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Antti-Tuomas Pulkka

THE INTERACTION OF MOTIVATION AND LEARNING ENVIRONMENT

The role of goal orientations in students' course evaluations

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Helsinki 2014

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Abstract

The purpose of this dissertation was to examine the role that adult students' achievement goal orientations play in their perceptions of their learning environment (course evaluations) and performance. Accordingly a learning environment questionnaire was developed, students' goal orientation profiles and their stability were examined, and associations between goal orientations, course-specific goals, and course evaluations and performance were looked at.

The samples came from the National Defence University. Study I consisted of two substudies. Substudy 1 (N=194) focused on the development of the learning environment questionnaire, while Substudy 2 (N=167) examined whether students' course evaluations varied as a function of their goal orientation profiles. In Study II (N=169), the stability and change in goal orientations and their relations to course evaluations were examined. Study III (N=88) looked at the predictive relations between students' achievement goal orientations, course evaluations and performance. Study IV (N=88) examined how students' achievement goal orientation and self-reported course-specific goals were related to each other, and how they predicted the students' course evaluations and performance.

Following the person-centred approach, the students were grouped based on their goal orientation profiles. The mastery-oriented students were focused on learning and understanding. The success-oriented students strived toward learning, and absolute and relative success. The performance-oriented students emphasized success but also had concerns about social comparison. The indifferent students displayed little emphasis on any goals. The avoidance-oriented students were focused on minimizing effort, as well as avoiding challenges and failure. The goal orientation profiles were stable: 60% of students retained the same goal orientation profile over time.

The students' course evaluations varied as a function of their goal orientation profiles. Mastery- and performance- or success-oriented students were most positive in their evaluations when compared to avoidance-oriented or indifferent students. As well, slight differences were observed concerning literature-

examination scores: the performance-oriented students scored the highest. In sum, the emphasis on learning and absolute success seems adaptive, whereas an emphasis on avoidance seems maladaptive. With regard to predictive relationships, the students' motivational orientations were linked to their course evaluations and achievement, achievement was related to course evaluations, and different pedagogical practices accounted for some of the variation in these relationships.

Regarding course-specific goals, by far most frequently, the students' open answers included responses displaying goals of gaining career qualifications as well as mastery-intrinsic goals. The presences of mastery-intrinsic and mastery-extrinsic goals were associated with higher course evaluations, whereas the presence of work-avoidance goals was associated with lower course evaluations. However, the course-specific goals were only weakly related to the goal orientation profiles.

All in all, the results show the common motivational profiles being displayed in a selective adult-student sample, and that these profiles are related to students' perceptions of their learning environment and their own role in relation to it. Further, the results concerning the stability support the conceptualization of goal orientation as motivational disposition. The results concerning students' open-ended answers show that not all goal orientation dimensions were present, or present at equal frequency, and that the students also described their purposes in more instrumental terms. Despite being quite independent from goal orientation profiles, these course-specific goals were very similarly related to the course evaluations.

Based on these findings, instructors need to be aware of both the personal and contextual factors affecting students' interpretations of teaching, as these interpretations may further influence motivation and learning. Students are not a homogenous group in their purposes and approaches as regards learning and studying, and these differing emphases lead to distinct preferences for and interpretations of the various aspects of the learning environment.

Keywords: motivation, achievement goal orientation, learning environment, course evaluations

Antti-Tuomas Pulkka

**Motivaatio ja oppimiskonteksti vuorovaikutuksessa:
Tavoiteorientaatioiden yhteys oppimisympäristön arviointeihin**

Tiivistelmä

Tässä väitöstutkimuksessa tarkasteltiin aikuisopiskelijoiden tavoiteorientaatioiden yhteyttä heidän käsityksiinsä oppimisympäristöstä (kurssipalaute) ja opintomenestykseensä. Tutkimuksessa kehitettiin oppimisympäristöä arvioiva kysymyssarja, tarkasteltiin opiskelijoiden tavoiteorientaatioprofiileja ja niiden ajallista pysyvyyttä ja tutkittiin tavoiteorientaatioiden, kurssikohtaisten tavoitteiden, kurssipalautteiden ja opintomenestyksen välisiä yhteyksiä.

Tutkimukseen osallistui opiskelijoita Maanpuolustuskorkeakoulusta. Ensimmäinen osatutkimus jakautui kahteen alatutkimukseen. Alatutkimuksessa 1 (N=194) kehitettiin oppimisympäristöä arvioiva kysymyssarja ja alatutkimuksessa 2 (N =167) selvitettiin, poikkesivatko eri profiiliin omaavat toisistaan kurssipalautteiden suhteen. Toisessa osatutkimuksessa (N=169) tarkasteltiin tavoiteorientaatioprofiilien pysyvyyttä ja niiden yhteyttä kurssipalautteisiin. Kolmas osatutkimus (N=88) selvitti muuttujien välisiä yhteyksiä tavoiteorientaatioiden, kurssipalautteiden ja opintomenestyksen välillä. Neljäs osatutkimus (N=88) selvitti, kuinka opiskelijoiden tavoiteorientaatiot ja kurssikohtaiset tavoitteet ovat yhteydessä toisiinsa ja miten ne selittävät kurssipalautetta ja opintomenestystä.

Henkilökeskeisen lähestymistavan mukaisesti opiskelijat jaettiin ryhmiin tavoiteorientaatioprofiilien perusteella. Oppimisorientoituneet korostivat oppimista, ja menestysorientoituneet korostivat sekä oppimista että absoluuttista ja suhteellista menestymistä. Suoritusorientoituneet keskittyivät menestykseen, mutta myös sosiaaliseen vertailuun. Sitoutumattomiksi nimikoidut opiskelijat eivät korostaneet oikeastaan mitään tavoitteita. Välttämisorientoituneille oli tärkeää minimoida työskentely ja välttää haasteita ja epäonnistumista. Profiilit olivat varsin pysyviä: 60 prosenttia opiskelijoista säilytti saman profiilin yli ajan.

Kurssipalautteet vaihtelivat eri orientaatioprofiilien mukaisesti. Oppimis-, menestys- ja suoritusorientoituneet olivat yleensä positiivisimpia arvioinneissaan verrattuna sitoutumattomiin ja välttämisorientoituneisiin. Myös opintomenestyksessä havaittiin heikko ero: suoritusorientoituneet menestyivät parhaiten strukturoidussa kirjallisuuskuulustelussa. Kokonaisuutena oppimisen ja absoluuttisen menestyksen korostaminen vaikuttaa olevan myönteistä, kun taas

välttämisen korostuminen vaikuttaa olevan ei-toivottavaa. Myös muuttujien välisten yhteyksien perusteella tavoiteorientaatiot olivat yhteydessä kurssipalautteisiin ja opintomenestykseen, ja opintomenestys oli edelleen yhteydessä kurssipalautteisiin. Yhteydet vaihtelivat hiukan eri pedagogisten ratkaisujen suhteen.

Opiskelijoiden avoimet vastaukset omista kurssikohtaisista tavoitteistaan ilmensivät useimmin oppimistavoitteita ja ammatillisten kvalifikaatioiden tavoittelua tulevaa työtä. Oppimis- ja menestystavoitteiden ilmentyminen vastauksissa oli yhteydessä korkeampiin kurssipalautteisiin, kun taas välttämistavoitteiden ilmentyminen oli yhteydessä matalampiin kurssipalautteisiin. Kurssikohtaiset tavoitteet olivat kuitenkin vain heikosti yhteydessä orientaatioprofiileihin.

Tutkimuksen tulokset osoittavat, että valikoituneessa ja erityisessä aikuisopiskelijajoukossa voidaan havaita samankaltaisia motivaatioprofiileja kuin muissakin oppijajoukoissa, ja profiilit ovat yhteydessä opiskelijoiden käsityksiin oppimisympäristöstä ja omasta roolistaan siinä. Havainnot profiilien pysyvyydestä tukevat näkemystä tavoiteorientaatiosta yleistyneenä suuntautumistapana. Avoimien vastauksien perusteella kaikki tilannekohtaiset tavoitteet eivät esiinny aina, tai ainakaan yhtä tiheästi. Opiskelijat kuvaavat tavoitteitaan myös käytännöllisemmin termein. Vaikka tilannekohtaiset tavoitteet olivat lähes riippumattomia orientaatioprofiileista, niiden yhteydet kurssipalautteisiin olivat hyvin samankaltaisia.

Tämän tutkimuksen tulosten pohjalta opettajien tulee olla tietoisia sekä yksilöllisistä että ympäristöön liittyvistä tekijöistä, jotka tuottavat erilaisia tulkintoja opetuksen ratkaisusta, sillä tulkinnat voivat merkittävästi vaikuttaa motivaatioon ja oppimiseen. Opiskelijat eivät ole yhtenäinen joukko oppimisen ja opiskelun tarkoituksiltaan eivätkä lähestymistavoiltaan, ja erilaiset korostukset ovat yhteydessä erilaisiin tulkintoihin ja arvotuksiin oppimisympäristön tekijöistä.

Avainsanat: motivaatio, tavoiteorientaatio, oppimisympäristö, kurssipalaute

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Finally I want to thank my family: my wife Terhi and my children, Sofia and Tomi, for their resilience and love.

I dedicate this work to my children.

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List of original publications

This thesis is based on four articles, which are hereafter referred to as Studies I to IV:

Study I: Pulkka, A-T., & Niemivirta, M. (2013a). In the eye of the beholder: Do adult students' achievement goal orientation profiles predict their perceptions of instruction and studying? *Studies in Educational Evaluation*, 39(3), 133–143. DOI <http://dx.doi.org/10.1016/j.stueduc.2013.06.002>

Study II: Pulkka, A-T., & Niemivirta, M. (2013b). Adult students' achievement goal orientations and evaluations of the learning environment: A person-centred longitudinal analysis. *Educational Research and Evaluation*, 19(4), 297–322. DOI <http://dx.doi.org/10.1080/13803611.2013.767741>

Study III: Pulkka, A-T., & Niemivirta, M. (2013c). Predictive relationships between adult students' achievement goal orientations, course evaluations, and performance. *International Journal of Educational Research*, 61, 21–37. DOI <http://dx.doi.org/10.1016/j.ijer.2013.03.015>

Study IV: Pulkka, A-T., & Niemivirta, M. (2014). The relationships between adult students' achievement goal orientations, self-defined course goals, course evaluations, and performance. *Manuscript submitted for publication*.

Amat victoria curam (Catullus 62, 16)

selected by Tomi Pulkka

1 INTRODUCTION

A central issue in research on the effectiveness of teaching is to understand which individual differences and instructional practices predict positive learning experiences in terms of students' evaluations of teachers and instruction, and why (e.g., Feldman, 2007). Student ratings are indisputably essential and useful elements in the assessment of the effectiveness of teaching, but there is concern about students' differing conceptions of effective teaching. For example, students may prefer pedagogical choices that involve passiveness and rote-learning if these prepare them well for tests, even if more active involvement would lead to deeper processing and positive motivational effects (McKeachie, 1997). This idea also extends also to the students' perceptions of instruction. In this sense, the individual-environment interaction suggests that as individuals differ in their cognitive and emotional functioning (such as expectations, beliefs, affects and goals), it follows that they also differ with respect to how these factors are related to the features of any given situation, or more precisely, to the individual meanings of the situational aspects (cf. Endler, 2000; Mischel & Shoda, 1995 for discussions on holistic and interactionist views on personality). In practice, for instance, it has been proposed that students who look for and attain more attention from their teachers (so called "target-students") seem to hold more favourable perceptions of the learning environment when compared to students who participate less (Fraser & Tobin, 1991). The ideas presented above illustrate the major assumption of this dissertation: different students prefer different things in educational contexts, and perceive learning and instruction in distinct ways (see also Fraser, 1990).

This study focuses on the role individual differences in motivation play in students' evaluations of instruction and their perceptions of their own role in studying and in relation to the learning environment. Given this focus, two important research frameworks are combined in this study: research on students' evaluations of the effectiveness of teaching, and research on learning motivation. For the purposes of simplification and clarity, these evaluations of certain aspects of the learning environment are referred to as course evaluations. It follows that the *context*, at course level, refers to the learning environment reflecting factors of instruction that may influence students' perceptions.

The American Psychologist (52/1997) dedicated a Current Issues section to a series of articles regarding the validity concerns of student ratings of instruction. In his introduction to this special section, Greenwald (1997) discussed four validity concerns on which leading scholars imputed differing interpretations and emphases. First, concerning conceptual structure, even if there seems to be a

consensus on the multidimensional measures of the effectiveness of teaching, some researchers suggest that a large dominant factor affects lower order dimensions. Second, convergent validity of student ratings is supported by correlations with other indicators of effective teaching, but the magnitude of this effect is discussed. Third, the discriminant validity concerns the question *whether the student ratings are influenced by other variables that are unrelated to the quality of teaching*. The fourth point, consequential validity, was brought forward in terms of the benefits student ratings offer to the educational institutes.

Concerning the third point, the early research focused on different issues (for a review see Greenwald, 1997). During the 1970s, a major issue was the actual effect grades had on student ratings: experimental studies yielded results that supported this supposition, although serious concerns about the possible flaws of these studies have been brought forward (e.g., Marsh, 1987). Research since the 1980s mostly focused on correlational construct–validity issues. Regarding this, the role of different determinants and mediating variables (the so-called “third variable”) in explaining the relationships between grades and students’ evaluations of teaching was widely examined (Greenwald, 1997). In this study, “the third variable model” is examined considering the role student motivation plays in course evaluations. The relationship between student motivation and course evaluations has already been established in early research: for example, the level of pre-course motivation has found to be related to both grades and ratings of teaching (Howard & Maxwell, 1980), and prior subject interest has been found to have a clear effect on student ratings. It has also accounted substantially for the relationship between expected grades and student ratings (Marsh, 1980).

More contemporary research has also suggested that certain student characteristics are associated with students’ evaluations of learning and teaching: for example, open students are known to prefer open teachers, and agreeable students agreeable teachers (Furnham & Chamorro-Premuzic, 2005a). Neurotic students have been found to be more likely to dislike written and oral examinations when compared to more stable students, and conscientious students have been found to prefer continuous assessment more than less conscientious students (Furnham & Chamorro-Premuzic, 2005b). Further, a positive attitude towards the subject has been found to be related to higher, that is, more positive ratings of classroom instruction (Wolf & Fraser, 2008).

Motivation is known to be associated with different affective, cognitive, and behavioural outcomes in the educational context (e.g, Anderman & Wolters, 2006). It has been shown that students displaying adaptive motivation are (a) likely to look forward to the course, which then contributes to positive course evaluations (Remedios & Lieberman, 2008), (b) also more likely to perceive their

classroom as learning-focused (Tapola & Niemivirta, 2008), and (c) they have reported higher ratings of interest in course materials and class enjoyment (Harackiewicz, Barron, Tauer, Carter, & Elliot, 2000; Lee, Sheldon, & Turban, 2003). Based on this, it seems that student motivation and their perceptions of learning and instruction are interrelated. In sum, it is postulated that student motivation (1) explains the variation in students' evaluations of teaching (Bacon & Novotny, 2002; Greenwald & Gillmore, 1997), (2) is related to distinct preferences of instruction and teacher characteristics (Tapola & Niemivirta, 2008; Senko, Belmonte, & Yakhkind, 2012), and (3) may affect student performance as such, and also possibly as a function of different pedagogical practices (e.g., Hattie, 2009; Hulleman, Schrager, Bodmann, & Harackiewicz., 2010; Midgley, Kaplan, & Middleton, 2001; Senko, Durik, & Harackiewicz, 2008).

In this dissertation, the associations between students' motivational orientations and students' perceptions of their learning environment are examined. Student motivation is addressed in terms of achievement goal orientations, that is, as relatively stable tendencies to favour certain goals and to strive for certain outcomes in learning and achievement situations. With regard to evaluations of the learning environment, in addition to instructional features, it was deemed necessary to address also students' evaluations of themselves *in relation to the learning environment* or the context of the given course. This dissertation includes four individual studies, which hereafter will be referred to as Studies I to IV. Study I includes two substudies, hereafter referred to as Substudies 1 and 2. The summary and the breakdown of studies, aims, and essential methodological details are presented in Table 1.

Table 1. Overview summary of original studies

Study	Participants	Main aims	Measures and reliabilities	Data analysis
I substudy 1	196 (94% male, 6% female) 1st- and 2nd- year students of the National Defence University (NDU)	The development of a evaluation of learning environment questionnaire (ELEQ)	ELEQ: <i>interestingness</i> ($\alpha=.80$), <i>teacher's competence</i> ($\alpha=.71$), <i>quality of teaching methods</i> ($\alpha=.70$), <i>quality of pedagogical materials</i> ($\alpha=.71$), <i>satisfaction with the course</i> ^a ($\alpha=.83$), <i>quality of assessment methods</i> ^b ($\alpha=.70$), <i>effort and attainment</i> ($\alpha=.63$), and <i>participation</i> ($\alpha=.68$).	Exploratory factor analysis, items analysis
I substudy 2	167 (95% male, 5% female) 1st- and 2nd- year students of the NDU	To examine differences in how groups of students with varying motivational profiles evaluate their learning environment	Goal orientations: <i>mastery-intrinsic orientation</i> ($\alpha=.91$), <i>mastery-extrinsic orientation</i> ($\alpha=.83$), <i>performance-approach orientation</i> ($\alpha=.69$), <i>performance-avoidance orientation</i> ($\alpha=.87$, and <i>work-avoidance orientation</i> ($\alpha=.88$), ELEQ: <i>interestingness</i> ($\alpha=.82$), <i>teacher's competence</i> ($\alpha=.86$), <i>quality of teaching methods</i> ($\alpha=.84$), <i>quality of pedagogical materials</i> ($\alpha=.89$), <i>satisfaction with the course</i> ^a ($\alpha=.89$) <i>quality of assessment methods</i> ^b ($\alpha=.92$), <i>interestingness</i> ($\alpha=.82$), <i>effort and attainment</i> ($\alpha=.69$), and <i>participation</i> ($\alpha=.82$)	Confirmatory factor analysis, latent class clustering analysis, analysis of variance
II	169 (96% male, 4% female) 1st- and 2nd- year students of the NDU	To assess stability and change in students' achievement goal orientation profiles, and to examine how those profiles were associated with students' evaluations of instruction and course-related activities	Goal orientations: <i>mastery-intrinsic orientation</i> ($\alpha_{T1/T2}=.89/.88$), <i>mastery-extrinsic orientation</i> ($\alpha=.84/.82$), <i>performance-approach orientation</i> ($\alpha=.72/.67$), <i>performance-avoidance orientation</i> ($\alpha=.86/.80$), and <i>work-avoidance orientation</i> ($\alpha=.81/.86$). ELEQ: <i>teacher's competence</i> ($\alpha_{T1/T2}=.79/.83$), <i>quality of teaching methods</i> ($\alpha=.86/.88$), <i>quality of pedagogical materials</i> ($\alpha=.86/.92$), <i>quality of assessment methods</i> ^b ($\alpha=.84/.90$), <i>satisfaction with the course</i> ^a ($\alpha=.91/.89$), <i>interestingness</i> ($\alpha=.91/.91$), <i>effort and attainment</i> ($\alpha=.79/.85$), and <i>participation</i> ($\alpha=.93/.91$)	Confirmatory factor analysis, longitudinal confirmatory factor analysis, latent class clustering analysis, configural frequency analysis, analysis of variance

Study	Participants	Main aims	Measures and reliabilities	Data analysis
III	88 (85 male, 3 female) 2nd- year students of the NDU	To examine the predictive effects between student motivation, performance, and course evaluations as a function of different pedagogical practices and assessment forms	Goal orientations: <i>mastery-intrinsic orientation</i> (CRel=.92), <i>mastery-extrinsic orientation</i> (CRel=.92), <i>performance-approach orientation</i> (CRel=.85), <i>performance-avoidance orientation</i> (CRel=.84), and <i>work-avoidance orientation</i> (CRel=.89). ELEQ: <i>perceived quality of assessment practices</i> ^b (CRel _{T1/T2} =.93/.93), ^a <i>course satisfaction</i> ^a (CRel _{T1/T2} =.92/.96) Academic achievement: <i>literature examination, skill demonstration</i>	Partial least squares path modeling
IV	88 (85 male, 3 female) 2nd- year students of the NDU	To examine whether students' self-defined course specific goals corresponded to their goal orientation profile and whether they predict students' evaluations of learning environment.	Goal orientations: <i>mastery-intrinsic orientation</i> (CRel=.92), <i>mastery-extrinsic orientation</i> (CRel=.92), <i>performance-approach orientation</i> (CRel=.85), <i>performance-avoidance orientation</i> (CRel=.86), and <i>work-avoidance orientation</i> (CRel=.90). ELEQ: <i>quality of teaching methods</i> (CRel =.94), <i>quality of pedagogical materials</i> (CRel =.95), <i>quality of assessment methods</i> ^b (CRel =.93), <i>satisfaction with the course</i> ^a (CRel =.92) <i>interestingness</i> (CRel =.93), <i>effort and attainment</i> (CRel =.89), and <i>participation</i> (CRel =.95) Academic achievement: <i>literature examination</i>	Partial least squares path modelling, qualitative analysis, inter-rater reliability analysis, latent class clustering analysis, analysis of variance, cross-tabulation, point-biserial correlations

Note: studies III and IV use parts of the same data set

Note: CRel = composite reliability estimate

Note: Variable names: ^a *satisfaction with the course* (Studies I, II and IV) equals *course satisfaction* (Study III) and ^b *quality of assessment methods* (Studies I, II and IV) equals *perceived quality of assessment practices* (Study III)

1.1 Students' course evaluations

Individual's selection and interpretation of information from the environment plays a basic role in the process of interaction between the person and the context (cf., Magnusson & Törestadt, 1993). Regarding learning environment research, it has been postulated (e.g., Fraser, 1994) that such an idea of the relationship between individual and environment, derived from Lewin's Field Theory, implies that both the environment and its interaction with individual characteristics determine behavior. This match between the individual and the environment is also described in Murray's needs-press model as the personal needs reflect the motivational characteristics (e.g., tendencies to choose certain goals), and the external situation, the environmental press, potentially either supports or frustrates such needs (Murray, 1962/1938, p.38-42; Stern, 1970; cf. Fraser, 1994, 1998b). It follows that the complementary match between instruction (environment) and students' characteristics (individual needs) is postulated to be potentially¹ linked to adaptive outcomes, such as achievement (e.g., Fraser & Rentoul, 1980).

