively low cost in both subjects. Gaspard et al. (2018) found that students with a high self-concept in one subject perceive

these subjects as less costly in relation to effort and emotions, and another study found task orientation to be related to higher self-concept (Pajares, Britner & Valiante, 2000). The results from this study support these findings. This group also reported high engagement, as has often been found in previous research (e.g., Tuominen-Soini et al., 2012; Shih, 2018). High mastery goals have also been found to be related to a sense of belonging to school (Won, Wolters & Mueller, 2018) which may again support students' engagement to school and schoolwork. They also displayed low exhaustion and cynicism. Previous research has suggested students high in mastery goals have better use of cognitive strategies, self-regulation, they seek help, and are better at problem-focused coping (Bong, 2009; Skaalvik, 1997; 2018; Tanaka et al., 2002). These cognitive and behavioural characteristics are likely to promote effective learning and wellbeing and inhibit ongoing stress and feelings of burnout. Thus, the mastery-oriented students seemed to display the most adaptive pattern of learning and academic wellbeing, being in line with previous research (e.g., Diseth, 2011; Elliot & Harackiewicz, 1996; Haydel & Roeser, 2002, Pintrich, 2000b; Schwinger et al., 2016; Shih, 2005; Tuominen-Soini et al., 2008; 2011; 2012).

Success-oriented. The success-oriented students (25,8%) also valued learning and developing competence but were more likely than mastery-oriented students to place value on relative ability and avoiding demonstrating incompetence as well. In terms of academic wellbeing, this group was characterised by relatively high cost in mathematics, high engagement and high burnout. Feeling fatigue seems probable due to their aims and efforts to learn and succeed combined with their high perceived emotional cost, required effort and opportunity cost in mathematics. More specifically, in line with previous research (Tuominen-Soini et al., 2012), the success-oriented students expressed high exhaustion. As has been noted in previous research, students aiming to succeed well often do, but are also susceptible for negative effects on wellbeing (e.g., Tuominen-Soini et al., 2012). This group differed slightly from the similar groups identified in the previous research (e.g., see Tuominen-Soini et al., 2008; 2011; 2012) as these success-oriented students demonstrated also surprisingly high avoidance. Although, this seems logical when taken to consideration their wish to succeed, develop and demonstrate relative competence in both subjects, avoiding making an effort when possible may seem as the only way to manage own resources and direct attention to more demanding or other important tasks. A recent study (Mouratidis et al., 2018) also found that performance-avoidance goals were negatively related to challenge-seeking. This group, thus, strives for learning and succeeding, but may not enjoy challenge as much as mastery-oriented and is more prone to avoiding investing their time and effort.

English-oriented, math-avoidant. In addition to the four groups that were expected to find, a novel group of English-oriented, math-avoidant students (14,3%), was identified. This group showed the strongest domain-specificity in the achievement goal orientations. The English-oriented, math-avoidant students expressed high mastery and performance orientations in English but low in mathematics. They also emphasised avoidance orientation in mathematics but not in English and showed no significant differences with the avoidance-oriented group in mathematics-related goal orientations. The perceived energy drainage and negative affective states were particularly high concerns in this group as the group expressed the very high emotional cost and effort required in mathematics. The more adaptive motivational patterns were displayed with respect to studying English. The results replicate those of Gaspard et al. (2018) in suggesting cost to be highly subject-specific, especially effort and emotional cost; this group expressed the strongest subject-specificity in both goal orientations as well as effort and emotional cost. This group was characterised by mixed goals in different domains, which is also reflected in their academic wellbeing. This group demonstrated rather mediocre engagement, which is logical due to showing very high mastery and performance goal orientations in one subject and very low in another. Continuous contradictions in their study goals were also related to relatively high burnout, and especially exhaustion and inadequacy.

