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## Study guidance experiences, study progress, and perceived learning outcomes of Finnish university students

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### ABSTRACT

In recent decades, the massification and diversification of higher education have generated new challenges for the guidance of university students. The present study focuses on students' experiences of guidance in relation to their study progress and perceptions of their learning outcomes. The data ( $n = 4916$ ) were collected from 2010–2013 through yearly Internet surveys whose targeted respondents were the students of a Finnish University. According to the results, general study guidance was a very strong predictor of students' self-assessed development of their academic and generic skills as well as working life orientation. It also decreased the probability of slow progress in studies. Significant differences between disciplines were found: the Faculty of Education outperformed other faculties in regard to students' satisfaction with the guidance and the students' evaluations of their own learning outcomes. The main result of the study is that guidance can play a significant role in students' academic success.

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### KEYWORDS

University students; study guidance; learning outcomes; higher education; study progress

## Students' experiences of guidance and the relation to their learning results

Guidance is an elementary part of organising and supporting students' studies in any education institution. Many recent developments in higher education policy and practice have generated new challenges for guidance. First of all, the number of university students has greatly increased in the past decades, which has resulted in a more heterogeneous student population. Due to this massification and diversification of higher education, the role of guidance in universities has become more significant.

One of the driving forces in the transformation of university studies in the EU has been the change initiated by the so-called Bologna process, which began in 1999 (Bologna 2016). In Finland, as well as in other European countries, this process has resulted in fundamental changes in degree structures and curricula. The main aims were to make education more effective and to shorten study times. Guidance became one of the main aspects in the process of providing support for the new optimal study times (BA in 3

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years; MA in 2 years; Dr/PhD in 4 years) and was seen as an integral part of the services university students are entitled to. At the same time, the teacher–student ratio greatly increased, resulting in a lack of resources (Hoffman, Välimaa, and Huusko 2008; Rott and Lahti 2006; Välimaa 2001). Thus, requirements for better and more effective guidance were to be implemented with less resources.

There are plenty of studies about students' approaches to learning, their perceptions of learning environments and the relations between these and learning outcomes (e.g. Asikainen et al. 2014; Karagiannopoulou and Milienos 2015; Lizzio, Wilson, and Simons 2002; Parpala et al. 2010; Trigwell, Ellis, and Han 2012; Tynjälä et al. 2005). However, less is known about students' experiences of guidance and the relation of these experiences to their learning results. Therefore, in the present study, we focused on these questions in the context of Finnish higher education.

### Various forms of guidance

The term *guidance* refers to different aspects and functions related to student support. In its broadest sense relating to education, the term is used in the context of lifelong learning and career guidance, an umbrella term for career counselling and related services (Moreno da Fonseca 2015; Vuorinen and Watts 2010). It can also refer to a rather specific provision of teaching and learning during a course (Hounsell et al. 2008).

In the context of Finnish higher education, the term *guidance* (*ohjaus*) refers to a variety of student support and advice services, such as activities related to study planning, tutoring, mentoring and counselling, thesis supervision, internship guidance, career planning, and facilitation of learning (Moitus and Vuorinen 2003). In international discussions, these aspects often fall under the concept of academic student support, and the services provided for students' welfare and academic success are referred to as student services or student support (Dhillon, McGowan, and Wang 2008; Ferreira, Vidal, and Vieira 2014; Morgan 2012; Sajiené and Tamuliené 2012). Thus, *student support* refers to a system of services that aims at fulfilling students' academic and nonacademic (emotional and social) needs (Sajiené and Tamuliené 2012, 121; Dužević and Čhe Časni 2015).

The present study was conducted at the University of Jyväskylä where administrative and academic staff have a variety of roles in the guidance system. There are centralised student services, which include student affairs office, careers services, international affairs, university chaplain and student health care services. Faculty and departmental based guidance includes study orientation and planning, as well as learning support. This is provided by the academic staff and study affairs secretary or study co-ordinator, who is often responsible for planning and co-ordinating guidance and study programme matters. There is also a tradition of peer tutoring programme organised for first year students.