Specifically the concept of *learning* environment, as it is applied in educational research, refers to the classroom atmosphere or climate, which encompasses the certain instructional setting (Dorman & Fraser, 2009). Broadly it may be addressed as the social and academic setting that is related to learning and other outcomes through complex interactions and processes in which the teachers and learners are participating (e.g. Dunkin & Barness, 1986; Menges & Austin, 2001). More precisely, as has been the focus of learning environment research (Fraser, 1998a), it is described as the format of the course and how it influences students' performance and attitudes (cf. Dorman & Fraser, 2009; Fraser, 1998b). Moreover, this perspective includes an assumption that the learning environment is viewed at classroom level rather than more broadly at school level, for instance (cf., Fraser, 1994).

Students' course evaluations are a common and principal source used to evaluate teaching effectiveness (d'Apollonia & Abrami, 1997; Ercikan, 2006; Feldman, 2007; Perry, Turner & Meyer, 2006). A central issue in this area of research on learning and instruction is to understand which factors facilitate positive course evaluations, and why. Long and enduring discussion on the validity of students' evaluations of teaching has produced a number of excellent and well-written accounts (e.g., Feldman, 2007; Fraser, 1998a; Marsh, 1987; Marsh & Roche, 2000). In this study, I approach some of the aspects of this discussion by examining whether certain motivational processes contribute to

¹ Stern (1970, p. 8) notes that adaptation is somewhat unique for individuals: person characterized by a certain need will not always act accordingly in all circumstances, and high press will not always elicit certain behaviour to the same extent.

the level of students' ratings of instruction. A distinction does need to be drawn, however: my research does not include assumptions opposed to the validity of student ratings; it simply aims to reveal possible interactions grounded on prior findings.

1.1.1 Determinants or covariates of course evaluations?

Generally, it has been posited that students' ratings of instruction, that is, course evaluations, are positively and moderately related to academic achievement, although results do not quite provide a definite pattern (Brockx, Spooren, & Mortelmans, 2011; Feldman, 2007; Fraser & Treagust, 1986; Marsh & Roche, 1997, 2000; McPherson & Jewell, 2007; Wachtel, 1998). This is illustrated in Aleamoni's (1999) meta-analysis, which revealed that with regard to associations between grades and course evaluations, 24 studies reported null relationships, whereas another 37 studies reported positive correlations.

Various explanations for the observed positive associations have been elaborated upon and discussed (Greenwald, 1997; Marsh & Roche, 1997). In these, three central themes can be identified. The positive relationship between grades and course evaluations may indicate (1) the quality of teaching, (2) the effect of student characteristics, or (3) simply satisfaction with grades (cf., Brockx, et al., 2011; Greenwald, 1997; Greenwald & Gillmore, 1997). Therefore, the explanations for this relationship are usually described in three distinct yet interdependent categories (Howard & Maxwell, 1980; Marsh & Roche, 1997).

First, the *validity hypothesis* or the *teaching effectiveness model* depicts that the relationship between performance and the evaluations of teaching is caused by *better teachers giving higher grades, because students have learned more*. This first interpretation emphasizes the validity of course evaluations, meaning that a competent teacher is able to facilitate learning, and this becomes evident in both high grades *and* high course evaluations (e.g., Howard & Maxwell, 1980; Marsh & Roche, 2000).

The second explanation posits that some variable that is unrelated to teaching affects the grade – course evaluations relationship (e.g., the prior characteristics hypothesis, cf. Marsh & Roche, 2000). This explanation in a more specific form is the student characteristics model (Howard & Maxwell, 1980), in which some existing student characteristic, such as motivation, affects both student performance and course evaluations: *greater student motivation leads to better learning and to greater student satisfaction* (e.g., Greenwald & Gillmore, 1997; Marsh, 1980). In support of this idea, Bacon and Novotny (2002) showed that the effect of grading leniency (see below) was stronger among students with low achievement striving scores; thus, this effect is more evident with some students than others, as a function of motivation. Furthermore, it has been shown that students' motivation moderated the effect of expected grades on their

subsequent course evaluations (Marsh, 1980). Students who indicated that they always attend classes, and are therefore also possibly highly motivated (which might logically result in higher achievement), have rated their teachers higher than students with low attendance (Brockx, et al., 2011).

Third, the *grading bias* or *grading leniency hypothesis* suggests that higher course evaluations are a result achieved by the instructor by giving higher grades, that is, higher grades cause higher ratings from students, *regardless of the effectiveness or the quality of instruction* (Greenwald, 1997; Holmes, 1972; Snyder & Clair, 1976). As to the empirical evidence, this explanation is basically difficult to discuss, as any isolated positive correlation as such can be taken as providing evidence for either bias or the validity of student ratings (e.g., Marsh & Roche, 2000; McPherson & Jewell, 2007). The moderate strength and substantial quotients of both non-significant and positive results is interpreted by some researchers (e.g., Aleamoni, 1999; Feldman, 2007) as disproving the interpretation of higher grades simply resulting in higher student ratings of instruction. However individual studies still provide results that can be interpreted as lending support to the grading leniency hypothesis (e.g., Brockx, et al., 2011; McPherson, 2006). With regard to the role of motivation, the effect of grading leniency has found to be stronger among students with low achievement-striving scores, or in other words, lower motivation (Bacon & Novotny, 2002).

As presented above, these effects are somewhat intertwined, and educational contexts are very complex in nature, so it is probable that none of these hypotheses is independently responsible for the observed relationships between performance and course evaluations. Further, the relationship between grades and student ratings may depend on the scales of respective evaluations of the learning environment. Some characteristic of instruction, for example enthusiasm, organization of the course, and the breadth of coverage have been found to be almost unrelated to achievement, but others, such as perceived learning, group interaction, prior subject interest (Marsh, 1984, 1987; Marsh & Roche, 2000), and teacher professionalism (Brockx, et al., 2011) have been found to be clearly related to achievement.

Students' course evaluations may be differently related to achievement as a function of the context-related aspects and individual-difference variables. Students' tendency to credit themselves for success and attribute blame for the lack of success to other reasons, for example the teacher (attributional bias), may result in lower ratings in the case of perceived low achievement (Gigliotti & Buchtel, 1990; Holmes, 1972; Snyder, & Clair, 1976). With regard to contextual aspects, such as the level of the course, both students' evaluations of teaching and grades tend to be higher on more advanced courses (cf., Feldman, 1978; Marsh & Roche, 2000). Furthermore, teachers of smaller rather than larger

classes tend to get slightly higher ratings. Students who have enrolled voluntarily (for example out of interest) compared to those who have enrolled for other reasons (for example, there is no alternative present) tend to give higher ratings. Ratings also seem to vary systematically as a function of the academic field: for example, teachers of humanities and languages tend to receive slightly higher ratings than teachers of physical science and mathematics (Feldman, 1978, 2007; Marsh, 1987). It is also of interest to note that, for example, the relationship between class size and course evaluations seems to be somewhat different regarding specific instructional dimensions: evaluations of the instructor's interaction with students tend to have a stronger negative association with class size than with other dimensions (Feldman, 1984). Finally, with regard to the actual measurement procedures, Feldman (1979) reported some tentative findings that students' course evaluations may be slightly higher if students rate anonymously, if the postulated purpose of ratings is the teacher's evaluation for personnel management, and if the instructor is present during the ratings. With regard to the teacher's academic rank, it has been found that teachers with higher status or rank sometimes get slightly higher ratings (Feldman, 1983). As mentioned above, these factors are naturally present in educational contexts, and even if these effects are recognized, it is clear that they may potentially interact in ways that are not controlled in studies or not yet fully understood.

1.1.2 Instrumentations of course evaluations

It seems that learning-environment research has been characterized by the development of a large number of questionnaires, used to assess students' perceptions of learning and instruction, for different purposes and in various contexts (d'Apollonia & Abrams, 1997; Fraser, 1998a; Lemos, Queirós, Teixeira, & Menezes, 2011; Marsh, 1987). In this section, I provide a rationale for my work on the instrument of this study (see section 1.3.4) by outlining some summaries and examples of the existing instruments. Fraser (e.g., 1998a) described the development of learning-environment questionnaires by presenting details of widely validated instruments. Two of these, namely those that have been developed and employed in *the context of higher education*, are described in detail as informative examples. These examples illustrate both differences and common tendencies of various instrumentations that assess students' perceptions of instruction and studying in various terms.

The College and University Classroom Environment Inventory (CUCEI) (cf. Fraser & Treagust, 1986; Fraser, Treagust, & Dennis, 1986) taps into students' perceptions of the psychosocial characteristics of actual and preferred environments, concerning work in small classes or groups (seminars). The instrument includes seven scales, each with seven items: (1) *personalization* as

opportunities to interact with the teacher, and their concern for the students (e.g. “The instructor is unfriendly and inconsiderate towards students” [reversed]); (2) *involvement* as the level of participation (e.g., “Students put effort into what they do in class”); (3) *student cohesiveness* in terms of knowing, helping and being friendly toward each other (e.g., “Students in this class get to know each other well”), (4) *satisfaction* as the extent of enjoyment of classes (e.g., “After the class, the students have a sense of satisfaction”), (5) *task orientation* in terms of organization and clarity of classroom work (e.g., “Class assignments are clear so everyone knows what to do”), (6) *innovation* as new and unusual teaching methods and tasks (e.g., “The instructor often thinks of unusual class activities”), and (7) *individualization* in terms of students’ decisions, abilities, interest, and rate of work (e.g., “Teaching approaches allow students to proceed at their own pace”). Sample items are from the actual form of the inventory.

The second example, *the Science Laboratory Environment Inventory* (SLEI) was developed to evaluate the learning environment in science-laboratory classes in the upper secondary level or in higher education (cf. Fraser, Giddings, & McRobbie, 1995; Fraser & McRobbie, 1995). The inventory includes five scales, each with seven items: (1) *student cohesiveness* as in how well students know, help, and support each other (e.g., “I work co-operatively in laboratory sessions”), (2) *open-endedness* in terms of open-ended and divergent approaches to experimentation (e.g., “I am allowed to go beyond the regular laboratory exercise and do some experimenting of my own”), (3) *integration* as how well the laboratory work integrates with other classes (e.g., “I use the theory from my regular laboratory science class sessions during laboratory activities”), (4) *rule clarity* as the extent of formal rules guiding work (e.g., “My laboratory class has clear rules to guide my activities”), and (5) *material environment* in terms of adequacy of equipment and materials (e.g., “I am ashamed of the appearance of the laboratory”). Sample items are from the actual and personal form of the inventory.

These two examples of instruments from the context of higher education include a rather typical composition of items and scales that represent both characteristics of *actual instruction* (such as in CUCEI: task orientation, and in SLEI: material environment) and aspects reflecting the *students’ role* (such as in CUCEI: involvement, and in SLEI: student cohesiveness). The scales and wordings of items shown above illustrate the need to provide measures that are relevant in a given study context (like seminars or laboratory classes in higher education), in order to gain relevant and specific information. Aside from the contents of items and scales that have naturally derived from different sources and frameworks, or have been designed to serve distinct purposes, these inventories also bring forward two important aspects that characterize different

instruments (Fraser, 1998a; Fraser, Giddings, & McRobbie, 1995; see also Tobin, Kahle, & Fraser, 1990 for discussion). The first aspect deals with whether actual versus preferred classroom events are measured. At the item level, for example, the actual form “*There is a clear set of rules for students to follow*” would, in the preferred form, be “*There would be a clear set of rules for students to follow*” (Fraser, 1998a). Second, the focus may be on students’ perceptions of the class as a whole, or reflect their own position relative to it. It follows that differently worded items may be tapping into students’ opinions of the class as a whole (“*the work of the class is difficult*”) or, alternatively, have a reference to their own role in that certain instructional scheme (“*I find the work of the class difficult*”) (Fraser, 1998a). If the focus is on addressing the individual needs and preferences of learners, it is not meaningful to force students to estimate other peoples’ perceptions. Therefore, in such a study context, the personal form of wordings should be preferred (Fraser, Giddings, & McRobbie, 1995).

Following this, in line with Fraser (1998a) and his colleagues (Fraser, Giddings, & McRobbie, 1995) and McKeachie (1997), it seems logical that as the purpose of this study is to uncover variation in course evaluations as a function of individual differences in motivational tendencies, the learning environment should be measured (a) with a comprehensive array of scales, in terms of both instructional and personal aspects relevant in this context, (b) with respect to actual activities, and (c) with the personal form of item wordings when appropriate.

1.2 Achievement goal orientations

During the last few decades, educational researchers have shed light on issues concerning what affects learners and their investment of effort and attention. Research on student motivation has accumulated evidence of the determinants and moderators of the direction, intensity, and persistence of invested effort, as well as the cognitive and affective factors (Anderman & Wolters, 2006; Fiske, 2008; Pintrich, 2003; Pressley & Roehrig, 2003; Wosnitza, Karabenick, Efklides, & Nenniger, 2009). Within this perspective, and positioned within the social-cognitive framework, achievement goal research (e.g., Ames, 1992a; Bembechat & Boulay, 2001; Dweck, 1986; Nicholls, 1984; Pintrich, 2000a, 2003) has been recognized as one the most prominent and productive approaches to explaining individual variation in learners’ achievement-related behaviour and educational outcomes. This perspective on student motivation seems to consist of two somewhat distinct yet interdependent approaches (see Elliot, 2005; Kaplan & Maehr, 2007; Urdan, 1997). Within the first approach, *achievement goals* refer to desired end states that reflect what students strive for in a more situational respect (i.e., the focus is on task-specific or situational *goals*: see e.g., Elliot,

1999; Elliot & McGregor, 1999; Elliot & Sheldon, 1997). The second approach, on the other hand, examines *achievement goal orientations*, that is, dispositions as generalized and reasonably stable tendencies to endorse certain types of goals and outcomes in achievement situations (see Nicholls, 1989; Niemivirta, 2002a). The present study follows the latter perspective, but derives as a whole from the wide array of prior studies, firstly because research following these different perspectives has yielded similar results (Kaplan & Maehr, 2007; Pintrich, 2000a). Secondly, as outlined above, these two approaches are interdependent: goal orientation is, in a sense, a generalized tendency in an individual's approaches and choices in achievement situations, but situational cues are also likely to steer goal-related preferences to some extent.

The research on achievement goals originated largely from the work of Dweck (1986) and Nicholls (1984). It would be a stretch to describe their original works as wholly compatible; there has been much deliberation about their models' differences and relations (cf. Elliot, 2005), but importantly, their views seemed to include the shared conceptual definition that students' goal strivings depend on both stable orientations and situational cues: subsequent research has combined their views in this (Urda, 1997). Originally, research identified two separate achievement goal dimensions or motivational states related to *mastery* (learning goals or task involvement) or *performance* (performance goals or ego involvement) (Ames & Archer, 1988; Dweck, 1986; Dweck & Elliot, 1983; Nicholls, 1984; Maehr, 1984). Basically,² it was stated that mastery-oriented students pursue the learning goals of improving their ability, whereas performance-oriented students pursue the performance goals of proving their ability (Elliot & Dweck, 1988; Dweck & Bembechat, 1983; Dweck & Legget, 1988). It was also assumed that through constant exposure to achievement situations, such individual purposes become an integral part of the individuals' motivational processes, and in reference to this, Nicholls (1989) discussed *motivational orientations* and Dweck (1992) *higher order goals*. Later research on achievement motivation has proposed and identified several different types of goal orientations, not only in education (e.g., Urda, 1997), but also in relation to sports (e.g., Duda & Nicholls, 1992; Duda & Whitehead, 1998) and work (e.g., Button, Mathieu, & Zajac, 1996; Vandewalle, 1997). A notable aspect of achievement goal research is the sometimes vague multitude of labels, terminology and instrumental definitions of constructs under examination (e.g., Murphy & Alexander, 2000). Several reviews and comparative methodological

² Although researchers differ on how they define, name and operationalize their constructs, generally the two "primary orientations" accentuate similar key contents (cf. Ames & Archer, 1987; 1988; Elliot, 2005). In this study, for the purposes of clarity, these dimensions are referred to as **mastery** and **performance** goals or goal orientations, except when citing the original research independently.

and meta-analytical studies have strived to entangle and explain different constructs, operationalizations, and sometimes varying patterns of results of achievement goal orientations (Hulleman, et al., 2010; Payne, Youngcourt, & Beaubien, 2007; Senko, Hulleman, & Harackiewicz, 2011; Utman, 1997; Urdan 1997). In the following sections, I review some relevant findings concerning the dimensions of achievement goals, and their determinants and outcomes.

1.2.1 Dimensions of achievement goal orientations

As noted above, contemporary research has complemented the original conceptualization of two achievement goal dimensions. In this study, I have adopted a conceptualization of five types of personal achievement goal orientations (Niemivirta, 2002a) that follows relevant research on empirically supported additional goal categories. Based on this view, a learner can pursue mastery with differing criteria, and thus a distinction is made between *mastery-intrinsic* and *mastery-extrinsic* goal orientations.³ Mastery-intrinsic goal orientation refers to the common and traditional conceptualization of a focus on mastery and learning (e.g., learning goals or task involvement; cf. Ames, 1992a; Dweck, 1986; Nicholls, 1984), in which the purpose is personal development of competence and learning new things. Distinct from this, mastery-extrinsic goal orientation refers to personal improvement or mastery with an emphasis on external criteria, such as good grades or absolute success at school, with intrapersonal standards (i.e., without competition or concerns of social comparison) for learning or improvement (Niemivirta, 2002a). Grant and Dweck (2003) also identified a similar construct in their explorative work, which they labeled *outcome goals* and which are also based on a focus on the value of doing well or getting a good grade. In sum, both mastery orientations refer to a desire to improve and develop without normative comparison or an urge to display competence, but with different criteria: mastery-intrinsic orientation includes self-set criteria, whereas mastery-extrinsic orientation refers to extrinsic criteria. Prior studies have also identified the construct validity, differentiation, and explanatory power of the mastery-extrinsic construct: observed relations and predictions have been logical and support the idea that as another form of learning or mastery orientation, the mastery-extrinsic orientation is in a sense adaptive, and clearly distinct from other orientations

³ Other recent distinctions are 1) in reference to the mastery/learning dimension, *the mastery-avoidance goal*, which defines competence in absolute/intrapersonal terms, but which is *negatively* valenced (e.g., Elliot & McGregor, 2001) and 2) the so-called 3x2 model, in which goal constructs are based on three standards used in competence evaluation (task, self and other), and on how this competence is valenced in relation to approach and avoidance tendencies (Elliot, Murayama, & Pekrun, 2011).

(Tapola, Jaakkola, & Niemivirta, in press; Tapola, Veermans, & Niemivirta, 2013; Tuominen-Soini, Salmela-Aro, & Niemivirta, 2008, 2011, 2012).

Furthermore, in line with this important step in prior achievement goal research, two types of performance goal orientations are also distinguished. Researchers managed to entangle, to some extent, the earlier, somewhat inconclusive pattern of results concerning performance goals, by differentiating this dimension into approach and avoidance components. Despite some different labels that have been given to these subdimensions, in this study, *performance-approach* and *performance-avoidance* orientations are used (see Elliot, 1999; Elliot & Harackiewicz, 1996; Middleton & Midgley, 1997; Midgley, et al., 1998; Skaalvik, 1997). In short, the performance-approach orientation reflects the aim of demonstrating competence relative to others or gaining favourable judgments, while the performance-avoidance orientation has a focus on avoiding judgments of incompetence and generally not appearing inferior to others.

Finally, not all students' personal goal preferences are related to achievement or competence. Following prior research, and in order to address learners' strivings in achievement situations more comprehensively, the present study also utilizes a *work-avoidance orientation*. This orientation includes students' aims of minimizing personal work and effort and avoiding challenges, instead of the purposes of striving for competence (Meece, Blumenfeld, & Hoyle, 1988; Nicholls, Patashnick, & Nolen, 1985; Thorkildsen & Nicholls, 1998).

Achievement goals have mostly been studied using survey measures, but qualitative research has revealed that students' descriptions of their own goals include intriguingly varying patterns and frequencies of goals and combinations of goals. For example, on the one hand, references to avoidance tendencies have been found to be quite common ("to get it over with" with the least amount of effort and merely getting the work done), and only a minority of students have expressed clear mastery goals (a focus on the value of learning and improvement), or compared their achievement with other students (Anderson, Brubaker, Alleman-Brooks, & Duffy, 1985; Cox, 2009). On the other hand, Harackiewicz and colleagues (1997) noticed that most often students' open responses included references to mastery goals or both performance and mastery goals, whereas only a few students (7% of their sample) mentioned only performance goals. Further, Levy, Kaplan and Patrick (2004) found that there was a roughly equal division of one-third of students who indicated in their responses solely the endorsement of mastery goals, performance-approach goals, or performance-avoidance goals. Students have also spontaneously described goals that are not related to achievement as such. Lemos (1996) found that students' responses displayed several types of goals, of which two were related to achievement: learning goals, and evaluation goals; the latter included both

concerns for high grades and avoiding negative evaluations. Also Lemos identified a type of working goals that included goals of merely getting tasks or other work done with no reference to the quality of learning or achievement. Dowson and McInerney (2003; see also 2001) also identified three academic achievement goals amongst a host of others that students had mentioned in interviews or displayed in observed classroom events: mastery goals, performance goals and work-avoidance goals. Finally, very few studies have combined different methodologies, but some results have shown that students' qualitatively generated goals do to some extent correspond with survey measures (Harackiewicz, et al., 1997; Veermans & Tapola, 2004).