Indifferent. The indifferent group (28,8%) had scores relatively close to the scale mean on all orientations. This kind of group that does not demonstrate a tendency to favour any specific goal has commonly been found in similar person-oriented achievement goal orientation studies (e.g., Tuominen-Soini et al., 2008; 2011; 2012). In line with the previous research the indifferent students formed the largest group, suggesting that these students represent somewhat an average student, who comprehends the importance of learning, gaining competence and grades but is rather undevoted to the realisation of these goals (e.g., Tuominen-Soini et al., 2008; 2011). The unwillingness to invest in the attainment to adaptive goals may partly be explained by their relatively high perceived cost in both domains, and in English especially. In contrast with mastery-, and success-oriented, and English-oriented, math-avoidant groups, and the mean of the sample, this group did not demonstrate particularly high goals related to learning or succeeding in English. This group demonstrated the highest emotional cost and effort required in English, which may, thus, somewhat prohibit the adoption of more adaptive motivational patterns. The indifferent students also struggled to find meaning in their schoolwork as they expressed especially high cynicism and rather high overall burnout. They demonstrated moderate engagement in schoolwork. These findings support the suggestion of the indifferent student to represent a typical Finnish upper secondary school student,

who understands the general nature of upper secondary school, acknowledges the importance of learning and performing well, but does not thrive to succeed.

Avoidance-oriented. The smallest group, avoidance-oriented (6,2%), were characterised by a lack of thrive to learn, succeed or outperform others, but rather a strong focus on avoiding schoolwork and minimising effort in both mathematics and English. This group has often been found to be the smallest (Tuominen-Soini et al., 2008; 2011; 2012) reflecting the overall focus on learning and performance is encompassed in the students' attitudes, but that there usually are also some students who do not manifest these goals. As with many other groups, the emotional cost and effort required in mathematics were high. Interestingly, other cost facets were moderate in this group. This may suggest that a lack of learning- or success-related goals may reduce the pressure of schoolwork, but it may be still emotionally and effortly costly to go through the courses, as effort and learning is required to pass the compulsory courses. In line with previous research (e.g., Tuominen-Soini et al., 2008), this group demonstrated the lowest engagement out of all the groups and high cynicism was characteristic to the avoidance-oriented students. Low engagement and also low academic achievement are related to feeling cynicism and inadequacy in students (Salmela-Aro, Kiuru et al., 2009). Goals help to direct student's behaviour, emotions and cognitive strategies. Without goals navigating through different tasks and assignments may feel distressing for a student who is still trying to identify their own place in life. The lack of achievement goals may reflect lack of perceived meaning in school and schoolwork which in turn could be demonstrated as cynicism. Overall burnout, however, was not as high as in success-oriented, English-oriented, math-avoidant, or indifferent students due to low exhaustion. Avoidance-oriented students scored even lower than mastery-oriented students on exhaustion. Thus, not having concerns over succeeding seems to in some way protect students from exhaustion. Despite having relatively low exhaustion, overall the most maladaptive patterns of motivation and wellbeing were expressed by this group.

9.2 Between Group Differences in Perceived Cost and Academic Wellbeing

The profiles differentiated in perceived domain-specific cost, schoolwork engagement, and school burnout. Jiang et al. (2018) argued that the perceived cost may be a significant factor for a student in terms of the adoption of avoidance goals. The findings from this study partly support this view. More specifically, according to the findings especially the effort and emotional cost seem to be related to avoidance orientation. On the correlational level there was a positive correlation only between

avoidance orientation in mathematics and effort and emotional cost in mathematics. When looking at the relations between groups and cost, all groups except mastery-oriented group, demonstrated both high avoidance as well as effort and emotional cost in mathematics. In English, both success-oriented and indifferent students displayed relatively high cost and avoidance orientation. Interestingly, however, avoidance-oriented students did not report high cost in other cost facets than the effort and emotional cost in mathematics. These findings may, thus, suggest that the perceived cost could be a discriminant factor in adopting avoidance behaviour for students who are more concerned about relative success and possible failing, but for students who are struggling to find a focus, a meaning, or reasons, to engage in their schoolwork, the cost may not play a big part in their avoidance goals or behaviour.

Students with different goal orientation profiles experience learning and task situations differently (Niemivirta, 2002), which additionally seems to be reflected in the differences in academic wellbeing. As previous research (e.g., Tian et al., 2017; Tuominen-Soini et al., 2008; 2011; 2012) has noted, goals related to self-improvement and growth were positively associated with an adaptive pattern of academic wellbeing, and the present findings provided further support for this view. These students make an effort to learn, and, thus also gain better results, which in turn enables to gain encouraging educational experiences that can grow motivation and feelings of competence and engagement. The mastery-oriented students demonstrated low overall cost, high engagement and low burnout and, thus, displayed most adaptive pattern of wellbeing. The success-oriented students showed almost as high engagement, but, interestingly, high burnout and perceived cost in both domains as well. This has been noted also in previous research that students who emphasise both mastery and performance are highly engaged but also susceptible to exhaustion at school (Tuominen-Soini et al., 2012; see also Niemivirta et al., 2019). The least engaged were the avoidance-oriented students who were also highly cynical and had relatively high feelings of inadequacy as has also been found in previous studies (e.g., Tuominen-Soini et al., 2012). Also, this seems logical and can lead to a process of avoidance of tasks and, thus, a lack of good experiences, succeeding, and lack of learning, which in turn is hindering future efforts to learn and engage in academic activities.