The faculties and departments have been rather autonomous in organising guidance and thus there may be differences in the practices between the units. Some aspects are regulated at the organisational level by explicit guidelines and instructions. For example, the students should compose a personal study plan in their first study year, and it should be revised over the course of their degree programme. Guidance is mostly individual but there are also formal and informal modes of group guidance, peer guidance and internet-based guidance (mostly distributing information). Guidance is a full-time profession for only a very few members of the staff. For teachers, guidance of learning is part of their teaching duties.

## Previous research on guidance and university studies

Among the few studies on how guidance is experienced by students and how it is related to students' study progress and learning outcomes is a comparison of matched first-year student groups by Chiteng Kot (2014). In that study, the students who used centralised academic advising over the course of two semesters outperformed the no-advice group in terms of increase in their GPA. Also, a decrease in the probability of first-year attrition was found regarding students who used advisory support. Another study, concerning language students, showed that students who were offered extra guidance during their first study year in the form of staff tutoring became more self-regulated and more motivated, and they had fewer study problems than the students who were not offered this opportunity (Honkimäki and Tynjälä 2007). As self-regulation seems to play a key role in explaining study progress (Hailikari and Parpala 2014), it can be assumed that through its effect on self-regulation, guidance might also have an indirect influence on students' study progress. There is further evidence that a lack of guidance may be linked to undesirable features, such as surface approach, in students' studies (Hailikari and Parpala 2014).

In the present study, we were interested in the relationship between students' guidance experiences and perceived learning outcomes in academic and generic skills. Generic skills such as communication skills, thinking skills, and interpersonal skills have recently emerged as important intended learning outcomes in universities (Jääskelä, Nykänen, and Tynjälä 2016; Kallioinen 2010; OECD 2012), and the concept of generic skills is especially interesting in higher education. The teaching of scientific thinking has been universally recognised as the main focus of higher education, and therefore its development has traditionally been seen to be a main generic learning outcome (Clanchy and Ballard 1995; Kallio 2011; Utriainen et al. 2017). Hence, in the present study, we consider scientific thinking and related academic skills, such as developing new ideas, to be essential generic skills in higher education. In addition, we gave attention to skills that have recently been emphasised in several contexts as being important twenty-first century skills, such as communication, collaboration, and problem solving (Binkley et al. 2012).

Generic skills can be context dependent and taught differently in different disciplines, because they seem to be shaped by disciplinary epistemology (Jones 2009). When it comes to guidance practices, little is known regarding the possible differences between disciplines. Some differences have been found in regard to students' satisfaction with academic support (Cahill, Bowyer, and Murray 2014), while similarities have also been reported (Walsh, Larsen, and Parry 2009): students from different disciplines who had successfully progressed in their studies preferred academic tutors and peers as support mechanisms for academic issues. In the present study we paid attention to disciplinary differences when examining the relationship between students' guidance experiences and their learning outcomes, especially concerning the development of generic skills.

## Purpose of the study

The aim of the present study was to examine Finnish university students' experiences of study guidance and the relation of these experiences to study progress and perceived learning outcomes. In more detail, the following research questions were addressed:

- (1) Are there differences in guidance experiences between students in different study years and different disciplines?
- (2) What is the relation between students' subjective guidance experiences and students' study progress?
- (3) What is the relation between students' subjective guidance experiences and perceived learning outcomes?

## Data and methods

### Data collection

The data ( $n = 4916$ ) were collected from 2010–2013 using annual Internet surveys whose invited respondents were the students of the University of Jyväskylä, Finland. Each year, the survey was sent to all first-, third-, and fifth-year students in the university register. Consequently, the respondents included both Bachelor's and Master's degree level students. The differences between disciplines were operationalised with the seven faculties of the university.

The annual response rates were typically around 30% with the exception of 2012, when only 16% responded (Table 1). In 2012, the survey was sent relatively late in the Spring semester causing a drop in the response rate. In comparison to the population totals, there were some slight differences. The response rates varied according to gender, study year, and study progress. Particularly the students with slow progress responded more passively (response rate 21%) than the other students (response rate 36%). Women (30%) responded more actively than men (21%), and first-year students (29%) responded slightly more actively than third-year (27%) or fifth-year (25%) students. As a result, the composition of the data set is somewhat distorted, with especially male students with slow progress in their studies being underrepresented in the data. To correct this distortion in the survey, 'weights' were applied in all statistical analyses. The survey weights were computed as inverses of the response rates, broken down by study year, gender and progress.