Three particularly central themes of achievement goal research will be reviewed below in detail. Firstly, the endorsement of different achievement goals has distinct patterns of consequences in educational contexts (Anderman & Wolters, 2006; Urdan, 1997). Secondly, prior research has brought forward evidence for both stability and change in students' motivational orientations (e.g., Anderman & Anderman, 1999; Muis & Edwards, 2009; Tuominen-Soini, et al., 2011). Thirdly, it has been suggested that achievement goals are associated with the context or different features of the learning environment (e.g., Ames & Archer, 1988; Church, Elliot, & Gable, 2001).

1.2.2 Outcomes and Correlates of Achievement Goal Orientations

The endorsement of different achievement goals is related to different forms of student engagement, learning outcomes, and affective experiences (e.g., Dweck, 1992; Dweck & Grant, 2008; Dweck & Legget, 1988; Hulleman et al., 2010; Senko et al., 2011). In general, it seems that a mastery-focused orientation is adaptive, as persistence, self-reported effort and low negative affect after failure are typically related to it, whereas a performance-focused orientation seems more maladaptive, as it is characterized by fear of failure, stress, heightened anxiety, self-handicapping and high negative affect after failure (Miller, Greene, Montalvo, Ravindran, & Nicholls, 1996; Niemivirta, 2002a; Smith, Sinclair, Chapman, 2002; Tuominen-Soini, et al., 2008). The review of findings concerning all the relevant achievement goal dimensions provides a more varied picture. In particular, the results concerning performance goals are less consistent than those concerning mastery goals, as a more complex set of relationships has been reported (Hulleman et al., 2010; Senko et al., 2011; Urdan, 1997). Basically, as Urdan (1997) states, three broad categories of possible explanations for these mixed results can be suggested. Firstly, measurement inconsistencies across studies with similarly labelled scales that actually tap into different aspects may account for the variation. Secondly, performance goals do not necessarily work uniformly for all students and may, for example, have to do with perceived ability, and thirdly, the way relative

ability goals (sic) work may have much more complicated interactions in real environments than in laboratory studies.

As to the dimensions adopted in this study, prior research has shown that a mastery goal orientation has many positive outcomes and consequences. This orientation predicts higher levels of course-specific interest and enjoyment of lectures (Harackiewicz, et al., 2000), use of deep learning strategies and interest-based studying (Senko & Miles, 2008), enjoyment, hope and pride (Pekrun, Elliot, & Maier, 2009), end-of-semester interest and enjoyment of lectures (Barron & Harackiewicz, 2003; Harackiewicz, Barron, Tauer, Elliot, 2002), self-esteem and self-regulation (Middleton & Midgley, 1997), and it has been found to have a positive effect on the development of interest (Harackiewicz, Durik, Barron, Linnenbrink-Garcia, & Tauer, 2008).

Mastery-extrinsic orientation has, on the one hand, been consistently linked to positive outcomes and indicators of well-being, such as higher self-esteem and school engagement in schoolwork, satisfaction with educational choice, subject-specific interest, self-reported effort and commitment, and lower ratings of cynicism and sense of inadequacy (Tapola, et al., in press, 2013; Tuominen-Soini, et al., 2008, 2011, 2012). On the other hand, some of these studies have found it to be related to emotional exhaustion, stress, and fear of failure.

Regarding the two components of performance goal orientation, the endorsement of a performance-approach goal orientation is characterized by a mixed pattern of findings. It has predicted pride (Pekrun, et al., 2009), task value (Wolters, Yu, & Pintrich, 1996), engagement (Lau & Nie, 2008) and persistence (Elliot, McGregor, & Gable, 1999), but it has also been associated with negative consequences, such as anxiety (Midgley, Kaplan, & Middleton, 2001), test anxiety (Middleton & Midgley, 1997), and exhaustion (Tuominen-Soini, et al., 2012), and has negatively predicted interest-based studying (Senko & Miles, 2008).

Performance-avoidance goal orientation has mostly unfavourable consequences: it has regularly been linked to negative outcomes, such as anxiety, and lower self-esteem and lower intrinsic motivation (Elliot & Harackiewicz, 1996; Skaalvik, 1997), and has predicted perceived studying difficulties (study disorganization, Senko & Miles, 2008), test anxiety, worry (Elliot & McGregor, 1999), anxiety, hopelessness, and shame (Pekrun, et al., 2009), and an avoidance of seeking help (Middleton & Midgley, 1997). Further, it has negatively predicted interest and enjoyment of lectures (Harackiewicz, et al., 2002), and has been found to have negative relationships to general forms of well-being, such as self-esteem, feelings of personal control, and vitality (Elliot & Sheldon, 1997).

Finally, a consistent pattern of findings concerning the work-avoidance orientation has shown it to be maladaptive. This orientation has been linked to generally undesirable outcomes and consequences, such as surface-level learning

strategies, fear of failure, test anxiety, feelings of inadequacy, school-related cynicism, low interest, low self-efficacy, low learning value, and low self-esteem (Barron & Harackiewicz, 2003; Harackiewicz, et al., 2000; Ng, 2009; Niemivirta, 2002a; Skaalvik, 1997; Tuominen-Soini, et al., 2008).

Relations between achievement goal orientations and student performance

With regard to student performance, or in other words, objectively measured academic achievement, it seems that mostly the focus on performance-approach goals predicts achievement more reliably than the focus on mastery goals (Huang, 2012; Rawsthorne & Elliot, 1999; Senko et al., 2011), but prior research has also yielded more varied results (cf., Linnenbrink-Garcia, Tyson, & Patall, 2008).

As noted above, mastery or learning goal endorsement has mostly been found to be unrelated to student performance, but some studies have shown positive associations (Albaili, 1998; Dupeyrat & Marine, 2005; Elliot & McGregor, 1999; Finney, Pieper, & Barron, 2004; Hsieh, Sullivan, & Guerra, 2007; Lau & Nie, 2008; Witkow & Fuligni, 2007). Mastery-extrinsic orientation has so far received less attention by researchers, but it has been found to correlate positively with achievement (Tuominen-Soini, et al., 2011).

The endorsement of personal performance-approach goals has mostly been positively related to student performance (e.g., Barron & Harackiewicz, 2003; Harackiewicz, et al., 2002, 2008; Sideridis, 2005), but also null results (e.g., Chan, 2008; Hsieh et al., 2007; Lau & Nie, 2008; Tapola, et al, 2013) and even negative relations (Gutman, 2006; Hau & Salili, 1990; Linnenbrink, 2005; Newman, 1998) have been reported.

Then again, performance-avoidance focused goal preferences have consistently been related to lower performance (e.g., Elliot & McGregor, 1999; Harackiewicz et al., 2008; Hsieh et al., 2007; Lau & Nie, 2008). Finally, it is known that the endorsement of work-avoidance goals is negatively associated with academic achievement (Harackiewicz, Barron, Carter, Lehto, & Elliot, 1997; Harackiewicz, et al., 2000, 2002; Long, Monoi, Harper, Knoblauch, & Murphy, 2007).

In order to entangle the diverse pattern of results concerning performance-approach goals, and to shed light on the somewhat differential results between mastery- and performance-approach goals, several potential models and explanations have been brought forward. Utman's (1997) meta-analysis yielded some evidence towards showing that learning goals led to an increased performance advantage over performance goals when the complexity of the evaluated task increased, and that older children and young adults in general benefited more from learning goal endorsement. Related to this, it has also been suggested that performance-approach orientation could be beneficial for older

students, for example at college, but this issue is still under debate (e.g., Harackiewicz, Barron, & Elliot, 1998; Harackiewicz, et al., 2002). Further, Hulleman and his colleagues (2010) showed in their meta-analysis of 243 correlational studies that performance-approach goals predict achievement more reliably when compared to mastery goals, but also that the effects seem to depend partially on the contents of the goal items. With regard to performance-approach goal scales, different results were found between scales including normative references compared to references of appearance and evaluation, and with regard to mastery-approach goal scales, results seemed to differ in accordance to whether the scales included goal-related wordings or not (Hulleman et al., 2010).

Among these explanations, the moderating effect of study strategies on the relations between goal orientations and performance, the so-called depth of learning hypothesis, has been proposed and examined, though little evidence has yet been found (Senko et al., 2011; Senko & Miles, 2008). This view states that as mastery orientation is related to deep learning strategies (e.g., Dupeyrat & Mariné, 2005), and as performance orientation is related to surface learning strategies (Meyer, Turner, & Spencer, 1997), the benefits of performance goal preferences, compared to mastery goal preferences, could therefore be more evident in a learning setting that facilitates or demands repetition, rote learning or otherwise superficial processing of the course contents and material (e.g., Brophy, 2005; Senko et al., 2011). It is likely that the actual process is overtly more complicated, as research has also shown that both these orientations may promote both deep and surface learning strategies (e.g., Diseth, 2011; Koopman, Den Brok, Beijaard, & Teune, 2011). What is more, in terms of the assessment of learning, the more specific form of this idea, namely *the achievement measure hypothesis*, states that the variation in observed associations between achievement goal preferences and academic outcomes is caused by the assessment practices or the criteria used to determine scores and grades (e.g., Midgley, et al., 2001; Senko, at al., 2008; see also Scouller, 1998). Basically, forms of assessment that require surface learning should be more beneficial to performance-oriented students, whereas forms of assessment demanding deep learning should benefit more mastery-oriented students. However, these assumptions are not yet well supported by research (e.g., Senko et al., 2011; Senko & Miles, 2008).⁴ Instead, initial evidence has been presented that the attentiveness, or even more precisely, perceptiveness, associated with personal

⁴ A recent meta-analysis (Gegenfurtner, 2011) provides some support for this idea: concerning professional training of adult learners it was found that the relationships between mastery orientation and transfer of training were higher in learner-centered instruction when compared with knowledge-centered instruction, whereas the relationships between performance orientation and transfer of training were higher in knowledge-centered instruction when compared with learner-centered instruction.

performance-approach goal endorsement, has resulted in accurate and flexible studying in terms of most relevant materials; that is, performance-approach oriented students have displayed a more effective learning agenda (Senko, Hama, & Belmonte, 2013). Also, the potential of task complexity as a moderator in this respect has been observed (Senko & Harackiewicz, 2005a). Dunlosky and colleagues (2013) demonstrated in their meta-analysis that benefits of different learning techniques seem to vary to some extent as a function of other variables related to learning environment and learner characteristics. For example, it seems that the benefits of practice testing are mostly equal regardless of test formats, age, or outcome measures, whereas highlighting relevant parts of text may hinder performance in tests where inference making is required, and elaborative interrogation may be useful only regarding measures of associative memory. Interestingly, the same meta-analysis also showed that very few results have been reported when it comes to motivation and benefits of different learning techniques.

In terms of learning experiences, study habits, long-term motivation and well-being, an emphasis on improvement or mastery instead of relative success or avoidance of failure seems adaptive, whereas a focus on avoidance of effort or concerns with social comparison seem maladaptive. Then again, in terms of measured student performance, it seems that focusing on displaying competence, competition, or extrinsic feedback or grades as such may be beneficial in some circumstances. Also, it seems that the effects of achievement goal orientations on student performance may be moderated to some extent by context or the characteristics of the learning environment.

With regard to individuals' goal profiles as configurations of several achievement goal dimensions, it seems that dominantly mastery- or learning-oriented students display a more adaptive pattern of outcomes, especially when compared to students with an emphasis on avoidance tendencies (Daniels, et al., 2008; Niemivirta, 2002a; Tapola & Niemivirta, 2008; Tuominen-Soini, et al., 2012). More specifically, when compared to avoidance-oriented students, mastery-oriented students have scored higher in self-report measures of self-esteem and self-efficacy, and lower in academic withdrawal, negative affect after failure, fear of failure, and cynicism (Tapola & Niemivirta, 2008; Tuominen-Soini, et al., 2008, 2011; Turner, Thorpe, & Meyer, 1998). When compared to success-oriented students, that is, students with an emphasis on both relative and absolute success, mastery-oriented students have reported lower levels of negative affect after failure, fear of failure and academic withdrawal (Tuominen-Soini et al., 2011; Turner et al., 1998), or have shown relatively similar motivational and affective patterns (Tuominen-Soini et al., 2008). Furthermore, when compared to students with a performance-focused profile (with a strong emphasis on performance goals and simultaneous avoidance tendencies),

mastery-oriented students have displayed higher levels of self-esteem, and lower levels of cynicism, fear of failure, and academic withdrawal (Koul, Roy, & Lerdpornkulrat, 2012; Tapola & Niemivirta, 2008; Tuominen-Soini et al., 2008).

With regard to academic achievement, it has been found that success-oriented students displayed the highest levels of achievement, followed by mastery- and/or performance-oriented students, as compared to students with less success- or mastery-oriented profiles (Tuominen-Soini, et al., 2008, 2011). Koul and colleagues (2012) found that students with a more mastery-approach oriented profile had the highest levels of academic achievement when compared to students with a performance-approach/performance-avoidance focused profile.

1.2.3 Temporal Stability in Achievement Goal Orientations

Despite growing evidence concerning the stability of achievement goal endorsement, prior studies have been conducted in such different contexts, and have used substantially varying analytical strategies, that findings seem to vary (cf. Kaplan & Maehr, 2007). Consequently, the emphasis of certain achievement goals has found to be somewhat stable, but also different types of change have been observed (e.g., Fryer & Elliot, 2007; Kaplan & Maehr, 2007; Muis & Edwards, 2009; Senko & Harackiewicz, 2005b; Senko et al., 2011; Tuominen-Soini, et al., 2011).

Based on a growing number of results concerning stability as indicated by correlations between time points, achievement goal endorsement appears to be rather stable (e.g., Anderman & Anderman, 1999; Anderman & Midgley, 1997; Bong, 2005; Creed, Tilbury, Buys, & Crawford, 2011; Muis & Edwards, 2009; Senko & Harackiewicz, 2005b; Tuominen-Soini, et al., 2011, 2012). Stability in individuals' rank-order does not exclude mean level changes in the endorsement of individual goal orientations over time, and results concerning such changes are somewhat varied. For example, mastery orientation and performance orientation have been found to decrease within a school year (3th, 4th, and 5th grade) (Meece & Miller, 2001), while in some other studies students have been found to become less oriented towards mastery goals and more oriented towards performance goals over the semester (5th to 6th grade) (Anderman & Anderman, 1999; Anderman & Midgley, 1997). Then again, concerning the transition from lower secondary level to upper secondary level, a slight increase in mastery-intrinsic orientation and a slight decrease in mastery-extrinsic and performance-avoidance orientations have been observed (Tuominen-Soini, et al., 2012). However, among high school students an increase in the emphasis of mastery goals has also been observed, while an emphasis on performance-approach goals remained stable from the first to the second semester (Bong, 2005). With respect to college students, mastery, performance-approach, and performance-

avoidance orientations have been found to be relatively stable over a semester (Senko & Harackiewicz, 2005b),⁵ but another study has shown some evidence of a decrease in mastery orientation and an increase in performance-avoidance orientation over a college course (Fryer & Elliot, 2007).

With respect to the person-centred approach, the few studies that have addressed the stability in terms of goal orientations *profiles*, which focus on the individuals' relative emphasis of different achievement goal orientations over time, have provided evidence for relative stability in both elementary and secondary school students (Tuominen-Soini, et al., 2011, 2012; Veermans & Tapola, 2004). That is, students mostly retained a similar relative emphasis on several goal dimensions over time. Intriguingly, although a multiple-goal perspective is quite a common approach in contemporary research, relatively few studies have adopted a perspective or analytical strategy that facilitates the examination of profile stability.

1.2.4 Achievement goal orientations and context

Within early achievement goal research, Ames and her colleagues introduced the idea that the achievement goal construct could also be viewed also with regard to classroom practices (e.g., Ames & Archer, 1987, 1988). In other words, research on achievement goals does not solely concern students' personal goal orientations, but also connects instructional choices and motivational processes. It is widely postulated that certain characteristics of the learning environment, such as classroom goal structures and more specifically the students' perceptions of these structures, are associated with motivation (Covington, 1992; Maehr & Anderman, 1993; Wolters & Gonzales, 2008). For example, it is known that certain instructional choices, such as moderate challenge, fostering of interest and the involvement of students, proper evaluation, real choices, and an emphasis on students' responsibility for their learning are linked to adaptive motivational patterns (e.g. Urdan, 1997). Much of this research originates in the so-called TARGET-framework (Tasks, Authority, Recognition, Grouping, Evaluation, and Time; cf. Ames, 1992a, 1992b; Ames & Archer, 1988; Epstein, 1989) in which, it has been proposed that certain pedagogical principles are linked to students' studying and learning.

Empirical evidence supports the assumptions of an association between context and personal motivation to some extent: certain instructional practices are associated with certain types of personal achievement goal orientations, and it seems that findings are quite similar across age groups. For example, dialogue

⁵ With respect to moderating processes, Senko and Harackiewicz (2005b) observed in the same study that lower prior performance was associated with a decrease in mastery goal and performance-approach goal endorsement, and with an increase in performance-avoidance goal endorsement.

as an instructional feature has been related to task involvement in elementary school students (Nicholls, Cobb, Wood, Yackel, & Patashnick, 1990), whereas social comparison has been associated with ego involvement (e.g., Nicholls, Cheung, Lauer, & Pataschnick, 1989). The endorsement of mastery goals has been predicted by the teacher's mastery orientation among middle school students (Friedel, Cortina, Turner, & Midgley, 2007), and by motivating tasks among high school students (Greene, Miller, Crowson, Duke, & Akey, 2004). Further, change in high school students' perceptions of learning environment has explained changes in their motivation: for example, an increase in perceptions of mastery goal structure accounted for the increase of personal mastery goal endorsement (Bong, 2005). With regard to university students, lecture engagement has predicted the endorsement of mastery goals, evaluation focus has predicted the endorsement of performance-approach goals, and perceived harsh evaluation has predicted the endorsement of performance-avoidance goals (Church, et al., 2001).

As noted above, the perceived classroom environment is assumed to endorse certain outcomes (e.g., Ames, 1992a, Lyke & Kelaheer Young, 1996). Mastery-related structures have been found to be related to positive coping strategies and lower incidence of disruptive behaviour, while performance-focused structures have been found to be related to negative coping strategies, higher incidence of disruptive behaviour, and self-handicapping (Kaplan, Gheen, & Midgley, 2002; Kaplan & Midgley, 1999; Lau & Nie, 2008; Urdan, 2004a). Further, the perceived mastery goal structure has predicted self-efficacy more consistently than the perceived performance goal structure (Bong, 2005, 2008).

All in all, it seems that the role of the classroom environment in research on student motivation and context has been emphasized (Ames & Archer, 1988; Anderman & Anderman, 1999; Barron & Harackiewicz, 2003; Greene, et al., 2004). Somewhat fewer studies have examined the role the students' individual differences in motivation play in their evaluations of teaching and studying (for exceptions, see Tapola & Niemivirta, 2008; Urdan, 1997; Wolters, 2004). The assumption of an unidirectional relationship (from the context or environment to the individual) also posits that instructional schemes or pedagogical choices appear similar or, more precisely, are perceived or interpreted by students in a similar manner (cf. James & Yates, 2007). The complementary view, which also addresses the complexity of educational contexts, assumes instead that individuals' motivation and perceptions of the environment act interdependently: students with a distinct motivational mindset will perceive and interpret shared instructional environments in distinct ways (cf. Fraser & Tobin, 1991; Lyke & Kelaheer Young, 2006; Tapola & Niemivirta, 2008; Wolters, 2004).

This view on student motivation has been supported empirically: personal achievement goal orientations seem to be linked to students' perceptions of their learning environment. Research has shown that mastery-oriented students give more positive course evaluations (Remedios & Lieberman, 2008) and perceive the classroom as more learning-focused than students with less adaptive orientations (Tapola & Niemivirta, 2008). Students with an emphasis on mastery goals have displayed higher interest and enjoyment when compared to those with more performance-focused strivings (Harackiewicz, et al., 2000; Lee, Sheldon, & Turban, 2003). Further, the emphasis on mastery-approach and performance-approach goals has predicted positively the enjoyment of learning, whereas the emphasis on performance-avoidance goals and work-avoidance goals has been negatively predictive of the enjoyment of learning (Ee, Wang, Koh, Tan, & Liu, 2009; Harackiewicz et al., 2002; Pekrun, et al., 2006). Additionally, the mastery goal endorsement has predicted both satisfaction with instruction (i.e., sports camp satisfaction, Hulleman, Durik, Schweigert, & Harackiewicz, 2008) and overall course evaluations (Remedios & Lieberman, 2008). Moreover, in contrast to mastery-oriented students, performance-oriented students seem to prefer more instructional practices that inform students about their relative level of performance or otherwise make achievement more explicit (Tapola & Niemivirta, 2008). It is also postulated that personal performance-goal endorsement is predictive of a greater demand for a teacher who presents material clearly and provides cues for success, whereas a demand for a teacher who displays topic expertise and offers intellectual challenge has been predicted by mastery goal endorsement (Senko, et al., 2012).

In a sense, then, the subjective “match” between motivation-driven personal preferences and instructional practices might influence both students' performance *and* course evaluations. More specifically, for example, the effects of different structures in the learning environment (Brophy, 2005; Senko, et al., 2008, 2011) might thus also be evident not only in performance outcomes, but also in course evaluations that then reflect the same match, converted into personal perceptions of the quality of instruction.

1.3 The Present study

1.3.1 Objectives

The purpose of this study was to examine the role adult students' achievement goal orientations play in their perceptions of the learning environment and their course performance. This study combined two frameworks: (1) the learning environment research in terms of students' evaluations of teaching effectiveness (referred to as course evaluations in this study), and (2) learning motivation in

the form of personal achievement goal orientations. It follows that the objectives of this study included a) the development of a learning environment questionnaire to assess course evaluations, and b) examination of how the students' motivational orientations are related to their course evaluations. For the latter objective, the following research questions were addressed:

1. What kind of goal orientation profiles can be identified in this context? (Studies I, II, and IV). Are these profiles stable? (Study II)
2. How are students' goal orientation profiles related to their performance, course evaluations and course specific goals? (Studies I, II, and IV)
3. How are students' goal orientations related to course evaluations and performance and do these relations vary as a function of different pedagogical practices and assessment forms? (Study III)

A more detailed breakdown of these questions into the aims of the individual studies is presented in Table 1 and the overviews section.