Performance-avoidance goal orientation was the highest among success-oriented and indifferent students, who also reported high opportunity cost in mathematics, both cost dimensions in English, exhaustion and inadequacy. Performance-avoidance goals have been found to be related to low competence-expectancies (Elliot & Church, 1997) and, therefore, these students may feel the subjects as costly and experience burnout symptoms. Additionally, performance-avoidance goal orientation

has been found to be related to fear of failure (Elliot & Church, 1997) that can have severe outcomes in terms of academic performance, unless if coupled with mastery and performance-approach orientations (De Castella, Byrne & Covington, 2013). The results from this study are in line with this view as the success-oriented students demonstrated high engagement in their schoolwork whereas the engagement of indifferent students was relatively low. These two groups that demonstrated rather high focus on both absolute as well as relative performance, also demonstrated relatively high inadequacy in comparison to the other three identified groups.

Taken together, emphasising mastery seems to be closely related to engagement. However, due to the individuals' many simultaneous strivings and also multifaceted wellbeing, it is important to look at the multiple goals of an individual as well as take both positive and negative aspects of motivation under consideration to enable a more comprehensive understanding. This study provided support to the importance of studying both positive and negative indicators of student wellbeing together as they can simultaneously manifest in various patterns (see Salmela-Aro et al., 2016, Salmela-Aro & Upadyaya, 2014; Tuominen-Soini & Salmela-Aro, 2014; Widlund et al., 2018). The demands-resources model (Salmela-Aro and Upadyaya, 2014) helps to understand the relations between schoolwork engagement and school burnout, and the consequences of students' wellbeing later in life. Whether student follows the energy-depleting or motivational process is affected by students' study resources, personal resources, and demands. The perceived cost can be understood as representing the demands that challenge the achievement of study-related goals and are an important factor together with resources in either promoting or hindering engagement or burnout. Therefore, looking at merely either schoolwork engagement or school burnout could give a simplified and untruthful portrayal of how well a student is coping.

9.3 Subject-specificity

The groups showed both domain-generality and -specificity. In line with previous studies (e.g., Sparfeldt et al., 2015) goals linked to learning and developing competence were more context-dependent than other goals within a group; there was bigger variance in the scores between subjects in mastery goal orientations than other orientations. As the previous research has not often studied goal orientation profiles in two different academic domains, the English-oriented, math-avoidant pattern is a novel goal orientation group to be identified. For some students, the motivational profiles

in mathematics and English were rather similar, while for some the motivation seemed to be more domain-specific, as was suggested also by Jansen in de Wal et al. (2016).

The only group that demonstrated distinct subject-specific preferences in goals related to learning and succeeding was the English-oriented, math-avoidant group. Interestingly, when looking at the identified goal orientation profiles individually unrelated to the other profiles scores, no group that would have shown clear partialities towards mathematics and high avoidance orientation towards English was found. There are many factors that could affect the emergence of the English-oriented, math-avoidant group. Firstly, this may reflect the affective differences related to the subjects. Research has often found high emotional stress and anxiety related to mathematics (e.g., Meece, Wigfield & Eccles, 1990; Skaalvik, 2018). In addition, there also may not be as many perceived costs related to English as there are to mathematics.

The noticeable subject-specificity can also be influenced by students' long-term goals and the perceived instrumentality of the subjects (see Miller & Brickman, 2004; Liem et al., 2008). Students who demonstrate similar orientations in different subjects may be more unsure about the field they want to work in or view different subjects and overall success in school as important in terms of their future. In contrast, students demonstrating more subject-specific orientations could view other subjects as more useful and valuable in terms of their future choices. As previous research has suggested, viewing intelligence and abilities as fixed or open to improvement may influence achievement goals (for a review, see Wigfield & Cambria, 2010). Students may view abilities, especially mathematical abilities, as something fixed and natural.