Students' **study progress** was measured with the number of credits they had earned. The progress was considered 'slow' if the student had earned 50 credits or less per study year, while above 50 credits was considered 'expected'. The demarcation of slow and expected study progress was set at 50 ECTS (European Credit Transfer and Accumulation System) based on the funding model of the Finnish Ministry of Education and Culture devised for Finnish universities: 12% of the funding of education is allocated on the basis of the number of students who have gained more than 55 study credits per year (OKM 2012). The surveys were conducted in the middle of the Spring semester and we thus decided to reduce the annual sum by 5 ECTS.

**Table 1.** Response rates by year of inquiry.

| Year  | <i>n</i> | Response rate % |
|-------|----------|-----------------|
| 2010  | 1645     | 34              |
| 2011  | 1206     | 27              |
| 2012  | 726      | 16              |
| 2013  | 1339     | 31              |
| Total | 4916     | 27              |

## Construction of scales

The questionnaire contained questions about students' experiences of learning and studying, their perceptions of learning environments and study guidance, approaches to learning, and self-perceived learning outcomes such as regarding generic skills. In the present study, we focused on students' experiences of study guidance and their perceptions of their learning outcomes.

The students' subjective **guidance experiences** were enquired about with the question: 'How much guidance, advice or help have you received for the following matters?' There were nine items that were scored on a 3-point scale: 1 = *not at all, although I would have needed it*; 2 = *to some extent, but not sufficiently*; and 3 = *sufficiently*. An exploratory factor analysis was performed on these items to examine if they could be combined into an adequate sum index. The analysis suggested a two-factor solution presented in [Appendix A](#).

Mean indices were preferred over factor scores because they operate on the same scale as the original items, making their interpretation easier. The rather low reliability of the index of *Guidance in IT, Library and International Skills* is partly due to the small number of items. Furthermore, the items were not fully coherent, their intercorrelations being around 0.35. Consequently, we did not use this index in further analyses but focused on the index of *General Study Guidance*.

The scales measuring perceived **learning outcomes** were constructed on the basis of previous studies on student learning in higher education (Tynjälä 1998) and conceptualisations of twenty-first century skills (e.g. Binkley et al. 2012). The students were asked to evaluate nine statements regarding academic skills on a 5-point scale (1 = *fully disagree*; 5 = *fully agree*), for example: a) *As a result of my studies, my thinking has considerably developed*; b) *I have learned to critically examine things*; and c) *I have learned to develop new ideas*. This set of items was also examined using factor analysis. All items (a–i) could successfully be combined into a mean index that we named *Development of Academic Skills* ([Appendix B](#)).

The students were also asked to evaluate 11 statements about the development of their generic skills. The 5-point scale (1 = *fully disagree*; 5 = *fully agree*) was used. Again, a factor analysis was performed. A two-factor solution emerged and two indices were formed: *Development of General Working Life Orientation* and *Development of Generic Skills* ([Appendix C](#)). These index variables were employed in the statistical analyses. The differences between disciplines were examined through the seven faculties of the University of Jyväskylä: Humanities, Information Technology, Education, Sports and Health Sciences, Mathematics and Science, Social Sciences, and the School of Business and Economics. The statistical methods included basic descriptive statistics (means, proportions, standard deviations, confidence intervals) as well as linear and logistic regression analyses.

## Results

### *Students' guidance experiences*

The means and standard deviations of the *General Study Guidance* index in various subgroups are shown in [Table 2](#). In general, the students were quite satisfied with the availability of the study guidance. The overall mean (on a scale from 1 to 3) was 2.30. According to the 95% confidence intervals, there were some statistically significant