With regard to the assumed contributions of this study, despite a large body of achievement goal research (for reviews, see Hulleman, et al., 2010; Maehr & Zusho, 2009; Pintrich, 2000a; Senko, et al., 2011; Urdan 1997; Wigfield & Cambria, 2010), certain limitations exist in current research, and these my thesis addresses.

Firstly, most of the achievement-goal research has focused on variable relations instead of individual profiles. Such a variable-centred approach mostly overlooks peoples' tendency to strive for multiple goals, that is, to emphasize several achievement goal orientations simultaneously. Secondly, only few studies have specifically examined the longitudinal stability of achievement goal orientations from the perspective of profiles rather than changes in individual variables. Thirdly, students' course evaluations and their perceptions of their own role and activities have mostly been assumed to influence individuals' motivation rather than vice versa. Finally, hardly any studies have tried to link survey measures of students' achievement goals and their own open descriptions of goals to each other or to other relevant educational outcomes. My research addresses these issues by (a) adopting a longitudinal person-centered approach (Study II), and a view that emphasizes the role individual differences in motivation play in how students perceive their learning environment (studies I to IV), (b) combining variable and person-centered approaches when examining the same data set and research problem from these different standpoints (studies III and IV), and (c) analyzing both quantitative and qualitative data concerning the same context and sample (Study IV).

In addition, as considerable amount of research in this area has focused on children and adolescents in the context of general education, my study expands upon previous work by verifying whether inferences derived from prior research also apply in samples of adult students, in a rather exceptional context. Finally, this study included the development and implementation of a learning environment questionnaire for the purposes of this study.

1.3.2 Perspective

1.3.2.1 Multiple-goal perspective

Some of the early research implicitly treated the two primary dimensions of achievement goal orientations (in the terms used in this study, mastery vs. performance) as mutually exclusive, or they were expected to result in clear distinct patterns of outcomes (Ames & Archer, 1987; Dweck, 1992; Nicholls, et al., 1985). These views have been challenged when empirical evidence for more complex relationships to several outcomes cumulated, which indicated that some effects seemed to vary as a function of multiple goal preferences (Bouffard, Boisvert, Vezeau, & Larouche, 1995; Meece & Holt, 1993; Pintrich & Garcia, 1991). For example, Harackiewicz and her colleagues (2002) advocate a multiple-goals approach, because of the positive and complementary effects found for both mastery and performance goals.

These findings have challenged the normative statement that mastery-goal preferences are adaptive and performance-goal preferences are maladaptive (for this discussion see Harackiewicz, Barron, & Elliot, 1998; Midgley, et al., 2001). Although some of the aspects of these discussions are related to results that reflect different analytical strategies or operationalizations, the key message is that different goal orientations are neither independent of each other nor mutually exclusive. To put it briefly, the multiple-goal approach adopted in this thesis, which is widely accepted in contemporary research, postulates that *learners can pursue several goals simultaneously, on differing levels, and with different combinations*, and that these distinct patterns lead to different outcomes (cf. Pintrich, 2000b).

1.3.2.2 Combining the person-centered approach and the variable-centered approach

As different goal orientations are not independent of each other (for example, mastery/learning orientation is usually moderately related to performance-approach orientation, and negatively associated with performance-avoidance orientation), it would be inadequate to examine only their separate relations to

outcome variables. This dissertation mainly uses a person-centred approach⁶ to examine students' different goal orientations, or more precisely, students' goal orientation profiles and their consequences. Therefore, in this study, individual differences in motivation are implicated by different configurations of goal orientation dimensions. However, as outlined in the introduction, many achievement goal inferences are drawn from empirical results based on the variable-centered approach, that is, from correlational analysis or different regression models. In this respect, in order to acknowledge the informative value of prior findings, it was necessary to address some of these assumptions with compatible methodology; thus Study III employs an analytical strategy that focuses purely on variable relations.

The essential difference between these two approaches concerns their focus and unit of analysis, or in a sense, their view on the role of variables (cf. Bergman, Magnusson, & El Khouri, 2003; Niemivirta, 2002b). In the variable-centered approach, the focus is on revealing or confirming significant relations among variables in the form of different correlations, or predictions such as path coefficients, or fit indices or indicators of explanatory power *in the sample* (Laurse & Hoff, 2006; von Eye & Bogat, 2006). In the person-centred approach, such aggregation across persons is not made, but subgroups of individuals displaying similar patterns in variables are assumed to exist, and procedures seek to identify and validate these groups (von Eye & Bogat, 2006).

In this dissertation both approaches are used (see Table 1), and partially on the same data set (Studies III and IV). The added value of this strategy is that although the main interest is served by the person-centered approach that concerns questions of *group differences* in course evaluations, the variable-centered approach facilitates examination of the relative contributions of predictor variables to these same outcomes (cf. Niemivirta, 2002b), which can then be compared with prior studies. Given that many prior achievement goal studies have used the variable-centered approach, this combined strategy is helpful in understanding the nature of observed interactions more profoundly (Laursen & Hoff, 2006; see also Magnusson & Törestad, 1993). The actual comparative use of both these strategies in achievement goal research is quite rare, but Seifert (1995), for example, demonstrated that in addition to the similarities of both views, the cluster analytic methodology (sic) yielded results that were undetectable in the confounded correlational results.

⁶ Different terms have been used for these two analytical strategies, for example person orientations versus variable orientation, and variable approach versus person approach (cf. von Eye & Bogat, 2006). In this study, the term person-centered approach is used to describe the position of the main analytical choices, and therefore it is contrasted to the variable-centered approach for the purposes of clarity.

1.3.2.3 Learning environment and student motivation

In general, the focus of the research on the relationships between the learning environment and student motivation has mostly been on the role of the classroom environment (e.g., Anderman & Anderman, 1999; Greene, et al., 2004) and consequently, as noted in the introduction, fewer studies have examined the role the students' motivational tendencies play *in* their perceptions of learning and instruction (for exceptions, see Tapola & Niemivirta, 2008; Wolters, 2004). The emphasis on the effect of the environment includes an implicit but actually somewhat unwarranted assumption that achievement situations appear similar to all students (cf. James & Yates, 2007), and consequently, that the experiences and interpretations of instructional practices in the classroom would be mostly identical for all students. This assumption results in empirical studies accepting a rather unidirectional effect of the environment on the individual; motivation is thus sometimes rectified into an outcome of instructional practices and context (e.g., Church, et al., 2001).

A complementary view adopted in this dissertation underlines that instead of looking at student motivation as a mere outcome of educational practices, its role is stressed also as a mediator that filters the impact of various features of instruction on subsequent educational outcomes (cf. Lyke & Kelaher Young, 2006; Murdock & Miller, 2009; Tapola & Niemivirta, 2008). Following this, achievement goal orientations are viewed as generalized motivational dispositions that frame students' interpretations and evaluations of teacher characteristics, classroom events and instructional practices (see Järvelä & Niemivirta, 2001; Senko, et al., 2012). With respect to motivationally relevant features of instruction, this means that students construct their perceptions of classroom activities in differing ways (Urduan, 1997; Urduan, Kneisel, & Mason, 1999).

To sum up the assumptions of this study with respect to the analytical strategy and the conceptualization of goal orientation that have been adopted: (1) students' achievement goal orientations and their perceptions of the learning environment are interdependent, (2) therefore differently motivated students may perceive and interpret shared instructional practices in different ways, and (3) this becomes manifest when examining how students perceive and interpret their learning settings *as a function of different goal orientation patterns*.

1.3.3 Context of the study

In the Finnish education system, higher education in the military field is provided by the National Defence University (NDU), which trains officers for the Finnish Defence Forces. The students are recruited after the completion of their military service, which is obligatory for male Finns (conscription) and voluntary

for female Finns. The annual intake of the NDU was approximately 140 and only 3–6% of students were female at the time the measurements of this study were conducted. The selection process consists of a pre-selection phase based on applications, achievement in prior education, and achievement in military service, and an exam phase containing a series of psychological and ability tests, and physiological screening. The first cycle of the university-degree training programme (Bachelor of Military Science) lasts three years, and it includes a combination of academic and vocational studies.

The academic studies are offered across a range of disciplines by five departments (Leadership and Military Pedagogy, Military History, Military Technology, Strategic and Defence Studies, and Tactics and Operations Art). Academic studies usually include ordinary university level courses comprising of lectures and literature, and different types or working methods and student activities. Vocational studies instead usually comprise of different types of exercises or other kind of practical training of arms, weapon systems, tactics and maneuvers, or, for example, practicing leadership or instructing in controlled situations or simulations. Some courses also combine traditional academic methods and practical exercises. In this study, most of the courses examined in individual studies were of this kind. These courses typically included two pedagogically distinct phases, the lecture period and the exercise period. The lecture period comprised of lectures and some small group sessions, and a literature examination. The examination basically tested memorizing the right answers based on norms, rules, restrictions, and guidelines from literature and course material. The exercise period was a ten-day field exercise including field work, planning sessions in groups, and individual skill demonstrations. The skill demonstration was an extensive practical test of coordinating a live-fire exercise requiring applying course knowledge, and testing individual leadership and teaching skills.

Cumulative academic achievement serves a special purpose in the personnel administration in the Finnish Defence Forces: with regard to the officers' degree, it is used to rank students twice during the studies (this is done within the services – army/air force/navy – with some modifications, but the purpose is similar). Based on the first ranking, which takes place after the first year, students choose their branch (e.g., infantry, armoured corps, engineering etc.). Based on the second ranking, at the end of the second year, students choose their units, to which they are posted after graduation. The significance of these ranking-based selections is underlined by the geographical and administrative facts. The units are situated throughout the country, and also the branches include strict in-built limitations: cross-training or cross-transfer from one branch to another is most improbable, and not all branches offer the same units to choose from. Based on what is known of the practices and policies of the NDU,

outlined above, the learning environment seems to include some features that could be expected to endorse a competitive ethos.

1.3.4 Questionnaire development

In order to integrate students' course evaluations with learning motivation, it was deemed necessary to develop a questionnaire to tap into the students' perceptions of instruction and their own role in course-related activities more comprehensively than in prior instruments based on an achievement goal perspective (e.g., PALS, see Anderman & Midgley, 1997; Midgley, et al., 2000). That is to say, it has been suggested that these prior instruments have mostly limited their focus on teacher behaviour or on aggregated classroom goal structures (Ames & Archer, 1988; Freeman & Anderman, 2005; Lyke & Kelaher Young, 2006; Urdan, Midgley & Anderman, 1998).

Following Fraser's (1998a) categorization of studies, this dissertation draws on scales and items in existing questionnaires with the purpose of developing an instrument to especially suit particular research context and purposes. It follows that in addition to scales tapping instructional aspects that are commonly included in research on the learning environment, this study aimed to address students' evaluations of themselves *in relation to the learning environment or the context of the given course*. This kind of interpretation of student behaviour and experiences can be exemplified by the conceptualization of perceived interestingness (cf. Hidi, 1990) that is not only a function of the subject or contents and enactment of the course as such, but also reflects how the student relates to them. Similarly illustrative examples are students' perceptions of their activeness and participation that are dependent on how they have experienced *the certain* course structure that enables or invites them to exhibit such engagement. In this view, then, students' perceptions of learning and instruction in a certain course are seen to convert into self-evaluations of their own role and activities *that reflect what is going on in the learning environment*.

In sum, my work in the development of the evaluation of the learning environment questionnaire is reported in Study I and in the review of the original study. Further, the scales are also described in the method section, but it is at this stage necessary to describe the process and prior works, in order to position my thesis in relation to learning environment research. In practice, first, a literature review was carried out with the purpose of identifying dimensions and constructs that are deemed important and relevant in the present context, and with regard to motivational research. The present work was informed and inspired by several existing instruments and operationalizations (Barron & Harackiewicz, 2003; Greene et al., 2004; Griffin, 2004; Harackiewicz, et al., 1997; Linnenbrink & Pintrich, 2001; Maehr, 1984; Marsh, 1987; Marsh & Roche, 1993; Maunder & Harrop, 2003; Stringer & Irwing, 1998). Indicative examples

are reported in Table 2, which shows the labels of the scales included in the instruments, the educational context in which the studies were conducted, and exemplary items.

Table 2. Indicative examples of learning environment instruments.

Source	Educational Level	Learning environment scales	Corresponding exemplary items
Barron & Harackiewicz, 2003	College	<ol style="list-style-type: none"> 1. Mastery classroom climate 2. Performance classroom climate 	<ol style="list-style-type: none"> 1. The instructor provides feedback that helps students improve their work 2. Grades are over-emphasized in this course
Greene et al., 2004	High school	<ol style="list-style-type: none"> 1. Motivation tasks 2. Autonomy support 3. Mastery evaluation 	<ol style="list-style-type: none"> 1. The teacher in this class values creative thinking and original ideas. 2. In this class the teacher wants us to take responsibility for our learning. 3. In this class, the teacher pays attention to whether I am improving.
Griffin, 2004	University	<ol style="list-style-type: none"> 1. Overall Course Rating 2. Overall Instructor Rating 3. Dynamic/Energetic 4. Presented Clearly 5. Materials Organized 6. Students Invited to Share Ideas 7. Students Could Seek Help 8. Course Content Worthwhile 9. Fair Evaluations 10. Instructor Show Interest in Students 11. Feedback Helpful 12. Instructor Knowledgeable 	<ol style="list-style-type: none"> 1. Overall, how would you rate this course? 2. Overall, how would you rate this instructor? 3. The instructor was dynamic and energetic in conducting the course. 4. The instructor presented the material in a clear and understandable manner. 5. Course materials were well prepared and organized. 6. Students were invited to share their ideas and knowledge. 7. The instructor made students feel welcome in seeking help/advice in or outside of class. 8. The content of this course is useful, worthwhile, or relevant to you. 9. Methods of evaluating student work were fair and appropriate. 10. The instructor seems to have a real interest in and concern for students. 11. The instructor gave students useful/helpful feedback on work. 12. The instructor is very knowledgeable in the subject of this course.

Source	Educational Level	Learning environment scales	Corresponding exemplary items
Marsh, 1987 (SEEQ)	University	<ol style="list-style-type: none"> 1. Learning 2. Enthusiasm 3. Organisation 4. Group interaction 5. Individual rapport 6. Breadth of coverage 7. Exams/grading 8. Homework/assignments 9. Workload/difficulty 10. Overall rating 	<ol style="list-style-type: none"> 1. I have found the course intellectually challenging and stimulating 2. Instructor's style of presentation held my interest during the class 3. Course materials were well prepared and carefully explained 4. Students were encouraged to participate in class discussions. 5. Instructor had a genuine interest in individual students. 6. Instructor contrasted the implications of various theories. 7. Examinations/graded materials tested course content as emphasized by the instructor. 8. Readings, homework, laboratories contributed to appreciation and understanding of subject. 9. Course difficulty/workload, relative to other courses was (1very easy - 7very difficult) 10. Compared with other courses/instructors I have had .. I would say this course/instructor is (very poor - very good)
Stringer & Irwing, 1998	University	<ol style="list-style-type: none"> 1. Teaching Quality 2. Feedback 3. Course Integration 4. Workload 5. Stimulation/Learning 6. Overall Evaluation 	<ol style="list-style-type: none"> 1. Quality of teaching was generally high 2. Assignment feedback fair and useful 3. Topics taught appropriate for course 4. Too much material covered in course 5. Course content stimulated interest 6. In general, course was valuable to me

Firstly, ideas for the creation of new items and modifying existing ones were derived from several sources. In order to unify the view into consistent scales, the initial pool of items was revised, and new items were created based on instructional principles and strategies, with the purpose of linking them to the support of adaptive learner motivation. First, Ames (1992a) suggests that in order to support mastery orientation and effective and adaptive, mastery-related student responses, certain *instructional strategies* should be followed. These strategies include, for example, focusing on meaningful aspects of learning activities, designing tasks with student interest in mind, controlling challenge to retain an optimal and reasonable level, supporting development, involving students in the process, offering choices to develop student responsibility, and emphasizing the most relevant aspects and individual progress in the assessment of learning (Ames, 1992a). Secondly, Pintrich (2003) outlined *design principles* that are implications of the motivational role of social-cognitive constructs and supposedly supportive of adaptive motivation in learning. These principles include, for example, that it is necessary to provide clear and accurate feedback with a focus on understanding, to provide stimulating and interesting tasks with some variety and novelty, to provide materials and tasks that are meaningful and interesting, and to use task, reward, and assessment practices that endorse learning, progress and self-improvement rather than social comparison or norm-based criteria (Pintrich, 2003). Third, Maehr and Midgley (1991) proposed *strategies* in relation to the school wide psychological environment. Among many others, these strategies include fostering the participation and responsibility of students and a variety of learning settings and activities, reducing the emphasis on social comparisons, and focusing evaluation (assessment) to support understanding, sense of competence, and self-efficacy (Maehr & Midgley, 1991).

Based on what is presented above, the operationalization of the learning environment in this study relies on research on the learning environment, with specifications derived from motivational research.

2 METHOD

2.1 Sample and procedures

Samples of the original studies came from the Finnish National Defence University (NDU). The samples consisted of first- and second-year students (mostly aged 20 to 23 years) due to accessibility, as later in their studies students are dispersed into specialized training.

The author administered the questionnaires in all of the measurements and similar briefing was held before respective ratings took place. Students were informed about the details of filling in the employed optical forms, the purposes of the study were outlined, and the anonymity of participation was emphasized.

The samples of individual studies are independent, except that Studies III and IV utilized partially the same data.⁷ Several cadet courses participated in this research at the same phase of their studies (i.e., 1st / 2nd year) but for Study I, during the 2006–2007 term, and for Study II during the 2008–2009 term, and concerning the data set of Studies III and IV during the 2011–2012 term. Thus except for Studies III and IV individual cadets participated in only one study.

2.2 Measures

Following on from the aims and focus of individual studies variables were included in the respective analysis, so not all the studies utilized all the scales. Also, based on reviewers' comments and authors' reflections during the research process, some of the variable names were modified during the different stages and iterations of subsequent studies. An overview of measurements, correspondence of different labels, and inclusion of variables in the original studies is reported in Table 1.

2.2.1 Achievement goal orientations

In each measurement of personal goal orientations, the students completed a questionnaire assessing five types of achievement goal orientations (Niemivirta, 2002a): *mastery-intrinsic orientation* (three items, e.g., "To acquire new knowledge is an important goal for me in my studies"), *mastery-extrinsic orientation* (three items, e.g., "Getting good grades is important for me"), *performance-approach orientation* (three items, e.g., "An important goal for me

⁷ Study IV considerably builds upon and extends Study III by a) using additional data both in terms of variables and b) additional qualitative data not reported even partially in the previous study, and c) applying a person-centered methodology.

in my studies is to do better than other students”), *performance-avoidance orientation* (three items, e.g., “It is important for me not to fail in front of other students”), and *work-avoidance orientation* (three items, e.g., “I try to get away with as little effort as possible in my studies”). The students rated each statement on a 7-point Likert-scale (1= *not true at all*, 7=*very true*). This instrument has been used in several studies showing high reliability and validity (Niemi-virta, 2002a, 2002c; Tapola, et al., 2013; Tuominen-Soini, et al., 2008, 2011, 2012).

2.2.2 Course evaluations

For each course, students completed the Evaluation of the Learning Environment Questionnaire (ELEQ) (cf. Study I), which focuses on several aspects of pedagogical practices and student activity that are considered relevant to student motivation. The detailed procedure and inclusion of scales into the analysis varied somewhat across studies for the benefit of respective aims.

As outlined above, the item and scale construction of ELEQ derives from previous research on the learning environment (Greene et al., 2004; Griffin, 2004; Marsh, 1987; Marsh & Roche, 1993; Stringer & Irwing, 1998), and it is grounded on the guiding principles postulated in a series of studies linking classroom environment and students’ goal strivings (Ames, 1992a; Maehr & Midgley, 1991; Pintrich 2003). The questionnaire includes eight scales assessing instructional practices and students’ own course-related activities; *teacher’s competence* (four items, e.g., “The teacher’s delivery was comprehensible for me”), *quality of teaching methods* (four items, e.g., “In my opinion, the teaching methods supported understanding of the contents”), *quality of pedagogical materials* (three items, e.g., “The pedagogical materials (textbooks and such) supported my studying well”), *quality of assessment methods* (three items, e.g., “The assessment (examination, test or such) supported my learning”), *satisfaction with the course* (three items, e.g., “All in all, I am satisfied with the course”), *interestingness* (four items, e.g., “The substance of the course was interesting for me”), *effort and attainment* (three items, e.g., “Considering my own work during the course I am satisfied”), and *participation* (two items, e.g., “I participated eagerly in discussions”). The students rated each item on a 7-point Likert-scale (1= *not true at all*, 7=*very true*). These examples are from the revised version of the instrument (see Appendix 1) that was used in Studies II to IV.

2.2.3 Open goal questionnaire

In Study IV, students’ self-described course-specific goals were examined. Achievement goals essentially include two components: the actual goal or purpose, and a reference to a criterion used to evaluate whether one has

achieved this goal. In order to tap these components, the students were administered an open-ended format questionnaire including the questions: a) "What are your personal goals in this course?" and b) "How do you know that you have achieved your goals and/or what kind of criteria do you use to decide this?" to assess their goal preferences.

2.2.4 Academic achievement

Students' scores and grades (in Studies III and IV) were obtained from departmental records. The performance measures came from two importantly different assessment practices. First, *the literature examination* included basically multiple-choice or short-answer questions that mostly required identifying the right answer based on memorized information of norms, rules, restriction, and guidelines from the literature provided and from course material. In sum, the literature examination was well-structured and focused on retention,

Second, *the skill demonstration* instead was an extensive practical test of applied course knowledge, individual leadership and teaching skills when coordinating a live firing exercise. This test consisted of planning and managing a half-day live firing exercise in which role the students are expected to display vigilant alertness as well as to be able to resolve normal disruptive incidents by preparation, improvisation, and controlled changes of plans. In sum, when compared to the literature examination, the skill demonstration was less structured and more focused on the application of knowledge.