Furthermore, girls were slightly overrepresented in the English-oriented, math-avoidant group, which may represent a susceptibility to stereotypical assumptions on the nature of mathematics and mathematical fields. The expectancy-value theory was originally developed to understand the emphasis of boys in scientific, technological, engineering and mathematical fields, and indeed the cost related to mathematics was high in the English-oriented, math-avoidant group. However, this study did not look at the other task values to understand even more in depth the disengagement towards mathematics demonstrated by this group, but it may be partly related to not seeing oneself to work in mathematics-intensive fields, and the usefulness of mathematics in the many different fields.

As found in previous research (Jansen in de Wal et al., 2016), the majority of the students seem to demonstrate rather domain-general achievement goal orientations and some students show more

distinct differences between subjects. The findings demonstrate the importance of including different subjects in studies. The findings from this study support the argument of students' goal orientations being formed by a combination of more general personal tendencies to favour certain goals as well as of different domain-specific components (see also Jansen in de Wal et al., 2016).

9.4 Achievement Motivation in Finnish General Upper Secondary School and Practical Implications

The most significant implication to be taken away from this thesis for educational settings is the importance of acknowledging and the need for supporting the many different kinds of students, their motivational patterns, mindsets, and the relations to different aspects of academic wellbeing. Some motivational profiles, such as mastery-oriented, demonstrate more adaptive patterns of academic behaviour as well as wellbeing whereas others, such as avoidance-oriented, demonstrate more maladaptive. The success-oriented pattern, on the other hand, seemed to be linked with cost related to effort required and emotions. When the profiles include more mixed or contradictory views, also the implications on academic wellbeing are more moderate as well.

More than half of the students belonged to either mastery- or success-oriented group, demonstrating that both learning as well as succeeding well on an extrinsic criterion, were important goals for the majority of the general upper secondary school students. This may also reflect a mastery- and performance-oriented nature of Finnish general upper secondary school and wider educational culture (see Jansen in de Wal et al., 2016; Meissel & Rubie-Davies, 2016). The biggest single group, however, were the indifferent students and second largest the success-oriented group. Given their emphasis on performance-avoidance orientation and its relations to low competence expectancies, it may be important to offer more situations at school where students can demonstrate competence in different ways that are not based purely on studying certain contents. These goals have also been linked with fear of failure (De Castella et al., 2013; Elliot & Church, 1997) and it seems important that teachers aim to create an environment where mistakes and failures are seen as promoting learning and pathways to a better understanding.

Although not the focus of the study, in the questionnaire, students were asked the highest degree they believe to obtain. A significant number of students (34,6%) replied "I don't know". This seems noteworthy as the grades from different subjects may weigh greatly when applying to future studies,

as previously discussed, and how the student should already have an understanding of possible future goals, or at least whether they want to study further. Otherwise, it may prove to be problematic later. This could imply that there needs to be more focus in student guidance and counselling to aid students figure out whether or where they want to apply after upper secondary school and how the knowledge of the studied subjects and grades received can have high importance later. Not being able to imagine whether to continue studying after upper secondary school or to which degree, may be reflected in the difficulties to find a meaning in school and schoolwork. Recently, 14,5% of all first and second year general upper secondary school students felt that their studied have no meaning (National Institute of Health and Welfare, 2017). This may turn into cynicism towards, schoolwork and school, and maybe even future. Work life is changing rapidly, and students may feel that what they learn does not benefit them in the future. Teachers and school environment should try to make teaching more meaningful for a student by relating the taught content to students' experiences, interests, and possible future scenarios.

Despite the avoidance-oriented group being the smallest, a large part of the students demonstrated performance-avoidance as well as avoidance goal orientations. Many students also experienced subjects as emotionally costly and reported symptoms of burnout. It has been suggested that the negative aspect may sometimes influence the consequent emotions, thoughts, and behaviour, even more than the positive (see King & McInerney, 2014). Thus, it is important to pay more attention to the maladaptive patterns of motivation and negative factors that may have an impact on students' adoption of avoidance goals or on different aspects of wellbeing. Teachers should try to minimise the perceived cost of subjects, especially in terms of emotions, in addition to targeting the relatedness of subjects. Avoidance-oriented students may appear as being unmotivated, and teacher might steer towards focusing on more striving students, and the interaction with avoidant students may become negative. Consequently, avoidant students may experience that not much is expected from them. However, as teacher and peer support have been found to work as a buffer against avoidance goals (King & McInerney, 2014), teachers should aim to support every student as individuals, and focus on creating a supportive class environment that emphasises peer-supported learning instead of competitiveness.