**Table 2.** Descriptive statistics on students' satisfaction with the general study guidance.

| Subgroup                              | <i>n</i> | Mean | <i>SD</i> | 95% confidence interval of the mean |      |
|---------------------------------------|----------|------|-----------|-------------------------------------|------|
| All students                          | 4806     | 2.30 | 0.52      | 2.29                                | 2.32 |
| Females                               | 3477     | 2.28 | 0.49      | 2.26                                | 2.30 |
| Males                                 | 1329     | 2.34 | 0.60      | 2.31                                | 2.37 |
| First-year students                   | 1826     | 2.34 | 0.48      | 2.32                                | 2.36 |
| Third-year students                   | 1769     | 2.30 | 0.52      | 2.27                                | 2.32 |
| Fifth-year students                   | 1211     | 2.25 | 0.57      | 2.22                                | 2.29 |
| Faculty of Humanities                 | 1291     | 2.30 | 0.49      | 2.27                                | 2.32 |
| Faculty of Information Technology     | 376      | 2.37 | 0.63      | 2.31                                | 2.43 |
| Faculty of Education                  | 778      | 2.38 | 0.43      | 2.35                                | 2.41 |
| Faculty of Sports and Health Sciences | 483      | 2.26 | 0.55      | 2.21                                | 2.31 |
| Faculty of Mathematics and Science    | 829      | 2.34 | 0.55      | 2.31                                | 2.38 |
| School of Business and Economics      | 315      | 2.19 | 0.54      | 2.13                                | 2.25 |
| Faculty of Social Sciences            | 734      | 2.21 | 0.53      | 2.17                                | 2.25 |
| Students with slow progress           | 1592     | 2.27 | 0.62      | 2.24                                | 2.30 |
| Students with expected progress       | 3272     | 2.33 | 0.47      | 2.31                                | 2.34 |

Note: Shading designates different classes or variables.

differences between subgroup means. On average, the males felt slightly more satisfied with the guidance than the females. The students with expected progress felt more satisfied than those with slow progress. The level of satisfaction decreased with each study years; students felt the most satisfaction in their first study year. Also, there were clear differences between the faculties. The most satisfied students came from the Faculty of Education and the Faculty of Information Technology, while the least satisfied students came from the School of Business and Economics and the Faculty of Social Sciences.

### Study progress

The students' study progress was examined in terms of occurrence of slow progress. The results in Table 3 show that slow progress was significantly more typical of males than females, and the proportion decreased with each study phase. There were also large

**Table 3.** Proportions of students with slow study progress.

| Subgroup                              | <i>n</i> | Proportion (%) | 95% confidence interval of the proportion |    |
|---------------------------------------|----------|----------------|---|----|
| All students                          | 4916     | 44             | 43  | 45 |
| Females                               | 3538     | 35             | 33  | 36 |
| Males                                 | 1378     | 60             | 58  | 63 |
| First-year students                   | 1880     | 47             | 44  | 49 |
| Third-year students                   | 1800     | 45             | 43  | 47 |
| Fifth-year students                   | 1236     | 39             | 36  | 42 |
| Faculty of Humanities                 | 1308     | 42             | 39  | 44 |
| Faculty of Information Technology     | 388      | 74             | 70  | 79 |
| Faculty of Education                  | 783      | 25             | 22  | 28 |
| Faculty of Sports and Health Sciences | 496      | 47             | 42  | 51 |
| Faculty of Mathematics and Science    | 852      | 56             | 53  | 59 |
| School of Business and Economics      | 330      | 33             | 28  | 38 |
| Faculty of Social Sciences            | 759      | 32             | 29  | 36 |
| General study guidance, lowest third  | 1634     | 48             | 45  | 50 |
| General study guidance, middle third  | 1602     | 42             | 39  | 44 |
| General study guidance, highest third | 1570     | 41             | 39  | 44 |

Note: Shading designates different classes or variables.



differences between faculties. The Faculty of Information Technology had a strikingly high number of slowly progressing students, while the proportion was clearly the lowest in the Faculty of Education. As for the general study guidance, the students with the lowest satisfaction with the guidance made slow study progress in more cases than did the students who felt more satisfied with the same guidance. The highest third and the middle third do not differ from each other.

### **Development of academic skills**

The subgroup means of the students' perceived development of their own academic skills are presented in Table 4. The means were quite high; they were all close to 4 on the index scale from 1–5. Several significant subgroup differences were found. The students who were the most satisfied with the guidance and who had progressed with expected speed gave their skills the highest appraisal, on average. There were differences between the faculty means as well. On average, the self-appraisal of academic skills was highest in the Faculty of Education and the Faculty of Sports and Health Sciences. The lowest means were observed in the Faculty of Information Technology, the Faculty of Mathematics and Science, and in the School of Business and Economics. Differences based on gender were not significant.