The maximum score in the literature examination was 74, and the skill demonstration was graded from .75 (disqualified) to 5.

2.3 Data analysis

In accordance with the aims of individual studies exploratory factor analysis and item analysis were used to examine the consistency of the newly developed scales (Study I), confirmatory factor analysis was used to confirm the structural validity of instruments (Studies, I and II), and longitudinal confirmatory factor analysis was used to establish measurement invariance between data points (Study II). Latent class clustering analysis was used to form groups of students based on their achievement goal orientation profiles (Studies I, II, and IV), configural frequency analysis was used to examine the stability of these profiles (Study II), and series of analysis of variance (Studies I and II) or, when necessary, appropriate non-parametric tests (Study IV) were used to test between-group differences. Structural equation modelling (PLS) was used to test internal consistencies (Study III and IV) and the relationships between study variables (Study III). Finally cross tabulations were conducted to examine the

interrelations between group membership and course-specific goals, and point-biserial correlations were used to observe associations between course-specific goals, course evaluations and performance.

The specific application of a certain analysis can be briefly described in four points. First, confirmatory factor analysis as applied in the Mplus statistics software (Muthén & Muthén, 1998–2009) was used to examine the structural validity of scales. In the measurement model, each factor was specified to predict corresponding items, and the error terms of the items were uncorrelated. In addition to chi-square statistics, I followed the two index strategy (c.f., Hu & Bentler, 1999) and used comparative fit index (CFI, cutoff value $>.95$) and root mean square error of approximation (RMSEA, cutoff value $<.06$) to evaluate the model fit. When necessary, missing values were imputed by the expectation maximization (EM) estimate (SPSS 15 and 18). Regarding the PLS-modelling, a path weighting scheme for estimating inner weights and a bootstrapping procedure for estimating parameter significance were used (SmartPLS software: Ringle, Wende & Will, 2005). The PLS-based modeling differs from covariance-based SEM in several important ways, of which the primary reason to consider the former type of analysis in this case was the relatively small sample which suffices in the PLS-analysis even for a complex model, and without restrictions from non-normal data (e.g., Hair, Ringle, & Sarstedt, 2011; Tenenhaus, Vinzi, Chatelin, & Lauro, 2005). Moreover, it is to be noted that the PLS-analysis does not operate with latent variables as such, but rather estimates model parameters to maximize variation in an exploratory sense (Reinartz, Haenlein, & Henseler, 2009). It follows that the PLS is preferred method if the research objective (as in Study III) focuses on predictions rather than confirmation of theoretically constructed model (Hair, Ringle, Sarstedt, 2011).

Second, longitudinal confirmatory factor analysis was conducted as a hierarchical analysis of invariance (e.g., Vandenberg & Lance, 2000) to test structural stability, stability in mean levels, and normative stability of the goal orientation measures. By doing this, I sought to examine measurement equivalence (i.e., whether identical constructs were measured at both time points) and latent mean changes. The analysis was performed on items measuring goal orientations in the first and the second measurements and the fit of several models with consequently increasing assumptions of measurement equivalence was compared. In addition to chi-square statistics, and the two index strategy described above, the change of CFI was observed (Cheung & Rensvold, 2002, p. 251). Furthermore, to take into account the sensitivity of the χ^2 -test to the sample size (e.g., Bentler & Bonnet, 1980), mean-adjusted χ^2 -statistics (S-B χ^2 , cf. Satorra, 2000; Satorra & Bentler, 2001) was calculated for more detailed model comparison.

Third, following the person-centred approach, latent class clustering analysis (LCCA; cf. Vermunt & Magidson, 2002) with the BIC-criterion⁸ was used to form groups of students based on their achievement goal orientation profiles. With respect to this analysis, in Study II, *the independent states* or *I-states as objectives* –procedure (ISOA cf. Bergman & El Khouri, 1999; Bergman & Nurmi, 2010) was employed. Based on this view, the pattern of values provided by an individual at one time depicts an independent state, and these I-states can be used as the analytical units of classification disregarding time. Following this, in Study II the LCCA was conducted on the students’ composite goal orientations scores from both measurements.

Fourth, the configural frequency analysis (von Eye, 1990; von Eye & Niedermeier, 1999) was used to identify “types” and “antitypes” of configurations of group memberships to establish whether the change of membership between measurements consisted of frequent patterns or less frequent patterns of changes in students’ orientation profiles. Basically, if an observed frequency was significantly greater than expected, it was labelled a type, and if the observed frequency was significantly smaller than the expected one, it was labelled an antitype. Lehmacher’s test with continuity correction was used (see von Eye, 2002).

⁸ Although some critique has been voiced about the accuracy of the classic BIC concerning smallish samples (Dziak, Coffman, Lanza & Li, 2012), it was deemed adequate here. Different ICs supported each other, solutions were reinforced by a bootstrapping procedure, and, based on prior work, cautious assumptions could be made about the number of groups.

3 OVERVIEWS OF ORIGINAL STUDIES

3.1 Study I: In the eye of the beholder: Do adult students' achievement goal orientation profiles predict their perceptions of instruction and studying?

Pulkka, A-T., & Niemivirta, M. (2013). In the Eye of the Beholder: Do Adult Students' Achievement Goal Orientation Profiles Predict their Perceptions of Instruction and Studying? *Studies in Educational Evaluation*, 39(3), 133–143. DOI <http://dx.doi.org/10.1016/j.stueduc.2013.06.002>

Study I, which consists of two Substudies 1 and 2, examined whether adult students' perceptions of various aspects of instruction (e.g., assessment practices) and their own role (e.g., level of participation) vary as a function of their motivational tendencies. First, a questionnaire was developed to tap students' perceptions of aspects of learning environment, and student behaviour and experiences relevant in this particular context; this is reported in Substudy 1. Following this, Substudy 2 examined whether inferences drawn from prior research can be generalized to this sample. The aim was to establish what kind of adult students' achievement goal orientation profiles are displayed in this sample and how these profiles are related to perceptions of instruction and studying.

Substudy 1

The aim of Substudy 1 was to construct an instrument to measure students' evaluations of instruction and their role and experiences in relation to the learning environment.

The sample consisted of 196 (94% male, 6% female) first-year and second-year students at the NDU who had complete data and were present at the time of the measurement (i.e., 70% of those enrolled). Students evaluated two courses using a learning environment questionnaire developed for the purposes of this study.

Based on design principles derived from research concerning the practical implementations of motivation and classroom learning environment, items were modified from multiple existing instruments and new items were created. Then nine initial scales were constructed (altogether 39 items) to assess common aspects of instructional practices and the students' own role and course-related activities.

Exploratory factor analysis was performed on all items, and item analyses were used to examine the consistency of the resulting scales.

Based on an inspection of the factor structure and contents of items, an eight-factor solution (26 items, accounting 48.9% of the variance) that clearly replicated most of the initial scales was extracted. Based on this, the following composite variables were constructed: *interestingness*, *teacher's competence*, *quality of teaching methods*, *quality of pedagogical materials*, *satisfaction with the course*, *quality of assessment methods*, *effort and attainment*, and *participation*. All scale means were rather high and correlations between scales were mostly positive and significant.

Brief but sufficiently comprehensive instrumentation that covered the key aspects of teacher behaviour, pedagogical practices, and student activity with adequate psychometric quality was constructed. This instrument successfully differentiated between the expected dimensions, and the found relationships between the scales were comparable to prior research. Some moderate internal consistencies indicated the need for some further refinements that were employed in Substudy 2.

Substudy 2

The purpose of Study 2 was to examine differences in how groups of students with varying motivational profiles evaluate their learning environment.

The sample consisted of first-year and second-year students at the NDU. Initially 208 (95% male, 5% female) students were administered the goal orientation questionnaire. Of these, 167 (95% male, 5% female) students completed the revised version of the ELEQ and were included in the final sample (78% of those enrolled and 82% of those who participated in Substudy 1).

Confirmatory factor analysis was used to examine the structural validity of both the goal orientation and the learning environment scales. Following the person-centred approach, latent class cluster analysis was used to identify groups of students with similar configurations of achievement goal orientations and differences between these groups in students' evaluations of the learning environment were then examined through a series of ANOVAs.

Results from the confirmatory factor analysis indicated reasonable fit with some minor modifications to the measurement models.

Based on results from the latent class cluster analysis (with BIC-criterion) a four-group solution was chosen for further analysis. Based on the standardized mean score profiles the four groups were labelled *mastery-oriented* ($n=29$, 14%), *success-oriented* ($n=91$, 44%), *indifferent* ($n=44$, 21%), and *avoidance-oriented* ($n=44$, 21%). An essential goal for mastery-oriented students was to increase competence and understanding, with the simultaneous aims of getting good grades as they displayed an emphasis on mastery-intrinsic orientation and mastery-extrinsic orientations, and less so on other orientations. Success-oriented students endorsed both mastery orientations and both performance

orientations, but had low levels of work-avoidance orientation. Thus they were striving for learning and both absolute and relative success, but also had concerns about displaying competence as well as judgements of incompetence. The indifferent group displayed a disengaged or non-committed motivational pattern as they expressed a below average emphasis on all orientations, with a slight emphasis on work-avoidance orientation. The avoidance-oriented group mainly aimed at minimizing effort: they scored low on both mastery orientations, above average on performance-approach and performance-avoidance orientation, and clearly highest on work-avoidance orientation.

Analyses of variance showed that goal orientation groups differed significantly from each other on their ratings of *interestingness* and *effort and attainment*: mastery-oriented and success-oriented groups responded more positively than the avoidance-oriented students, who gave the least positive evaluations.

Structural validity of the revised learning environment instrument was established and higher internal consistencies compared to those of Substudy 1 indicated improved reliability of the scales. The motivational profiles and group composition were mostly similar to those identified in prior studies on lower and upper secondary school students. However some differences were observed as (1) the emphasis of some achievement goal orientations was stronger in this sample, and (2) as the success-oriented group was substantially larger than success-oriented groups observed in samples of lower and upper secondary school students.

With regard to variable relations, some differences emerged between Substudies 1 and 2: it seems that the distinct pedagogical choices employed in different courses may have affected, for example, the role that assessment methods played in students' ratings.

The observed group differences in course evaluations were theoretically relevant: students with a more adaptive motivational profile were more positive in their evaluations. In contrast, the absence of differences in students' perceptions of instructional practices may indicate effects of this particular learning context.

3.2 Study II: Adult students' achievement goal orientations and evaluations of the learning environment: A person-centred longitudinal analysis

Pulkka, A-T, & Niemivirta, M. (2013). Adult students' achievement goal orientations and evaluations of the learning environment: A person-centred longitudinal analysis. *Educational Research and Evaluation*, 19(4), 297–322. DOI <http://dx.doi.org/10.1080/13803611.2013.767741>

The aims of this study were first, to assess stability and change in students' achievement goal orientation profiles, and, second, to examine how those profiles were associated with students' evaluations of instruction and course-related activities.

The participants were 169 (96% male, 4% female) first- and second-year students (aged 20 to 23 years) from the Finnish National Defence University (NDU) who participated in the study at both measurement points and had complete data on achievement goal orientations. Students' achievement goal orientations and their perceptions of the learning environment concerning certain courses were assessed twice, approximately four months apart.

Confirmatory factor analysis was used to examine the structural validity of both the goal orientation and learning environment scales. Longitudinal confirmatory factor analysis was conducted as a hierarchical analysis of invariance to test structural stability, stability in mean levels, and normative stability of the goal orientation measures in order to establish whether identical constructs were measured at respective times and to examine latent mean changes. Following the person-centered approach, latent class clustering analysis was used to form groups of students based on their achievement goal orientation profiles. The stability of the goal orientation groups was examined with configural frequency analysis in order to establish whether the group membership at respective time points indicated patterns of change or stability in students' orientation profiles. Between-group differences in course evaluations (the evaluations of the learning environment) were examined with analysis of variance.

Results from confirmatory factor analysis indicated reasonable fit with some minor modifications to the measurement models. Analysis of invariance indicated strong partial invariance evidenced in clear structural and normative stability over measurement and small mean level changes in mastery-extrinsic orientation and work-avoidance orientation: the first decreased slightly and the latter increased slightly.

Based on the results from the latent class clustering analysis, four groups of students were identified based on their achievement goal orientation profiles. The *mastery-oriented* students ($n=111$, 33%) mainly focused on learning and understanding as they scored relatively high on mastery-intrinsic and mastery-extrinsic goal orientations, and relatively low on performance-approach, performance-avoidance, and work-avoidance goal orientations. The *success-oriented* students ($n=50$, 15%) strived for mastery as well as for absolute and relative success as they had relatively high scores on all mastery and performance goal orientations. It is also to be noted that success-oriented students did not differ from mastery-oriented students in their scores on

mastery-intrinsic orientation and work-avoidance orientation. The *avoidance-oriented* students ($n=69$, 20%) were merely aiming at minimizing their effort and investment: they scored relatively low on mastery-intrinsic and mastery-extrinsic goal orientations and high on work-avoidance goal orientation. The avoidance-oriented differed significantly from the mastery- and success-oriented students in their endorsement of work-avoidance goals. The *indifferent* students' ($n=108$, 32%) scores were closest to the sample averages and they seem to be quite non-committed learners: ready to perform the necessary work with the minimum of effort, but they do not show a clear emphasis concerning any other personal goals. Interestingly, their standardized mean score profile seemingly mirrors that of mastery-oriented students, with a slight relative emphasis on performance-approach and performance-avoidance, and work-avoidance orientations.

A first order configural frequency analysis indicated that the configurations that represented the same group membership in both measurements were most common and consequently depicted stability. Also, it was untypical for mastery-oriented students to move to indifferent or avoidance-oriented groups, for indifferent students and avoidance-oriented students to move to a mastery-oriented group, and for success-oriented students to move to an avoidance-oriented group. Based on these results, roughly 60% of the students had identical goal orientation profiles at both time points, and radical changes were rare. Regarding between-group differences, the series of ANOVAs indicated that the orientation groups differed from each other in their evaluations of the quality of pedagogical materials in the first measurement, and effort and attainment and participation in both measurements. In general, mastery- and success-oriented students tended to respond more positively when compared to either indifferent or avoidance-oriented students.

These results provided evidence of multiple goal configurations by showing that even in a carefully screened adult student population common motivational profiles can be identified. Results also showed that students' personal achievement goal orientations seem rather stable. Goal orientation profiles were associated with the students' course evaluations, although less than assumed. Observed differences in course evaluations matched the students' personal goal orientation profiles in the sense that mastery-oriented and success-oriented students were most positive in their evaluations of their own role and efforts in studying. However, differently oriented students evaluated most instructional aspects quite uniformly thus providing room for several possible explanations of which factors contribute to students' evaluations of learning and instruction.

3.3 Study III: Predictive relationships between adult students' achievement goal orientations, course evaluations, and performance

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DOI <http://dx.doi.org/10.1016/j.ijer.2013.03.015>

The aim of this study was to examine the chain of predictive effects between students' goal orientations, performance, and course evaluations as a function of different pedagogical practices and assessment forms. The course in which the data were collected included two pedagogically distinct phases and assessment forms: the first, *the lecture phase* was conducted in lecture format including some small group sessions, and it ended with an examination (basically a multiple-choice exam based on literature), whereas the second, *the exercise phase* was a ten-day exercise in field conditions that consisted of field work, planning in groups, and individual skill demonstrations (practical test of applied course knowledge).

The participants were 88 (85 male, 3 female; aged 20 to 23 years) second-year students at the Finnish National Defence University (NDU). Students' achievement goal orientations were measured right before the course and course evaluations were measured twice: time 1 measurement was at the end of the lecture period, and time 2 measurement took place one week after the exercise period. Students' scores from the examination and their grades from the skill demonstration were obtained from departmental records.

Based on assumptions derived from prior research and the sequence of measurements, students' course satisfaction (time 2) and the perceived quality of assessment practices (times 1 and 2) were first regressed on scores from the examination and grades from the skill demonstration, respectively. Second, examination scores, grades and the perceived quality of assessment practices (time 2) were regressed on students' course satisfaction (time 1) and the perceived quality of assessment practices (time 1). Finally, all the above factors were regressed on personal achievement goal orientations.

Due to the small sample size this study utilized partial least squares path modelling to test the proposed predictions in the model as well as the internal consistencies of the scales. The composite reliability estimates indicated good structural validity.

The results showed that mastery-intrinsic orientation predicted positively course evaluations, but not performance. Performance-approach orientation was unrelated to students' course evaluations, predicted negatively skill

demonstration, but was unrelated to the literature examination. Mastery-extrinsic orientation predicted negatively the perceived quality of assessment practices at time 2, and work-avoidance orientation predicted positively course satisfaction at time 2. Students' course evaluations were correlated within and between the two pedagogical phases, and course satisfaction was weakly predicted by skill demonstration, but unrelated to the literature examination.

Findings of this study suggest the performance and course evaluations to be rather independent of students' achievement goal orientations, yet the differences in the effects between the two phases imply some role by the respective form of assessment. It also seems that students' achievement weakly covary with some aspects of their course evaluations.

3.4 Study IV: The relationships between adult students' achievement goal orientations, self-defined course goals, course evaluations, and performance

Pulkka, A-T., & Niemivirta, M. (2014). The relationships between adult students' achievement goal orientations, self-defined course goals, course evaluations, and performance. *Manuscript submitted for publication.*

The aims of this study were to examine how students' achievement goal orientation and self-reported course specific goals are related to each other and how they predict the students' perceptions of their learning environment and course performance.

The sample consisted of 88 (85 male, 3 female; aged 20 to 23 years) second-year students at the Finnish National Defence University (NDU). The course phase in which the data were collected was conducted in lecture format and included an examination that was basically a multiple-choice test. Students' achievement goal orientations were measured at the beginning of the course. With regard to students' course evaluations, the measurement was at the end of the lecture period immediately before the examination, except that students' perceptions regarding the quality of assessment practices were evaluated after the examination. Regarding qualitative data, the students completed an open questionnaire at the beginning of the course, in which they were instructed to describe their own personal goals and objectives for the course.

Partial least squares (PLS) path modelling was used to test the structural validity of the instruments. Following the person-centred approach, latent class clustering analysis was used to form groups of students based on their achievement goal orientation profiles. Between-group differences in the achievement and course evaluations were examined by conducting a series of ANOVAs based on goal orientation group memberships.

Regarding qualitative data, each type of achievement goals was coded by three raters as present (1) or absent (0) in students' responses and interrater reliability was tested. The absent/present frequencies of each type of achievement goals were cross-tabulated with goal orientation group memberships to establish whether students with different goal orientation profiles displayed distinct emphases on any type of course-specific goals. The associations between students' course-specific goals and evaluations of learning environment were examined with point-biserial correlations.

Results from the LCCA indicated that the solution with four groups explained the data best. Therefore, four homogenous groups of students were identified based on their achievement goal orientation profiles. *Mastery-oriented* students ($n=10$, 11%) emphasized both mastery goal orientations, yet they scored relatively low on both performance goal orientations and work-avoidance goal orientation. These students mainly focused on personal mastery, learning and understanding, and also recognized absolute success and good grades as important goals. *Performance-oriented* students ($n=24$, 27%) scored relatively high on all orientations, with some emphasis on mastery-extrinsic and performance-approach goal orientations. This indicated that they strived for absolute and relative success and had some concerns about social comparison. *Indifferent* students' ($n=18$, 21%) scores were closest to the sample averages in all dimensions so they displayed no relative emphasis of any goal orientations. *Avoidance-oriented* students ($n=36$, 41%) scored relatively low on both mastery goal orientations and high on work-avoidance goal orientation. These students were merely focusing on minimizing their effort, and avoiding challenges and failure.

The results of the series of non-parametric ANOVAs showed that the goal orientation groups differed from each other in their evaluations of teaching methods, quality of pedagogical materials, quality of assessment methods, satisfaction with the course, effort and attainment, and participation. In most cases, mastery-oriented and performance-oriented students tended to give higher ratings than the other two groups.

Students' open answers were found to include responses displaying most often qualification goals (gaining specific instrumental qualification for working career), and mastery-intrinsic goals, mastery-extrinsic goals, and clearly less often other goal categories. With regard to relations between profiles and open-ended answers, the avoidance-oriented students mentioned mastery-intrinsic goals less frequently and performance-oriented students mentioned mastery-intrinsic goals marginally more frequently than could be expected by chance.

There was little congruence between students' self-reported goals and their goal orientation profiles: we found little differences in how students with various goal orientation profiles described their own course-related goals and criteria.

With regard to course evaluations, the presence of mastery-intrinsic goals (focus on learning new things and increasing competence) was associated with higher ratings of satisfaction with the course, interestingness, effort and attainment, and participation. The presence of mastery-extrinsic goals (focus on success and good grades) was associated with higher ratings of the perceived quality of teaching methods and pedagogical materials. In contrast the presence of work-avoidance goals was associated with lower ratings of satisfaction with the course and interestingness.

As to student performance, no associations were found between course-specific goals and performance. With regard to goal orientation profiles, the results showed that the performance-oriented students scored highest and slightly better than the mastery-oriented students.

The results of this study indicate that despite the special study context, the achievement goal orientation profiles and relative group sizes in this study very most similar to those obtained in previous studies with adult students and on secondary school students. With regard to the incidence and contents of course-specific goals, it seems that not all the categories of goals are reported spontaneously with equal frequency: for example students' responses lacked almost completely any statements related to social comparison whereas statements related to mastery-intrinsic goals and gaining qualifications as such were very common.

The goal orientation groups differed from each other in their evaluations of many aspects of learning and instruction and, in turn, the students' self-reported goals were also associated with their course evaluations in a (somewhat) parallel way. Results indicated that generalized achievement goal orientations are related to students' situation-specific achievement goals (although weakly) and perceptions of the learning environment, but students can also describe their situation-specific goals with a different focus and yet these situated goals are also predictive of the subsequent perceptions in a parallel way.