Findings emphasise the importance of fostering the school cultures and learning environments that support different learners to find their schoolwork meaningful and their efforts worthy. Schoolwork engagement was clearly related to mastery goals and, thus, school environment should promote learning over relative success in the classroom. Social environment, sense of belonging, and social

support, have also been found to be linked with learning and wellbeing (Anderman, 2003; Ma, 2003; Won et al., 2018). By appreciating all students' efforts as valuable contributions, confronting individuals with reasonable expectations, and promoting a supportive and motivated environment seems to be essential in terms of students' learning, achievement, and wellbeing.

9.5 Limitations and Future Directions

There are several limitations related to this study. Regarding the generalisability of the results, the participants were from one upper secondary school in Finland, and thus, the findings could be different in other contexts. There could have been more schools from different cities in Finland and larger groups also from the later years of upper secondary education in order to represent all upper secondary school students in Finland. Furthermore, the findings are limited to general upper secondary school students, which is not a compulsory phase of education in Finland, and the findings could vary significantly if taken the whole cohort into account. Future research should also focus on more heterogeneous areas and schools, for example in terms of the proportion of immigrants, to understand the diversity of motivational patterns and, consequently, be able to generalise the results to a wider population.

In this study, achievement goal orientations were studied in relation to two academic subjects: mathematics and English. The results supported the view of goal orientations to be at least partly subject-specific. To gain a more comprehensive understanding on the subject-specificity or subject-generality, there should be more research done on subject-specific goal orientations simultaneously in a variety of different subjects. Gender differences were not the focus of this thesis but according to the noticeable differences in gender divisions in cynicism and engagement, and some differences in goal orientation groups, future research should also study whether there are gender differences in the subject-specific goal orientations, task values, and wellbeing.

This study focused on achievement goal orientations and perceived cost to understand students' subject-specific motivation. Achievement goal orientations enable to capture students' multiple goals to engage in tasks and subjects but also other types of goals, such as social goals, affect students' wellbeing and academic behaviour (Makara & Madjar, 2015) and may also explain some gender differences in goals and engagement (Yu & McLellan, 2019). Thus, future research should also

include other goals together with achievement goal orientations and task values to understand how students prioritise and value different types of goals.

This study provided support for the importance of cost and its subfacets when researching task values as well as the implications of motivation on academic wellbeing. Different aspects of subject's relevance, especially utility value, for an individual have shown to be important in terms of students' motivation (e.g., Harackiewicz et al., 2012; for a review, see Priniski, Hecht & Harackiewicz, 2018). In order to understand the subjective reasons to engage in subjects beyond positive task values, future research should include both positive task values as well as the negative costs, and their different subfacets.

Individual's wellbeing consists of a variety of cognitive, biological and social aspects. Perceived cost, schoolwork engagement, school burnout, were the focus of this study as they represent important positive and negative aspects of academic wellbeing and demands for wellbeing. However, future work should also take other measures of subjective wellbeing social aspects into account. For example, a better understanding is needed of how subject-specific achievement goal orientations together with task values relate to individual's self-esteem, academic self-concept and sense of belonging.

The adaptivity of goal orientation profiles were investigated with the use of achievement goal orientations, perceived cost, schoolwork, and school burnout. This study did not focus on achievement, but it must be taken into account that the results may have varied slightly if grades or other measurements of achievement would have been included. However, the aim of this study was to understand the relations between different goal orientations with study-related wellbeing, which has important implications on students' resources and abilities to study, set goals and achieve them also in the long-term. Additionally, it would be valuable for the future research to focus on the different educational and occupational aspirations as the task values have been found to be strongly related to students' educational choices. The subject-specific achievement goal orientations together with task values, and their relations to students' future aspirations, could enable to understand the complex interactions that affect students' achievement behaviour.

Despite the limitations, this thesis has numerous strengths in relation to its multidimensional take on motivational constructs in two academic subjects, connecting different patterns of achievement motivation and both positive and negative aspects of academic wellbeing and combining variable-

and person-oriented methods that are also open for replication and further investigations in future research. Taken into account the importance of school for an adolescent, and the centrality of achievement motivation for social interactions, learning, and achieving, the future research should aim to complement the current understandings of the relations between different aspects of individual motivation, social environment, and wellbeing. In conclusion, the significance of individual patterns of motivation, and their implications for learning and wellbeing, should not be undermined but rather appreciated and supported - at schools, at a societal level, and in research. These unique patterns together form the foundation for the whole of current and future education.