### **Development of general working life orientation and generic skills**

The subgroup means of the students' perceived development of their general working life orientation are presented in Table 5. The means were mostly close to 3, the midpoint of the index scale from 1–5. Again, the students who were the most satisfied with the guidance and who had progressed with at least the expected pace appraised their development of their general working life orientation most highly. Females evaluated their working life

**Table 4.** Descriptive statistics on students' perceived development of their academic skills.

| Subgroup                              | <i>n</i> | Mean | <i>SD</i> | 95% confidence interval of the mean |      |
|---------------------------------------|----------|------|-----------|-------------------------------------|------|
| All students                          | 4916     | 3.92 | 0.65      | 3.90                                | 3.94 |
| Females                               | 3538     | 3.92 | 0.61      | 3.90                                | 3.94 |
| Males                                 | 1378     | 3.91 | 0.74      | 3.88                                | 3.95 |
| First-year students                   | 1880     | 3.78 | 0.65      | 3.75                                | 3.81 |
| Third-year students                   | 1800     | 3.94 | 0.64      | 3.91                                | 3.96 |
| Fifth-year students                   | 1236     | 4.08 | 0.63      | 4.05                                | 4.12 |
| Faculty of Humanities                 | 1308     | 3.93 | 0.66      | 3.90                                | 3.97 |
| Faculty of Information Technology     | 388      | 3.76 | 0.72      | 3.70                                | 3.87 |
| Faculty of Education                  | 783      | 4.08 | 0.54      | 4.04                                | 4.13 |
| Faculty of Sports and Health Sciences | 496      | 4.05 | 0.58      | 4.00                                | 4.10 |
| Faculty of Mathematics and Science    | 852      | 3.79 | 0.69      | 3.74                                | 3.83 |
| School of Business and Economics      | 330      | 3.81 | 0.65      | 3.74                                | 3.89 |
| Faculty of Social Sciences            | 759      | 3.98 | 0.65      | 3.93                                | 4.03 |
| General study guidance, lowest third  | 1634     | 3.73 | 0.70      | 3.70                                | 3.77 |
| General study guidance, middle third  | 1602     | 3.97 | 0.59      | 3.94                                | 4.00 |
| General study guidance, highest third | 1570     | 4.08 | 0.60      | 4.05                                | 4.11 |
| Students with slow progress           | 1644     | 3.80 | 0.78      | 3.77                                | 3.83 |
| Students with expected progress       | 3272     | 4.02 | 0.56      | 3.99                                | 4.04 |

Note: Shading designates different classes or variables.

**Table 5.** Descriptive statistics on students' perceived development relating to their general working life orientation.

| Subgroup                              | <i>n</i> | Mean | <i>SD</i> | 95% confidence interval of the mean |      |
|---------------------------------------|----------|------|-----------|-------------------------------------|------|
| All students                          | 4916     | 3.08 | 0.89      | 3.05                                | 3.10 |
| Females                               | 3538     | 3.11 | 0.86      | 3.08                                | 3.14 |
| Males                                 | 1378     | 3.03 | 0.96      | 2.98                                | 3.07 |
| First-year students                   | 1880     | 3.01 | 0.86      | 2.97                                | 3.05 |
| Third-year students                   | 1800     | 3.07 | 0.88      | 3.03                                | 3.11 |
| Fifth-year students                   | 1236     | 3.19 | 0.93      | 3.14                                | 3.24 |
| Faculty of Humanities                 | 1308     | 3.06 | 0.90      | 3.02                                | 3.11 |
| Faculty of Information Technology     | 388      | 2.96 | 0.90      | 2.88                                | 3.04 |
| Faculty of Education                  | 783      | 3.63 | 0.73      | 3.58                                | 3.69 |
| Faculty of Sports and Health Sciences | 496      | 3.14 | 0.88      | 3.07                                | 3.22 |
| Faculty of Mathematics and Science    | 852      | 2.86 | 0.87      | 2.80                                | 2.91 |
| School of Business and Economics      | 330      | 3.07 | 0.77      | 2.99                                | 3.16 |
| Faculty of Social Sciences            | 759      | 2.89 | 0.87      | 2.83                                | 2.96 |
| General study guidance, lowest third  | 1634     | 2.76 | 0.89      | 2.71                                | 2.80 |
| General study guidance, middle third  | 1602     | 3.12 | 0.88      | 3.08                                | 3.16 |
| General study guidance, highest third | 1570     | 3.38 | 0.83      | 3.34                                | 3.42 |
| Students with slow progress           | 1644     | 2.95 | 1.01      | 2.91                                | 2.99 |
| Students with expected progress       | 3272     | 3.18 | 0.81      | 3.15                                | 3.21 |