4 DISCUSSION

The main aim of this study was to examine how students' motivational orientations are associated with their evaluations of instruction and course-related activities, and their course performance. All in all, the results indicate that common achievement goal orientation profiles were found in this fairly special student population, and that students' course evaluations varied as a function of these profiles in theoretically relevant ways, although less than assumed. The role that goal orientations play in students' performance and their perceptions of instruction and studying is discussed.

4.1 Main findings

4.1.1 Evaluations of the learning environment

In Study I, the development of a questionnaire, designed to tap into adult students' perceptions of the learning environment, was described. With regard to the construction of scales, the factorial structure extracted paralleled well with the theoretical assumptions, as the original scales were mostly replicated.

The associations between the learning environment scales were consistent with prior research (Marsh & Roche 1993; Stringer & Irwing, 1998). As students' course satisfaction and their experience of its interestingness were strongly associated with the students' perceptions of the teacher's competence, it seems that teachers indeed played a crucial role in how positively the students experience their course. Interestingly, in Substudy 1, students' evaluations of the quality of teaching methods, pedagogical materials and assessment methods were only weakly correlated, which demonstrates how these core aspects of pedagogical practice do not necessarily go hand in hand.

These independent patterns of correlations also suggest that the questionnaire was sensitive enough to differentiate between these instructional aspects.

As to the students' experiences and self-evaluations, self-reported effort and attainment, and participation had clearly different patterns of relations with instructional practices, the latter being mostly independent from them. Consequently it seems that effortful engagement is distinct and different from active participation in the course. This is supportive of arguments that *students' preferences* of pedagogical choices may differ importantly concerning different modes of personal engagement, or more exactly, in terms of passiveness

contrasted to more active involvement (McKeachie, 1997), so the activeness is perhaps more a function of personal preferences rather than instruction as such.

However, some differences in scale relations were observed between Substudies 1 and 2, indicating that concerning different courses, first, students' perceptions of the assessment practices were now more closely linked to their evaluations of other aspects, and second, in Substudy 2, participation was moderately associated with interestingness and the quality of pedagogical materials, while these associations were not observed in Substudy 1. This may be interpreted as an indication of the relational function of students' self-evaluation: different context results in different emphasis and relations given by students to their personal effort and engagement. With regard to courses conducted in a more traditional lecture format, the personal activeness during the course was unrelated to instructional aspects, whereas concerning a course with a lengthy period of cooperative learning and practical tasks in field conditions, activeness was clearly associated with students' perceptions of some other aspects of the learning environment. Studies II to IV all concerned similar courses to that examined in Substudy 2, and relationships between ELEQ scales were mostly positive and significant in these studies. Thus it seems plausible that as course characteristics are related to the level of course evaluations (cf. Feldman, 1978, 1984, 2007), they may also affect the relationships between evaluations of different aspects.

In sum, the evaluation of the learning environment questionnaire was able to differentiate between the expected dimensions, and the observed relations between the resulting scales paralleled prior findings (e.g., Marsh & Roche 1993; Stringer & Irwing, 1998). However, the relatively high correlations among the ELEQ scales in further studies (II to IV) as well as the predictive sequence among course evaluations found in Study III reflect the intertwined nature of students' perceptions of various dimensions of learning and instruction (e.g., Marsh & Roche, 1997; Remedios & Lieberman, 2008; Stringer & Irwing, 1998). This seemed to be the main trend across studies of this dissertation, despite some differences noted above.

4.1.2 Students' achievement goal orientations

With regard to students' goal orientations, the person-centred approach is based on distinct configurations of emphasis of the goal orientation dimensions. Following this, in Studies I, II, and IV students were grouped based on their achievement goal orientations, and these groups were then described in terms of mean levels, standardized scores, and between-group differences in goal orientation variables. Although, in the light of existing knowledge, no strict assumptions can be stated about "universal profiles" that should emerge, certain assumptions were made based on empirical evidence from studies conducted on

samples of Finnish youths, using the same instrumentation and analytical strategies (Tuominen-Soini et al., 2008, 2011, 2012). It was expected that at least the mainly mastery/learning-oriented group, success/performance-oriented group, and most probably a group oriented more towards avoidance of self-investment and effort could be found. Many prior studies have been conducted on younger learners, and given the special context of the present study (selective sample and assumed competitive ethos of the institution), it was interesting to compare whether similar profiles could be identified.

In Studies I, II, and IV, similar analytical strategy with latent class cluster analysis was used to form groups of students based on their achievement goal orientation profiles. Solutions in individual studies were chosen according to statistical criteria, after which the groups were labelled informatively, based on interpretations of mean differences in achievement goal orientations and the standardized mean score profiles (see Figure 1). Altogether five distinct profiles were identified, and three of these were consistently found in all studies. These three consistent groups were labelled *mastery-oriented* (Study I 14%; Study II 33%; Study IV 11% of subsamples), *indifferent* (Study I 21%; Study II 32%; Study IV 41%), and *avoidance-oriented* (Study I 21%; Study II 20%; study IV 21%). In addition to these, in Studies I and II, a *success-oriented* profile was identified (Study I 44%; Study II 15%), and in Study IV, a *performance-oriented* profile was identified (27%). In the following subchapters, these profiles are described in more detail, and their congruence to prior research is outlined.

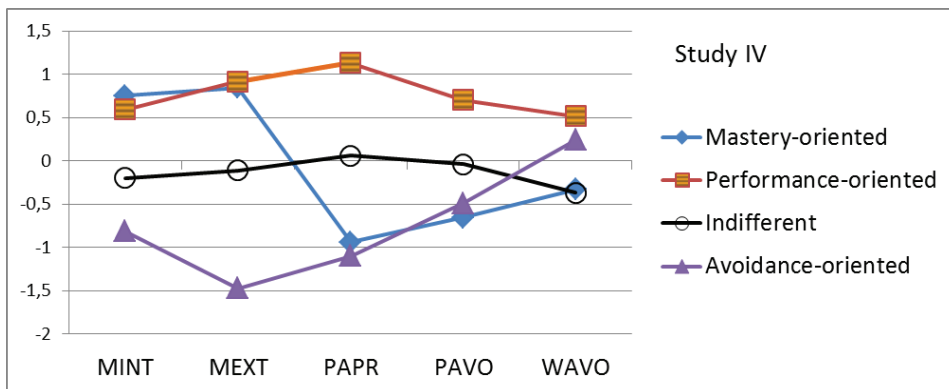
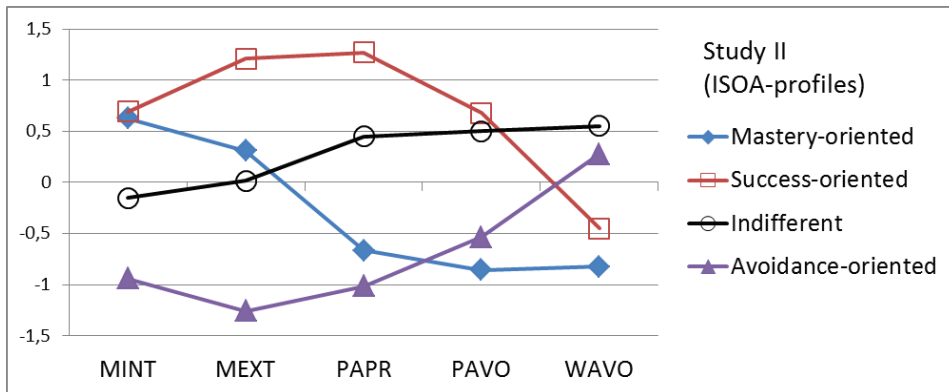
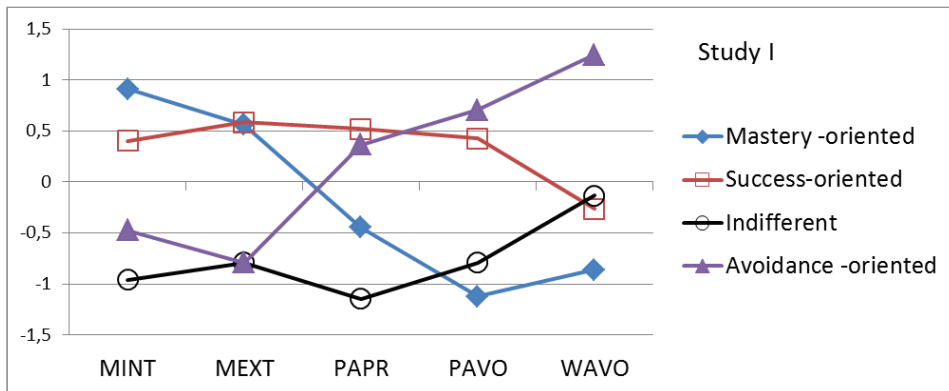


Figure 1. Standardized mean scores on achievement goal orientation scales as a function of group membership in Studies I, II, and IV.

Note: MINT = mastery-intrinsic orientation, MEXT = mastery-extrinsic orientation, PAPR = performance-approach orientation, PAVO = performance-avoidance orientation, WAVO = work-avoidance orientation

The mastery-focused profile

In general, mastery-oriented students' ratings expressed an emphasis on mastery-intrinsic and mastery-extrinsic orientations, and less so on performance-approach, performance-avoidance, and work-avoidance orientations. These students differed significantly in Studies I and IV from all the other groups in their ratings of mastery-intrinsic orientation, which were the highest of all. In Study II, mastery-oriented and success-oriented students did not differ in their ratings of mastery-intrinsic orientation. Furthermore, the mastery-oriented group largely differed from the more maladaptive groups (indifferent and avoidance-oriented), especially in their ratings of performance-avoidance and work-avoidance orientations, which were lower in comparison. An exception from this was Study IV, in which the mastery-oriented students did not differ from indifferent and work-avoidance oriented students in their ratings of performance-avoidance orientation, and with regard to ratings of work-avoidance orientation, they did not differ from the indifferent students. These between-group differences indicate that (a) the most important goal for mastery-oriented students was to acquire new knowledge and increase their personal competence and understanding, followed by (b) aims of absolute success, with the criteria of getting good grades, again without comparison with other students. Furthermore, (c) they seem to have little concern for judgments of incompetence or failure with respect to other students, nor do they emphasize the goals of minimizing their work and effort, or avoiding challenging situations that might postulate such engagement. As to group sizes across the studies, the mastery-oriented group was smallest in Studies I and IV. When compared to studies conducted with Finnish samples of lower and upper secondary school students and using the same instrumentation, the mastery-oriented group sizes observed in them are usually quite similar or just slightly bigger. Tuominen-Soini and her colleagues (2008, 2011, 2012) identified a mastery-focused profile in four studies and it consisted of 18% and 21% of a lower secondary school student sample, 33% of a sample that included both lower and upper secondary school students, and 36% of an upper secondary school student sample. Given this, it seems that the mastery-focused profile in the military student population is equally common, or perhaps marginally more rare, than in samples of younger Finnish learners in a general educational context. This may be an effect of age or gender (my sample was almost solely male), or the educational context, but this is beyond my data. I would assume all of these factors to play a role. This will be discussed in more detail later.

With regard to studies on adult learners' achievement goal orientation profiles that have used different instrumentations, certain profiles that can be described as mainly mastery-focused have been identified. Despite differences in measures and clustering procedures, these profiles and their incidence seem

informative. Daniels and her colleagues (2008) identified a group consisting of 27% of their sample that was characterized by the endorsement of predominantly mastery goals as compared to performance goals. Bembenutty (1999) identified a group of students with substantially high scores in task-goal orientation that consisted of 44% of his sample. Kolić-Vehovec, Rončević, and Bajšanski (2008) identified a group with a distinct emphasis on the mastery orientation scale, and low emphasis on the work-avoidance and performance scales, which consisted of 19% of their sample. Cano and Berben (2009) also reported a corresponding group (20% of their sample) that displayed low emphasis on performance-avoidance goals and a moderately strong emphasis on mastery-approach goals. Table 3 reports a detailed description of these compatible groups concerning all profiles.

Success- and performance-focused profiles

Students with a success-oriented achievement goal orientation profile (Studies I and II) emphasized both mastery-intrinsic and mastery-extrinsic orientations as well as a performance-approach orientation, but emphasized the performance-avoidance orientation less, and had low levels of work-avoidance orientation. These students differed significantly from indifferent and avoidance-oriented students in their ratings of mastery-intrinsic and mastery-extrinsic orientations. Furthermore, their endorsement of performance-approach orientation tended to be higher when compared to other groups: they had a significantly higher mean than mastery-oriented and indifferent students in Studies I and II, and a significantly higher mean than avoidance-oriented students in Study II. Then again, in both studies, success-oriented students differed significantly in their higher ratings of performance-avoidance orientation when compared to mastery-oriented students. Consequently, it seems that the strong endorsement of mastery goals in this group resembles that of mastery-oriented students, but their levels of performance-approach goal endorsement is generally higher when compared to mastery-oriented students. It follows that, in addition to success-oriented students seeming to strive for mastery, learning, and understanding, according to standards of both absolute and relative success, these students also display some concerns about comparison with other students and displaying their competence, and they seem to worry about judgments of incompetence to some extent. All in all, these comparisons suggest that when compared to the mastery-oriented group, success-oriented students have more in common with them than when compared to avoidance-oriented or indifferent groups. When comparing present group sizes to those of Tuominen-Soini and colleagues (2008, 2011, 2012), it seems that also in their studies, quite varying numbers (10%, 31% and 36%) were identified in these profiles, of which the smallest group size came from the sample of upper secondary school students. Perhaps

the group size in Study I (44%) can be considered larger than seems usual, but it must be noted that in other studies this large group size was not replicated.

Another multiple-goal profile that was identified in Study IV was the performance-oriented profile. Performance-oriented students displayed relatively high levels of both mastery orientations, but also an equally high level of the performance-approach orientation, and moderately high relative levels of performance-avoidance and work-avoidance orientations. These students differed significantly from avoidance-oriented students in their higher scores of mastery-intrinsic orientation, and had also a significantly higher level of mastery-extrinsic orientation than indifferent and avoidance-oriented students. In this, the performance-oriented profile closely resembles the success-oriented profile described above. However, performance-oriented students had by far the highest levels of both performance-approach and performance-avoidance orientations. The performance-oriented students emphasized learning and understanding as well as good grades and absolute success (much like the success-oriented students), had strong concerns about displaying their competence relative to others, and sought to avoid judgments of incompetence or generally avoiding appearing inferior to other students. Tuominen-Soini and her colleagues (2008) were also able to identify a similar profile in a sample of lower and upper secondary school students that consisted of 17% of their participants.

Regarding prior studies with different instrumentations, Daniels and her colleagues (2008) identified a multiple-goals group consisting of 29% of their sample that was characterized by strong endorsement of both mastery and performance goals, thus indicating a somewhat similar focus as the success-oriented group. Following this logic, further groups that are plausibly similar have been identified. Bembenuddy (1999) identified a group consisting of 31% of the sample with a high score in both mastery and performance goals, and Kolić-Vehovec and colleagues (2008) identified a group of students with high ratings of mastery and performance orientations and low ratings of work-avoidance orientation; this group consisted of 29% of their sample. Finally, Cano and Berben (2009) were able to identify a group (24% of the sample) that had high scores on all achievement goal orientations, but especially on performance-approach goal orientation, which also resembles the success-oriented profile with respect to compatible dimensions.

Indifferent students

It is challenging to describe this group, as expressions used to explicate the relative strength of certain goal endorsements include wordings such as “focused”, “emphasized” or “most important”, that do not seem to fit here. These indifferent students do not emphasize any specific class of achievement goals:

the factual characterizing aspect in their profile is *absence of emphasis*. The students in the indifferent group expressed a below or close to below average emphasis on all orientations, yet had relatively high scores of work-avoidance orientation (Studies I and II). They therefore displayed a kind of disengaged pattern of motivational goals, but simultaneously, they seem to wish to spare themselves from working hard or facing challenges in achievement situations. Indifferent students differed from the mastery- and success-oriented in their lower ratings of mastery-intrinsic and mastery-extrinsic orientations (Studies I, II, and IV). More distinctive than the mean differences, in this case, is their profile when described by standardized mean scores: although the figure for the profile seems to fluctuate to some extent, their scores largely display the absence of a clear relative emphasis (see Figure 1). Tuominen-Soini and her colleagues (2011, 2012) have also identified a similar profile: in their studies, 39% and 36% of lower secondary school students and 34% of upper secondary school students displayed this kind of indifferent profile.

The different dimensions being used makes the comparison of this profile to prior research especially challenging. In spite of this, it can be stated that the low-motivation profile identified by Daniels and her colleagues (2008) consisting of 21% of their sample, and the profile (25% of the sample) identified by Bembenuity (1999) with especially low ratings of task goal orientation as well as performance-approach and performance-avoidance orientations, seem to parallel my findings here. Cano and Berben (2009) also identified a group (27% of the sample) that had very low emphasis on all goal orientations, which indicates, in a sense, an undefined profile that resembles the indifferent-profile identified in my study.

The avoidance-focused profile

The avoidance-oriented group had low scores in both mastery-intrinsic and mastery-extrinsic orientations, above average in performance-approach and performance-avoidance orientations, and in Studies I and IV, the highest scores in the work-avoidance orientation. This group mostly had the lowest ratings in the mastery-intrinsic and mastery-extrinsic orientations, and differed significantly from the mastery- and success-oriented groups. Thus it seems that the most important characteristics of this group were their clearly low endorsement of goals that include gaining competence and learning new things, and success in studies and good grades, but instead, they displayed emphasized strivings to avoid working and effort in general. In addition to this, their standardized mean score profiles indicated a slight relative emphasis on the performance-avoidance goal orientation. In sum, these students mainly aimed to minimize the effort and time spent on studying, yet also had some concerns about social comparison and judgments of incompetence.

When comparing the avoidance-oriented students to the indifferent students, it seems that these two groups are closer to each other and more distinct from the mastery- and success-oriented groups.

The avoidance-focused profile was also identified by Tuominen-Soini and her colleagues (2008, 2011, 2012): 6% and 7% of samples consisting of both lower and upper secondary school students, 12% of the sample of lower secondary school students, and 20% of the sample of upper secondary school students displayed a similar profile. As to other studies that have examined goal orientation profiles, few have employed work-avoidance scales, but Kolić-Vehovec and colleagues (2008) identified a profile (16% of their sample) with high scores on work-avoidance scales and low scores on mastery and performance scales, which partly converges with my findings.

Table 3. Comparison of goal orientation groups (Part 1)

			Profiles, group size
Study	Participants	Achievement goal dimensions	Profiles corresponding to the mastery-oriented profile
Daniels et al., 2008	College students, N=1002	Mastery goals, performance-approach goals ¹⁾	"Mastery", n= 275, 27% endorsement of predominantly mastery goals (i.e., more mastery than performance)
Bembenuddy, 1999	College students, N=102	Task goal orientation, performance-approach goal orientation, performance-avoidance goal orientation	"High mastery" n=45, 44% high on task-goal orientation
Kolic-Vehovec et al., 2008	University students, N=352	Mastery orientation, performance orientation ²⁾ , work-avoidance orientation	"Mastery-oriented group" n=64, 18% high on mastery orientation scale, low on work-avoidance and performance orientations
Cano & Berben, 2009	University students, N=680	Mastery-approach, mastery-avoidance, performance-approach, performance-avoidance	"Low AG, but moderately high mastery approach" n=139, 20%, low on performance-avoidance goals, moderately on high mastery approach

Note 1) Despite the label "performance goals", it seems that on the basis of the exemplary item "If I can, I want to get better grades in this class than most of the other students" (Daniels et al., 2008, p.591), this scale mainly taps performance-approach goal preferences.

Note 2) Again, despite the label "performance orientation", it seems that based on what the authors outlined and what the exemplary item "I feel satisfied when I do better than other students" implies (Kolec-Vehovec et al., 2008, p.110), this scale more appropriately taps performance-approach goal preferences.

Table 3. Comparison of goal orientation groups (Part 2)

(n, % of sample) and characteristic goal configurations			
Profiles corresponding to the success-oriented profile	Profiles corresponding to the indifferent profile	Profiles corresponding to the avoidance-oriented profile	Other profiles
"Multiple goals" n=289, 29% high mastery and performance goals	"Low motivation" n=206, 21% low mastery and performance goals	N/A	"Performance" n= 232, 23% endorsement of predominantly performance goals (i.e., more performance than mastery)
"Combined high mastery and high performance-approach" n=32, 31% high on task-goal orientation and high performance-approach goal orientation	"Low mastery, low performance-approach, and low performance-avoidance" n=25, 24% low on task, low on performance-approach, and low on performance-avoidance goal orientation.	N/A	N/A
"Mastery-performance group", n=96, 27%, high results on mastery and performance orientations, low on work-avoidance orientation	N/A	"Work-avoidance group", n=55, 16%, high on work-avoidance scale, low on mastery and performance orientations	"Performance-work-avoidance group", n=123, 35% high on both performance and work-avoidance orientations, low on mastery orientation
"High AG, specifically on performance approach", n=165, 24%, high on all orientations	"Low AG, specifically on mastery goals", n=185, 27% low on mastery approach and mastery avoidance goals, moderately low on performance approach goals		"High AG, but low performance approach", n=191, 29%, combination of moderately high on mastery approach, high on mastery avoidance, and low on performance-approach

Summary of profiles, and similarities and differences with prior studies

The achievement goal orientation profiles in this study were mostly similar to those identified in a series of studies that used the same goal orientation dimensions. Further, profiles of a roughly similar interpretation have been found in other contexts within the same age group, though such comparisons are challenging as different measures and grouping procedures may affect the commensurability of results. As displayed in Table 3, prior studies have also identified profiles of varying nature that were not observed in my samples. It is beyond the scope of this dissertation to comprehensively evaluate the explanatory power of all the prior studies, but some generalizations are plausibly noteworthy.

In sum, despite some differences in the group sizes and emphases of some goal orientations, a conclusion that the grouping results are valid is warranted, as they (1) were replicated across studies, (2) compare well to prior research using the same instrumentation, and (3) are mainly compatible also with studies with different instrumentation that have been conducted in the higher education contexts.