10 Conclusions

The purpose of this thesis was to investigate achievement goal orientation profiles in two important domains, mathematics and English, in upper secondary school students, and how the profiles are related to perceived cost and academic wellbeing. Five distinct goal orientation profiles were found: mastery-oriented, success-oriented, English-oriented, math avoidant, indifferent, and avoidance-oriented. These profiles differed in meaningful ways in perceived cost, schoolwork engagement, and school burnout. For some students, the motivational profiles in mathematics and English were rather similar (e.g., mastery-oriented), while for some, the motivation seemed to be more subject-specific (e.g., English-oriented, math-avoidant). The findings suggest that reviewing goal orientations and task values together may lead towards a more comprehensive understanding of students' multifaceted achievement motivation as this study demonstrated perceived cost to be a prominent factor in describing students' motivation. The findings add to the current knowledge about the domain-generality and -specificity of goal orientations and how they are related to individual's subjective wellbeing. To conclude, the findings indicate that examining students' multidimensional achievement motivation in diverse subjects as well as their implications of different aspects of students' wellbeing is valuable for comprehending the motivational dynamics and in recognising factors endangering and fostering student learning and wellbeing.

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Appendix A.

Standardised factor loadings: Goal Orientations

Achievement goal orientations in mathematics and English measured separately

Item	Factor Loading									
	Mint M	Mext M	Papp M	Pavo M	Avo M	Min E	Mext E	Papp E	Pav E	Avo E
Mint1	.853									
Mint2	.869									
Mint3	.887									
Mext4		.855								
Mext5		.890								
Mext6		.883								
Papp7			.680							
Papp8			.633							
Papp9			.782							
Pav10[1]				.580						
Pav11[1]				.610						
Pav12				.924						
Avo13					.524					
Avo14					.823					
Avo15					.698					
Mint1						.810				
Mint2						.881				
Mint3						.806				
Mext4							.776			
Mext5							.810			
Mext6							.855			
Papp7								.659		
Papp8								.680		
Papp9								.729		
Pavo10[1]									.576	
Pavo11[1]									.636	
Pavo12									.944	
Avo13										.533
Avo14										.893
Avo15										.617

Note. Error covariances between two pairs of similarly worded items were freed: [1] = Items 3 ("I try to avoid situations in which I may appear dumb or incompetent") and 6 ("I try to avoid situations in which I may fail or make mistakes"); Mint = Mastery-intrisic, Mext = mastery-extrinsic, Papp = performance-approach, Pavo = performance-avoidance, Avo = avoidance; M = mathematics; E = English.

Standardised factor loadings: Perceived Cost

Perceived cost in mathematics and English measured separately

Item	Factor loading			
	EEM	OPM	EEE	OPE
EE1	.665			
EE2	.687			
EE3	.817			
EE4	.866			
EE5	.838			
OP1[1]		.547		
OP2[1]		.690		
OP3		.885		
EE1			.728	
EE2			.559	
EE3			.821	
EE4			.857	
EE5			.821	
OP1				.616
OP2				.765
OP3				.828

Note. Error covariances between two pairs of similarly worded items were freed: [1] = Items 11 ("I have to give up other activities that I like to be successful at math/English") and 22 ("I have to give up a lot to be good at maths/English"); Items deleted: Item 26 ("Dealing with math drains a lot of my energy"); EE = Effort & Emotional Cost, OP = Opportunity Cost; M = mathematics, E = English.

Standardised factor loadings: Academic Wellbeing

Burnout dimensions and engagement measured separately

Item	Factor loadings			
	EXH	CYN	INAD	ENG
EXH1	.569			
EXH2	.721			
EXH3	.785			
EXH4	.677			
CYN5		.755		
CYN6		.841		
CYN7		.769		
INAD8			.623	
INAD9			.624	
ENG10				.788
ENG11				.747
ENG12				.739
ENG13				.850
ENG14				.859
ENG15				.619
ENG16				.804
ENG17				.686
ENG18				.719

Note. Items deleted: Item 7 ("I feel that I have less and less to give in my schoolwork"); EXH = exhaustion, CYN = Cynicism, INAD = Inadequacy; ENG = Engagement.