Note: Shading designates different classes or variables.

orientation more highly than did males, on average. Not surprisingly, the mean of the working life orientation increased over the study years. The Faculty of Education had an exceptionally high mean in this index (3.63). The lowest means were found in the Faculty of Mathematics and Science and in the Faculty of Social Sciences.

The respective statistics of the *Development of Generic Skills* index are shown in Table 6. The means were highest for students who were satisfied with the guidance and who had progressed well in their studies. Again, the Faculty of Education had the highest index mean (3.73), while the lowest means appeared in the Faculty of Mathematics and Science and in the Faculty of Social Sciences.

**Table 6.** Descriptive statistics on students' perceived development of their generic skills.

| Subgroup                              | <i>n</i> | Mean | <i>SD</i> | 95% confidence interval of the mean |      |
|---------------------------------------|----------|------|-----------|-------------------------------------|------|
| All students                          | 4916     | 3.48 | 0.82      | 3.45                                | 3.50 |
| Females                               | 3538     | 3.51 | 0.77      | 3.48                                | 3.54 |
| Males                                 | 1378     | 3.42 | 0.94      | 3.38                                | 3.46 |
| First-year students                   | 1880     | 3.31 | 0.83      | 3.27                                | 3.35 |
| Third-year students                   | 1800     | 3.50 | 0.81      | 3.47                                | 3.54 |
| Fifth-year students                   | 1236     | 3.67 | 0.79      | 3.62                                | 3.71 |
| Faculty of Humanities                 | 1308     | 3.61 | 0.79      | 3.57                                | 3.65 |
| Faculty of Information Technology     | 388      | 3.41 | 0.92      | 3.33                                | 3.49 |
| Faculty of Education                  | 783      | 3.73 | 0.68      | 3.68                                | 3.78 |
| Faculty of Sports and Health Sciences | 496      | 3.60 | 0.76      | 3.53                                | 3.66 |
| Faculty of Mathematics and Science    | 852      | 3.20 | 0.86      | 3.14                                | 3.26 |
| School of Business and Economics      | 330      | 3.57 | 0.84      | 3.48                                | 3.67 |
| Faculty of Social Sciences            | 759      | 3.28 | 0.80      | 3.22                                | 3.34 |
| General study guidance, lowest third  | 1634     | 3.30 | 0.87      | 3.26                                | 3.34 |
| General study guidance, middle third  | 1602     | 3.56 | 0.75      | 3.52                                | 3.60 |
| General study guidance, highest third | 1570     | 3.60 | 0.80      | 3.57                                | 3.64 |
| Students with slow progress           | 1644     | 3.32 | 0.97      | 3.28                                | 3.36 |
| Students with expected progress       | 3272     | 3.60 | 0.71      | 3.57                                | 3.62 |

Note: Shading designates different classes or variables.