A comprehensive array of motivational profiles was identified in my studies: usually different student populations seem to include a distinct (1) learning or mastery-focused, (2) success-focused, (3) avoidance- or work-avoidance focused profiles (when proper measures are used), and (4) a somewhat hard-to-define “low goals”-profile, which was labelled here as indifferent. However, it seems plausible that depending on procedures and criteria, but also possibly on potential contextual differences, variants of profiles can be derived. Whether these differences are the product of methodological disparities, or real differences in generalized tendencies in student motivation, is open to discussion. One aspect that clearly separates this study from many prior works is the dominantly male student population, as the research has revealed some gender-related differences in personal goal preferences (e.g., Chan & Chan, 2007; Middleton & Midgley, 1997). More precisely, as among university students it has been shown that females are more likely to adopt mastery goals than men, this and other potential differences might have been reflected in the group sizes of this study (Harackiewicz et al., 1997, 2000, 2002).

To conclude, given the somewhat special nature of my sample in terms of selectiveness and the competitive ethos of the institute, it is interesting that common achievement goal orientation profiles can be identified, including those of a more maladaptive or undesirable nature. This indicates that despite the selection process, the student population in the NDU comprehensively represents normal Finnish young adults in terms of achievement goal orientations. Based on this, the selection procedures do not seem to address learning aptitude in the form of motivation. In more generic terms, many of

military cadets entering the academy do not appear to be particularly proficient learners in the light of their goal orientations. The development of achievement goal preferences in this context is beyond my data, except for the findings concerning short-term stability, which will be discussed in more detail below.

4.1.3 Short-term stability in students' achievement goal orientations and goal orientation profiles

In this dissertation, the stability and change in adult students' achievement goal orientations was addressed from different points of view in Study 2. First, in terms of variable relations across multiple measurement points, the over-time correlation of measured achievement goal orientations is an indication of normative stability. Second, the analysis of measurement invariance, in addition to observation concerning the structure of the constructs, provides results regarding changes in latent means between the measurements. Third, with respect to the person-centered approach, the stability of identified configurations of emphasis on goal orientation dimensions, or in other words, the stability of motivational profiles, was examined.

In sum, the stability over time, as indicated by the correlational results, was found to be rather high. Over time, correlations for the different goal orientation dimension were (squared correlation in parentheses): mastery-intrinsic $r=.68$ (.46), mastery-extrinsic $r=.78$ (.61), performance-approach $r=.66$ (.44), performance-avoidance $r=.67$ (.45), and work avoidance $r=.68$ (.46). This indicates stability in individuals' rank order, that is, the extent to which the individual differences in the endorsement of respective goal orientations were retained between measurements: in this study this meant over several months. However, this form of stability does not exclude potential mean level changes in the population. In Study II, as one stage of the measurement invariance, the change in latent variables' means over time was examined. This stage of analysis revealed minor mean level changes in the mastery-extrinsic orientation, which decreased slightly, and the work-avoidance orientation, which increased slightly. This depicts that over a period of several months, the students' emphasis on good grades or absolute success as a criterion of increased competence diminished a little, whereas the focus on getting away with as little effort and challenge as possible strengthened slightly.

Regarding the extent to which the average levels of the participants' endorsement of different achievement goal orientations remained the same over time, it was found that the students' achievement goal orientation motivational profiles were clearly stable over the period of four months, as 60% of the participating students displayed the same motivational profile over two measurements. With respect to those students who did move from their original goal orientation group to another, the shifts were mainly directed towards

groups that were similar to the original, or in other words, most of the changes took place between adaptive profiles (mastery-oriented and success-oriented), or between maladaptive profiles (indifferent and avoidance-oriented). In Study II, only 13% of students displayed untypical considerable changes in their achievement goal orientation configurations, that is, shifting from an adaptive group (mastery- or success-oriented) to a maladaptive group (avoidance-focused or indifferent). All in all, my findings corroborated with those of Tuominen-Soini and her colleagues (2011, 2012): students in this context mostly held the same motivational profiles, rather than fluctuated between very different sets of preferences and beliefs, and thus their goal orientations are interpreted as being quite stable.

With respect to the theoretical position of this study, the above findings concerning the nature and stability of students' goal orientation profiles provide support for both the (a) multiple-goal perspective and (b) the concept of achievement goal orientations as dispositions. Concerning the multiple-goal perspective, it seems that as distinct patterns of emphasis on different goal orientations were found in this student population, it can be argued that had the procedures of profiling, or more precisely grouping, not been followed, important results may have stayed undetected due to a confounding of effects. With regard to goal orientations contrasted to goals in a more situational respect, it seems that the findings of stability in many respects testify to the nature of achievement goal orientations as more enduring dispositions. Such generalized tendencies to favour certain types of goals and outcomes across achievement situations can be expected to be rather stable inherently, especially over the somewhat short time in this study.

However, a word of caution is to be noted, as any grouping solution is as explanatory or robust as is the procedure that resulted in the bases of grouping. Technically, as is reported in the methods section and demonstrated in respective studies (I, II and IV), the latent class clustering analysis provides consistent results that are based on strict statistical criteria. Also, the comparison with related studies shows the groups identified in this dissertation would seem to be clearly valid: the configurations are comprehensible and correspond to many prior findings. However, as was also demonstrated, a small number of substantial changes were observed. Plausible reasons for this might have to do with the analysis: in latent class clustering analysis, the individual cases, or in this study, persons, are given a probability for each group membership. Therefore it might be that some of the "moving cases" in terms of goal-orientation group membership might result from borderline-cases that in the respective measurement reach or cross a certain probability that differs just enough from what they received in another measurement. This would then be observed as a change in longitudinal *categorical* data.

My review of prior studies showed that in addition to corresponding profiles, quite dissimilar configurations have also been reported. Even though the comparison between studies that have used different variables is difficult, it seems that some of the profiles in this study would be hard to detect if an appropriately comprehensive set of clustering variables is not imputed. Of course, the actual analytical procedures and their applications may also affect results in this respect, but it is beyond my study to address comprehensively all the possible sources of variation. To sum up, indicators from analyses, theoretically relevant interpretations, and comparison to prior research support the findings concerning military students' achievement goal orientation profiles, but reasonable caution should be exercised when making inferences from these results.

4.1.4 Students' course-specific goals

With regard to the incidence and contents of course-specific goals, it seems that not all the categories of goals are reported spontaneously with equal frequency (e.g., Brophy, 2005). My qualitative inquiry concerning students' course-specific goals, in reference to the presupposed dimensions, indicated that their answers displayed most often mastery-intrinsic and mastery-extrinsic goals, and clearly less often the other goal categories: in particular, they hardly mentioned performance-approach goals at all (1 case). In addition to these, the students' answers very often included the aims of passing the professional trial to qualify, or more specifically, to gain all the qualifications necessary for a working career, and this goal was mentioned alongside the other goals as well as being a sole goal. This category was labelled as *the qualification goals* that reflect (1) instrumental motivation, as the professional qualification as a goal is externally driven and rewarding and (2) future time perspective, as the value of the qualification is realized in students' duties after graduation (Husman & Lens, 1999; Miller & Brickman, 2004; Peetsma & van der Veen, 2011). This indicates that students were prone to set goals in explicitly meaningful and discernible terms that are independent from the traditional dimension - even though they were primed to describe achievement goals in a more traditional sense.

Further, in some combinations of certain types of goals mentioned by the same student, certain multiple-goal responses were observed. Most frequent combinations were (1) a combination of mastery-intrinsic and qualification goals, (2) mastery-intrinsic, mastery-extrinsic and qualification goals, or mastery-extrinsic and qualification goals, and (3) performance-avoidance, work-avoidance and qualification goals. Contradictory combinations and students who displayed only a single goal were very rare. This indicates that also in an open-ended format, learners emphasize multiple goals simultaneously, and goals usually considered opposing are not typically mentioned by the same student.

However, it was found that these course-specific goals were only weakly related to goal orientation profiles, as avoidance-oriented students mentioned mastery-intrinsic goals less frequently, and performance-oriented students mentioned mastery-intrinsic goals slightly more frequently than could be expected by chance. The distribution of other goal-related responses was equal between goal orientation groups.

4.1.5 The role of goal orientations in course evaluations and achievement

4.1.5.1 Goal orientation profiles and course-specific goals in relation to students' evaluations of the learning environment

The results concerning the main research question showed that there were some differences in how students with different achievement goal orientation profiles evaluated their instructional practices and their role and course-related activities in relation to the course context. In Studies I and II, differences were mostly found with regard to students' views of themselves and their own role in studying. In Study I, goal orientation groups differed significantly from each other in their ratings of interestingness and effort and attainment, and in Study II, differences were observed in students' evaluations of the quality of pedagogical materials, effort and attainment, and participation. In Study IV, more differences were observed: the goal orientation groups differed significantly in students' evaluations of the quality of teaching methods, pedagogical materials, and assessment methods, their satisfaction with the course, effort and attainment, and participation. Course evaluations as a function of goal orientation groups across Studies I, II, and IV are presented in Figure 2.

The between-group differences corresponded to the assumed nature of students' personal goal orientation profiles: mastery-oriented and success-oriented students gave higher ratings, depicting, in this study context, that these students were most positive in their evaluations of the learning environment. As goal orientations in this study include a reference to studying *in general*, the more positive evaluations given by students with an emphasis on learning new things or success indicate that their stance towards learning and studying is more positive as well.

Similarly, the result that indifferent and avoidance-oriented students gave by comparison somewhat lower evaluations may also be interpreted also in a similar manner. It follows that students with either the avoidance-focused profile, or the non-committed students without explicit goal emphasis (indifferent), have a less positive approach to and attitude towards learning and instruction. These results converge with previous findings, showing that, in sum, an emphasis on mastery is associated with positive experiences and outcomes,

and is therefore *adaptive*, and that an emphasis on avoidance is associated with an inferior stance to learning and instruction, and is therefore *maladaptive* (e.g. Anderman & Wolters, 2006; Urdan, 1997).

With regard to course-specific goals, the results were somewhat similar. All in all, the presence of mastery-intrinsic goals was associated with higher ratings of satisfaction with the course and its interestingness, as well as their personal effort and attainment, and participation. The presence of mastery-extrinsic goals was associated with higher ratings of the perceived quality of teaching methods and pedagogical materials. In contrast, the presence of work-avoidance goals was associated with lower ratings of satisfaction with the course and its interestingness. Consequently, even though the course-specific goals were weakly related to orientation profiles, their effects on students' evaluations of learning and instruction were converging.

However, taking into account all the studies included in this dissertation, the students in the different goal orientation groups perceived many instructional aspects of the courses quite uniformly (see Figure 2). The data of this dissertation only provides limited explanations, but four possible reasons that are relevant to the present context and sample can be suggested.

Firstly, as the samples of my studies consisted of somewhat older learners than in many prior studies, the pattern of results may reflect the mature learners' more objective stance towards course evaluations. Based on this idea, the military cadets' ratings of the learning environment were perhaps not so much influenced by how they *felt* about their instruction, but as a whole reflected more objective, and therefore more homogenous observations of the learning environment.

Secondly, the teachers' behaviour and explicit attitude towards all the students may have been equal or similar enough regardless of, for example, their performance, abilities, and social standing, thus curtailing differences that could have resulted from differential teacher treatment (cf. Brophy & Good, 1974; Fraser, 1990; Salonen, Lehtinen, & Olkinuora, 1998). Equal treatment could very well be expected as it is embedded in ideal of officers in the Finnish military. This is not to say, for example, that this particular student population would lack the so-called "target students" that dominate interaction with the teacher in a group situation (cf. Fraser & Tobin, 1991), but that it may be the social climate or assumed role model among the students that has made this kind of behaviour less obvious in this context. Students are aware of that activeness and brisk participation and expressing one's opinions and knowledge is expected and the majority of them may act accordingly in the presence of instructors. The third possible source may be the exceptionally homogenous sample. Taking into account that students' preferences of teaching vary and are related to their evaluations of teaching (e.g., McKeachie, 1997), the military cadets shared

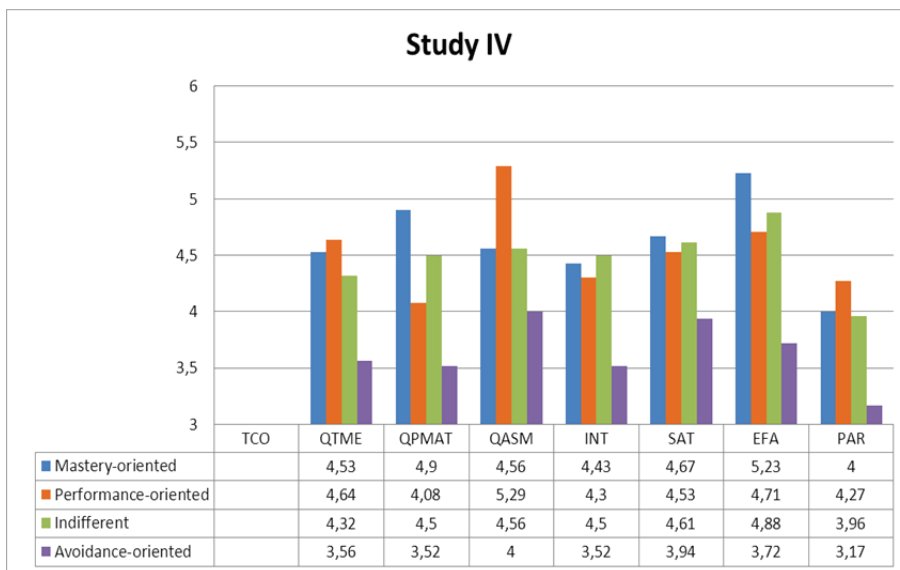
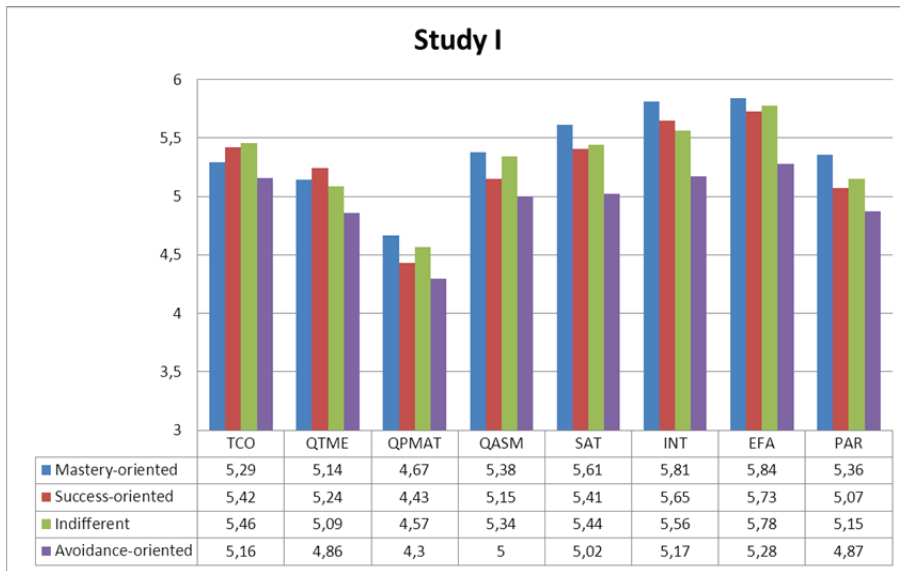


Figure 2. Differences in course evaluations between goal orientation groups across studies (Part 1)

Note: TCO = teacher's competence, QTME = quality of teaching methods, QPMAT = quality of pedagogical materials, QASM = quality of assessment methods, INT = interestingness, SAT = satisfaction with the course (course satisfaction), EFA = effort and attainment, PAR = participation.

Note: Teacher's competence was not included in Study IV

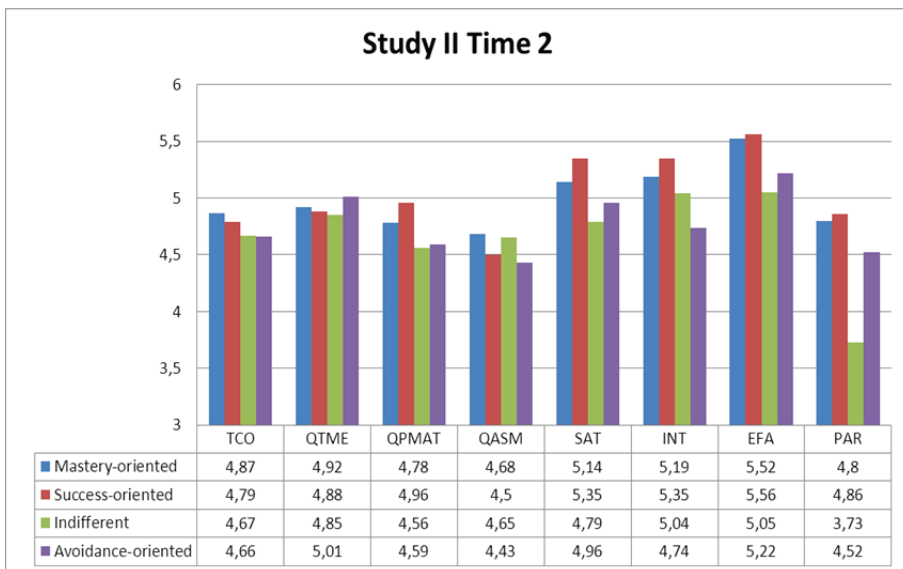
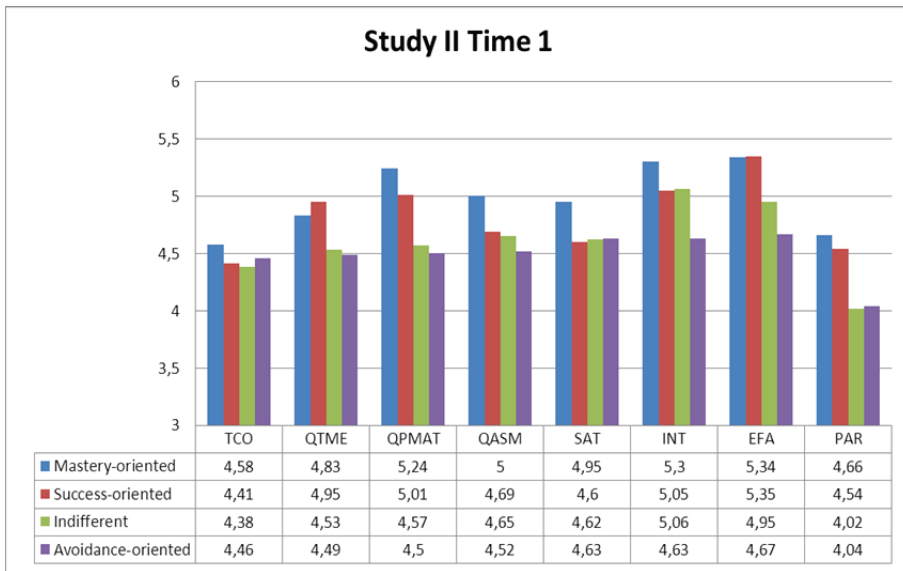


Figure 2. Differences in course evaluations between goal orientation groups across studies (Part 2)

experiences from prior military training may be reflected in their homogenous evaluations of the instructional practices (Urdu, 2004b). Fourthly, some evidence has been provided for gender-related differences in both personal goal orientations (e.g., Chan & Chan, 2007; Middleton & Midgley, 1997) and students' perceptions of the learning environment (Koul, Roy, & Lerdpornkulrat, 2012; Levy, den Brok, Wubbels, & Brekelmans, 2003) – although these differences might vary as a function of different contexts, such as culture or school subject. Among university students it has been found that women are more likely to endorse mastery goals, and to report enjoying lectures and rehearsing more than men (Harackiewicz, et al., 1997, 2000, 2002). It follows that our dominantly male sample might be expected to hold less varying perceptions, which might partially account for the somewhat limited variation observed in the students' course evaluations.

4.1.5.2 Predictions of students' goal orientations on course evaluations

An important aspect of this study was to examine inferences derived from prior research by also employing the variable-centered approach in Study III. Therefore it is to be noted that the results discussed above represented observed differences as a function of goal orientation profiles, or in this case, *differences between groups of students* that held similar patterns of goal orientation dimensions. Instead, the results discussed in this section concern the effects of the achievement goal orientations' role in terms of variable relations. Consequently, in contrast to what was presented in previous chapters, the findings of Study III are in a sense based on the assumption that the mechanisms addressed in the present model are alike across potential subgroups (e.g., Bergman, Magnusson, & El-Khoury, 2003; Niemivirta, 2002b).

Goal orientations and course evaluations

In line with assumptions derived from prior empirical evidence, mastery-intrinsic orientation was positively related to students' course satisfaction, and their perceptions of the quality of the literature examination. But, against the assumptions, mastery goal preferences were not predictive of the perceived quality of the practical and applied skill demonstration. The positive effect on students' perceptions was, in generic terms, consistent with prior research (e.g., Hulleman et al., 2010; Urdu, 1997) and indicated that a focus on personal mastery and improvement is related to a generally positive stance towards learning and instruction (e.g., Bong, 2009; Daniels, et al., 2009; Ng, 2009; Remedios & Lieberman, 2008). The positioning of the effects concerning these two forms of assessment is somewhat intriguing. It might have been expected that the skill demonstration (vs. literature examination) should have matched

the mastery-related striving as an application of knowledge in a novel and challenging learning situation, and independent effort were expected to characterize this assessment form (cf., Brophy, 2005; Midgley, Kaplan, & Middleton, 2001; Senko, Durik, & Harackiewicz, 2008; Senko et al., 2011). All in all, that proposition rising from the achievement measure hypothesis was not supported here (e.g., Senko & Miles, 2008).

Another rather intriguing observation was that preferences for minimal personal effort and engagement, i.e. the endorsement of work-avoidance orientation, predicted, albeit weakly, course satisfaction concerning the exercise period. This indicates that the characteristics of that certain phase or pedagogical environment matched the preferences linked to avoidance of working and challenges. Though this sounds controversial, this might be an unintended result of the regular rotation of duties during the exercise period. Some of these duties are likely to require less activeness and exposure than others, and given that the focus of the exercise is on the qualification for Firing Instructor, it may be that the cadets' instructors mostly concentrate on the student in charge, that is, the one seeking to qualify at that drill. Consequently, on that day, the other students – should they want to – might only need to perform merely what is absolutely necessary, which, in turn, corresponds to the focus of work-avoidance orientation. This is enlightening especially from the practical point of view: the focus on the qualification aspect, when designing the assessment, may have resulted in unwanted and probably quite invisible options for students to underperform.

The endorsement of a mastery-extrinsic orientation was weakly *negatively* predictive of the perceived quality of skill demonstration. This might be an indication of a maladaptive effect of the concern for grades, embedded in the focus of mastery-extrinsic orientation; grade discrepancy has been found to be negatively associated with students' course evaluations through the self-serving bias mechanism (e.g., Griffin, 2004; Gigliotti & Buchtel, 1990). It may be that those students with a focus on grades and success have felt personal disappointment rising from a discrepancy between expected and actual achievement, which may then have been projected to the evaluations of the perceived quality of this particular assessment.

To sum up, the course evaluations seem to be rather independent of students' achievement goal orientations, yet the differences in the effects across the two phases imply some moderation by the types of assessment used, though these remain somewhat vague to interpret.

Achievement and course evaluations

With regard to the grading-leniency hypothesis, the analysis in Study III enabled the examination of associations between objective evaluations of student performance and students' ratings of learning environment. In sum, the performance in the literature examination was unrelated to course evaluations, but performance in the skill demonstration marginally predicted respective course satisfaction. As such, this seems quite inconclusive, but it is to be noted in the interpretation of these results that the students were unaware of their performance in the examination, but knew their skill demonstration grades when giving their course evaluations. When contrasted in this respect, then, these two effects might actually indicate the grading-leniency effect, that is, higher grades resulting in higher evaluations (e.g., Brockx, et al., 2011; Greenwald, 1997; Greenwald & Gillmore, 1997). Thus, although this effect was weak, when students were aware of their achievement, the higher grades were related to slightly higher course evaluations.

4.1.5.3 Goal orientations and achievement

The results discussed in this section concern two importantly different assessment forms. The literature examination was basically multiple-choice, which was assumed to require rote learning and reproduction of information, whereas the skill demonstration was assumed to require understanding and deep processing. These forms of assessment might be expected to moderate the effects of goal endorsement due to motivation-related differences in studying habits and preferences (Midgley, Kaplan, & Middleton, 2001; Senko, et al., 2008). Therefore, should achievement goal effects on performance be observed, they could be expected to vary in the sense that the literature examination could be beneficial to students with an emphasis on performance-approach goals, and the skill demonstration could be expected to be beneficial to students with an emphasis on mastery-intrinsic goals.

Regarding effects between variables, only the endorsement of performance-approach goals was marginally *negatively* related to the skill demonstration grades. This result deviates from the evidence that the performance-approach orientation is quite often positively associated with achievement (c.f., Senko et al., 2011), but some other studies have, however, shown corresponding negative relationships between performance-approach goals and achievement (Gutman, 2006; Hau & Salili, 1990; Linnenbrink, 2005; Newman, 1998). Given the deep processing, individual effort and activeness that were assumed to characterize the skill demonstrations, this negative effect is partially supportive of the achievement-measure hypothesis: an emphasis on performance goals may not be adaptive in the assessments of learning that require such effort and aptitude

from students (Harackiewicz, et al., 2002; Senko & Miles, 2008; Wolters, 2004). Further, based on the propositions derived from the learning-agenda hypothesis (Senko et al., 2011; see also Broekkamp & Van Hout-Wolters, 2007), it might be that students in this case were unable to identify the topics and tasks that the instructors deemed important, and therefore also emphasized in their assessment (Senko & Miles, 2008), as the students mostly met their supervisors for the first time during the exercise. Thus a strategy based on the identification of criteria or the projected importance of various aspects used by the instructor was perhaps maladaptive in this context.

Further, it is to be noted that the mastery-intrinsic orientation was unrelated to *both* measures of performance. As above, taking into account the differential hypothesis concerning the two assessment forms, the skill demonstration might be expected to benefit those with an emphasis on gaining competence and learning new things (i.e. mastery-oriented students). The lack of relations in this respect might be related to the *tangential studying* explanation (c.f., Senko, et al., 2008; see also Senko & Miles, 2008). This would mean that the endorsement of mastery goals, resulting in higher interest, may elicit exploring topics that are not essential or potentially not even relevant in the assessment. It follows that the students with a strong emphasis on mastery goals may have neglected the specific skills and drills essential in the skill demonstration.

From the person-oriented perspective, the picture is somewhat different but understandable. In Study IV, it was found that, with regard to the scores from the examination, performance-oriented students scored slightly higher than mastery-oriented students, who had the lowest scores. This might be explained by the nature of the examination. As mentioned above, being strictly structured and more focused on the repetition of knowledge, it might be expected to benefit those with an emphasis on success and outperforming others rather than those who are mastery-oriented (Harackiewicz, et al., 2002; Senko & Miles, 2008; Wolters, 2004). However, this result was only marginal, and the hypothesis behind this assumption is not well supported by research (e.g., Senko et al., 2011; Senko & Miles, 2008).

In sum, some of the results concerning associations between personal achievement goal orientations and academic achievement could be related to the research findings and hypotheses concerning the moderating role of motivation-driven studying practices and preferences. However, as some assumptions were not met and a few somewhat controversial findings were brought forward, it is clear that the complex nature of these associations is also highlighted here. Based on this, the actual effect of a form of assessment might depend on several aspects, such as, for example, perceived difficulty (cf., Senko & Harackiewicz, 2005a), not represented in my data, aspects that are more a function of the actual implementation rather than obvious characteristics that were known here.

4.2 Practical implications

To start with, this study has shown that common motivational profiles, even those that can be considered maladaptive, can be found in a selective adult student population, and that they are associated with students' perceptions of learning and studying. Following this, educators need to recognize that despite context, gender and age, common motivational variation can be expected in a student population, and what teachers do is interpreted in different ways. Now, what is this information worth – how will it be applied to instruction? Despite findings from experiments suggesting that certain goal states can be quite reliably induced, and promising results from some interventions (cf., Urdan, 1997; Kaplan & Maehr, 2007), it is also clear that institution- or programme-wide applications of principles that would be purely supportive of adaptive motivation are, to say the least, challenging (e.g., Maehr & Midgley, 1991; Nicholls, 1989). Fundamental and, quite likely, unfeasible changes would be required to create an environment that would be optimally motivating to virtually all students. However, identifying motivationally relevant shortcomings in instruction is possible, and it is feasible to adapt details of instruction to support motivation. This is not achieved quickly, no big things may be achieved, pedagogical delivery is certainly going to be supportive to only a part of the students, and these practices are not feasible at all times. To be or to become aware of students' individual differences in motivation is something to start from; and the key message is that individual differences in motivation, here, mean differences in a *relative* emphasis on certain kinds of achievement purposes and beliefs in the importance of certain goals. Teachers need (1) to approach and address their students, and interpret their behaviour and other responses in the light of the knowledge that they are not a homogenous mass in what moves them and what kind of engagement is fostered, and (2) to seek to apply individual choices in instruction, learning paths and tasks where and when possible and appropriate. For example, as it seems that the skill demonstration as a pedagogic practice may offer opportunities for passiveness and minimal effort, maybe it would be worthwhile to scaffold the instructor's observations by evaluating the students as a group, and using peer-evaluations and self-evaluations as an additional source.

Further, as students' course evaluations are and will remain an essential part of quality evaluations in educational institutes, as is the case in the context of NDU, the interpretation of these evaluations is of utmost importance. The benefits and justification of these student evaluations are as good as is their validity and reliability. When mean levels of individual course evaluations are used as personal objectives of the effectiveness of their teaching for individual teachers, and aggregated means over all the courses in one term are used as indicators of departmental effectiveness (NDU, 2010), both teaching staff and

management should share an awareness of the possible effects that account for the variations in these measures. The results of this study do not justify calling student ratings biased, but it seems that the students' evaluations of their role and activities are more affected by individual motivation than are their evaluations of instructional practices. This underlines two further important facts: first, it would be wise to seek to use research-based inventory in quality management to ensure that no unintentional confounding of independent aspects takes place. Second, as students' motivation will play some role in their perceptions and consequent evaluations of instruction and studying, it would be recommendable to analyze also the variation of ratings both within and between individual courses, to avoid losing vital information in the overarching aggregation of results. In sum, the identification of best practices related to student motivation could begin with recognizing the appropriate level and unit of analysis.

As to the motivation-related structures embedded in the policies and practices of the NDU, the most obvious is the ranking system that is necessitated by the personnel management strategies of the Defence Forces. The conceptual definition of goal *orientation* adopted in this study depicts that in addition to a certain degree of stability, the emphasis of different orientations may be to some extent influenced by the demands of the learning environment (e.g., Ames & Archer, 1988; Church, Elliot, & Gable, 2001). Following this, though beyond my data, it could be that the military students' achievement goal orientations may be nudged towards the focus on social comparison and demonstration of competence during their studies in the NDU. Clearly, the personnel management system is not likely to be changed based on small influences by achievement goal orientations in order to facilitate more positive learning experiences. However, it is also necessary to speculate on the possible long-term consequences: the NDU as an institute holds an important position in the Finnish military education. Even though there are some short interim courses and more specific military occupational training conducted by other units, the NDU is the sole military-professional training institution. Thus the attitudes and opinions the learners adopt in their studies may dictate their interest and enthusiasm to enrol on subsequent courses, and consequently affect their orientation towards all education associated with the NDU.

With regard to the two assessment practices examined here, it was interesting to note that differences in performance could not really be traced back to motivational profiles, and that the two forms of assessment were also virtually unrelated. Therefore, it seems that regardless of the purposes of the different practices, they might in fact be assessing something quite different, or in a different way, from what was intended. It would be recommended to discuss and disseminate these practices to separate more clearly which characteristics serve

which demand: perhaps practical options or administrative necessities do not go hand in hand with pedagogical objectives.

4.3 Theoretical contributions

My findings support the theoretical perspective adopted here, but it is to be noted that the selective nature of this given population does not justify confident generalizations to other educational contexts, and the following deliberations are to be understood in the context of this study. Instead, many results of this study indicate that implications derived from results concerning students of different age, gender, and background can also be extended reliably to a predominantly male and highly selective adult student population.

First, the observations that concern the stability support the concept of achievement goal orientations as generalized tendencies to choose from and prefer certain goals. In such tendencies, the short-term stability observed in this study can be expected to be an inherent characteristic. In contrast, regarding the concept of achievement goals, which includes a strong emphasis on situational cues, more situational variation could be expected. The main findings, namely the similar profiles *and* profile-related differences in course evaluations across studies, also testify that the configurations and effects of achievement goal orientations were stable, in being replicable across all the studies of this dissertation. Based on these results, then, students' goal orientations acted repeatedly as assumed in terms of motivational lenses, that is, as Kaplan and Maehr (2007, p. 155) have postulated, "frameworks for filtering information, constructing and appraising the nature of the situation, creating meaning, and guiding action".

Also, the findings support the view on motivation in relation to environment adopted in this study. As the students' evaluations or, more precisely, their perceptions of their learning environment seem to covary to some extent with their motivational mindset, it is unwarranted to assume that motivation would result from environmental influences (e.g., Church, et al., 2001). Moreover, as was postulated, the motivation in a learning context functions both as a moderator and an outcome of pedagogical delivery. A subjective match between the context and the individual is thus related to the consequences of pedagogical choices.

Some results demonstrate the relations between general achievement goal orientations and course-specific goals: although they were only weakly associated, they had similar effects on the same outcomes. Based on this, an emphasis on certain achievement goals, whether general or situational, is consistently related to distinct outcomes (e.g., emphasis of mastery is related to higher ratings in course evaluations), but students can describe a variety of

course-specific purposes quite independent from their generalized achievement goal strivings.

Also unquestionably, the multiple-goal perspective and, in a methodological sense, the focus on the person-centred approach were supported. The explanatory power of individual studies and the replication of grouping results across studies indicate clearly that students do hold varying patterns of generalized achievement goal preferences, and that the number of these patterns is limited and can be examined meaningfully (cf. Harackiewicz et al., 2002; von Eye & Bogat, 2006). Based on the findings of this study, it is probable that some important mechanisms in terms of variable relations are similar or at least quite similar across subgroups, but many interesting and important findings would have been hard to detect unless examined as a function of different goal orientation configurations.

4.4 Limitations of this study and suggestions for future research

Although these findings contribute to current research linking student motivation and course evaluations, not all assumptions were met, and some effects were rather weak, so certain limitations are to be taken into account when interpreting the above findings.

Firstly, as noted above, the sample of this dissertation is quite special as it is very homogenous and selective. Also the nature and pedagogical implementation of the assessed courses was in some cases quite different. Consequently, the context of the individual studies may have importantly affected the students' evaluations of the instruction and studying. Future studies should address various types of courses, for example, in terms of different academic fields, levels of courses, and actual class size, and in different educational contexts, to differentiate between these potential sources of variation (e.g., Feldman, 1978, 2007).

Secondly (and partially related to the first point), the data did not include definite measures of some characteristics of the learners and aspects of the given learning environment that might have moderated the students' perceptions. For example, the competitiveness of the learning environment was only assumed based on what was known of the instructional policies and practices and the educational ethos of the NDU. As to the other course characteristics, the courses might also vary in workload (e.g., difficulty and pace), which is of importance, as higher workload has been linked to higher course evaluations (e.g., Marsh & Roche, 2000). What is more, students' preferences for certain pedagogical choices and more detailed assessments of teacher behaviour are among the most plausible variables that influence course evaluations (e.g., Furnham & Chamorro-Premuzic, 2005a; Senko, Belmonte, & Yakhkind, 2012; Tapola &

Niemivirta, 2008). With respect to some assumptions concerning the study-strategy mechanisms, the design of my studies did not include measures of students' learning strategies or learning techniques, which would be necessary in order to directly address the moderating role of different learning behaviours (e.g., Dunlosky, et al., 2013; Senko, Hama, & Belmonte, 2013). Therefore, the findings of this dissertation do not necessarily cover all the relevant aspects that represent what actually occurs in the learning environment, and thus more research is needed on these issues. Based on this, it is therefore recommended that future research should include measures outlined above in study settings that concurrently address motivation and the pedagogical implementation of instruction and assessment.

Finally, the sample sizes in my studies were in most cases somewhat modest. Despite analytical choices being, when possible, adopted with this limitation in mind, it is clear that the small samples may in many cases have resulted in low statistical power, which, in turn, may have made the expected relationships harder to detect. Nevertheless, with respect to the aims and the context of this study, in most studies virtually all students accessible were included in the samples, thus representing in this limited sphere a very comprehensive sampling. Reflecting on these issues, I emphasize again that I do not suggest here that the results of this study are generalizable as such to different age groups or contexts. Rather, it is put forward that the prior findings have explanatory power in, and could be extended to, this highly selective mature student population, and the sampling is adequate enough to justify the conclusions presented in the previous chapters.

4.5 Concluding remarks

To conclude, this dissertation contributes to current research on motivation in adult education by displaying evidence of multiple-goal configurations and the stability of those configurations in a special study context. This study also examined the role individual differences in motivation play in students' evaluations of their learning environment and personal experiences and activities.

As a whole, my studies have shown that even carefully screened and specialized adult students in a very specific learning environment display similar motivational profiles to those of students from the general educational context and of very different age, even including profiles of a more maladaptive nature.

Military cadets' goal orientation profiles seem to be rather stable, and observed changes indicate a small fluctuation of some individual cases between similar groups, rather than a substantial change in a relative emphasis on different goal orientations.

The results also indicate that students' achievement goal orientations are associated with their evaluations of instruction and studying, and course-related activities, although less so than assumed. The students with adaptive motivational profile held more positive perceptions of several aspects. Also, it was found that the emphasis of certain achievement goal orientations is perhaps slightly beneficial in certain kinds of assessments of learning. Therefore students' personal achievement goal orientations do clearly play a role in the students' performance and course evaluations, but the extent of these relations as a function of the various characteristics of instruction needs further clarification. In addition to this, some evidence was provided for achievement being related to course evaluations, and that different pedagogical practices may account for some of the variation in these relationships. This suggests that rather than being a linear model, this effect is to be viewed and examined as a complex process of interactions.

To conclude, my results support the assumption that students' motivational mind-set is reflected in course evaluations and achievement. The key message here is not that students' ratings of instruction are biased beyond usefulness, or unreliable measures of instructional quality; the ratings are simply somewhat moderated by the students' motivation. Instructors need to be aware of both personal and contextual factors affecting students' interpretations of the pedagogical delivery, as these interpretations may further influence motivation and, consequently, learning, to a certain extent.

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APPENDIX 1.

Evaluations of learning environment scales and items (final version)

Original Finnish version	English translation
<p><u><i>Opettajan ominaisuudet</i></u></p> <ol style="list-style-type: none">1. Opettajan ulosanti oli minusta selkeä2. Minusta opettaja kykeni havainnollistamaan opetustaan oppimista hyvin tukevalla tavalla3. Opettaja ylläpiti minun kiinnostustani opiskeltavaan asiaan motivoivasti4. Opettaja suhtautui minuun opintojaksolla positiivisesti	<p><u><i>Teacher's competence</i></u></p> <ol style="list-style-type: none">1. The teacher's delivery was comprehensible for me2. The teacher was able to use illustration to support our learning very well3. The teacher was able to maintain the students' interest in the topic in a motivating way4. The teacher's attitude towards the students was very positive
<p><u><i>Opetusmenetelmät</i></u></p> <ol style="list-style-type: none">1. Opetusmenetelmiä käytettiin mielestäni tehokkaasti2. Opetusmenetelmät olivat minusta opintojakson sisällön opettamiseen sopivia3. Minun mielestäni opetusmenetelmät tukivat hyvin opettavien asioiden ymmärtämistä4. Käytetyt opetusmenetelmät saivat minut ajattelemaan oppimista edistävasti	<p><u><i>Quality of teaching methods</i></u></p> <ol style="list-style-type: none">1. The teaching methods were used effectively2. The teaching methods for this course were very suitable3. In my opinion, the teaching methods supported understanding of the contents4. The teaching methods promoted thinking

<p><u>Opetusmateriaalit</u></p> <ol style="list-style-type: none"> 1. Opetusmateriaali (oppikirjat, tekstit, tms.) tuki hyvin minun opiskeluani 2. Opetusmateriaali (oppikirjat, tekstit, tms.) lisäsi tai syvensi minun tietojani 3. Opetusmateriaali (oppikirjat, tekstit, tms.) oli minusta hyvin valittu tai laadittu 	<p><u>Quality of pedagogical materials</u></p> <ol style="list-style-type: none"> 1. The pedagogical materials (textbooks and such) supported my studying well 2. The pedagogical materials (textbooks and such) supported personal knowledge building 3. The choice of pedagogical materials (textbooks and such) for this course was very good
<p><u>Arviointimenetelmät</u></p> <ol style="list-style-type: none"> 1. Arviointi (koemenettely, tentti/vast) tuki minun oppimistani ymmärtämistä lisäävällä tavalla 2. Suhteessa opetuksen toteutukseen arviointi (koemenettely, tentti/vast) oli minusta onnistunut valinta 3. Minun mielestäni arviointi (koemenettely, tentti/vast) kohdistui opetus-tavoitteen mukaisiin asioihin 	<p><u>Quality of assessment practices</u></p> <ol style="list-style-type: none"> 1. The assessment (examination, test or such) supported my learning. 2. The implementation of the assessment (examination, test or such) was successful. 3. In terms of learning objectives, the assessment (examination, test or such) focused on relevant issues.
<p><u>Tyytyväisyys opetukseen</u></p> <ol style="list-style-type: none"> 1. Olin opintojaksoon kokonaisuutena tyytyväinen 2. Ennako-odotuksiini nähden minä olen opintojaksoon tyytyväinen 3. Minusta opintojakso oli kokonaisuutena onnistunut 	<p><u>Course satisfaction</u></p> <ol style="list-style-type: none"> 1. All in all, I am satisfied with the course. 2. In terms of my expectations of this course I am satisfied. 3. As a whole the course was successful.

<p><u><i>Kiinnostavuus</i></u></p> <ol style="list-style-type: none"> 1. Opintojakson sisältö oli minusta kiinnostavaa 2. Opintojakson asiat olivat minulle mielenkiintoisia 3. Minun mielestäni opintojakso oli kokonaisuutena innostava 4. Opintojaksolla opetettavat asiat olivat minulle tärkeitä 	<p><u><i>Interestingness</i></u></p> <ol style="list-style-type: none"> 1. The substance of the course was interesting for me 2. The topics of this course were intriguing for me 3. All in all, this course was stimulating for me 4. I think that the topics taught in this course were important
<p><u><i>Oman työskentelyn arviointi</i></u></p> <ol style="list-style-type: none"> 1. Olen omaan työskentelyyni opintojaksolla tyytyväinen 2. Minä pyrin tekemään annetut henkilökohtaiset tehtävät mahdollisimman hyvin 3. Saavutin mielestäni asetetut oppimistavoitteet 	<p><u><i>Effort and attainment</i></u></p> <ol style="list-style-type: none"> 1. Considering my own work during the course I am satisfied 2. I tried to accomplish the personal tasks as well as possible 3. I achieved the learning objectives
<p><u><i>Oma aktiivisuus</i></u></p> <ol style="list-style-type: none"> 1. Minä osallistuin keskusteluihin innokkaasti 2. Olin opintojaksolla yleisesti aktiivinen 	<p><u><i>Participation</i></u></p> <ol style="list-style-type: none"> 1. I participated eagerly in discussions 2. In this course, I was generally active

Note: The Finnish version always includes reference to the first person, for example “In my opinion..”, “I think...” or “..for me”.