**Table 7.** Binary logistic regression model for predicting slow progress in students' studies.

| Explanatory variable                  | Regression coefficient | Standard error | Chi-square statistic | Significance | Odds ratio | Inverse odds ratio |
|---------------------------------------|------------------------|----------------|----------------------|--------------|------------|--------------------|
| Female gender                         | Reference category     |                |                      |              |            |                    |
| Male gender                           | 0.78                   | 0.07           | 126.80               | <0.001***    | 2.18       | 0.46               |
| First-year students                   | Reference category     |                |                      |              |            |                    |
| Third-year students                   | -0.09                  | 0.07           | 1.53                 | 0.217        | 0.92       | 1.09               |
| Fifth-year students                   | -0.33                  | 0.08           | 17.63                | <0.001***    | 0.72       | 1.39               |
| Faculty of Education                  | Reference category     |                |                      |              |            |                    |
| Faculty of Humanities                 | 0.69                   | 0.11           | 41.62                | <0.001***    | 2.00       | 0.50               |
| Faculty of Sports and Health Sciences | 0.76                   | 0.13           | 33.79                | <0.001***    | 2.14       | 0.47               |
| Faculty of Social Sciences            | 0.21                   | 0.12           | 2.84                 | 0.092        | 1.23       | 0.81               |
| School of Business and Economics      | 0.06                   | 0.16           | 0.14                 | 0.708        | 1.06       | 0.94               |
| Faculty of Math. and Science          | 1.01                   | 0.12           | 76.97                | <0.001***    | 2.76       | 0.36               |
| Faculty of Information Tech.          | 1.67                   | 0.14           | 134.71               | <0.001***    | 5.29       | 0.19               |
| General study guidance                | -0.34                  | 0.06           | 31.48                | <0.001***    | 0.71       | 1.40               |

Note: Nagelkerke  $R$ -squared = 14.5%. Shading designates different classes or variables.

\*\*\* $p < 0.001$ ; \*\* $p < 0.01$ ; \* $p < 0.05$ .

## Results of regression analyses

### Model for predicting slow progress

The fitted logistic regression model for predicting slow progress is presented in Table 7. The sample in this analysis consisted of 4806 university students and of whom 1592 (33%) showed slow progress in their studies (i.e. not more than 50 credits per study year). The values of the binary response variable were 1 = slow progress, 0 = expected progress. Thus, a variable with a positive regression coefficient is associated with the increased probability of slow progress.

Table 7 indicates that slow progress was significantly more typical of male than female students. As for the faculties, slow progress was found particularly often in the Faculty of Information Technology as well as the Faculty of Mathematics and Science. The Faculty of Social Sciences and the School of Business and Economics did not differ significantly from the reference group, the Faculty of Education: these three faculties had the lowest proportion of students with slow progress. The general study guidance provided was found to have a highly significant association with students' study progress, decreasing the probability of slow progress.

### Model for the development of academic skills

The results from the linear regression analysis for the students' perceived development of their academic skills are presented in Table 8, which shows that the general study guidance was a very strong, positive predictor of students' self-perceived development of academic skills. The differences between the faculties are again remarkable, with the Faculty of Education and the Faculty of Sports and Health Sciences showing the highest average level of academic skills, when other variables are controlled for. On average, males appraised their skills slightly more highly than did females and the self-perceived level of skills went up with each study phase (as could be expected). However, the variation explained with the model is not very high (13%).

**Table 8.** Linear regression model for the development of students' self-perceived academic skills ( $n = 4806$ ).

| Explanatory variable                  | Regression coefficient | Standard error | <i>t</i> statistic | Significance |
|---------------------------------------|------------------------|----------------|--------------------|--------------|
| Female gender                         | Reference category     |                |                    |              |
| Male gender                           | 0.05                   | 0.02           | 2.63               | 0.009**      |
| First-year students                   | Reference category     |                |                    |              |
| Third-year students                   | 0.16                   | 0.02           | 7.63               | <0.001***    |
| Fifth-year students                   | 0.31                   | 0.02           | 14.03              | <0.001***    |
| Faculty of Education                  | Reference category     |                |                    |              |
| Faculty of Humanities                 | -0.14                  | 0.03           | -4.69              | <0.001***    |
| Faculty of Sports and Health Sciences | 0.01                   | 0.04           | 0.16               | 0.876        |
| Faculty of Social Sciences            | -0.05                  | 0.03           | -1.63              | 0.103        |
| School of Business and Economics      | -0.23                  | 0.04           | -5.37              | <0.001***    |
| Faculty of Math. and Science          | -0.30                  | 0.03           | -9.28              | <0.001***    |
| Faculty of Information Tech.          | -0.32                  | 0.04           | -8.34              | <0.001***    |
| General study guidance                | 0.31                   | 0.02           | 18.47              | <0.001***    |

Note: *R*-squared = 12.5%. Shading designates different classes or variables.

\*\*\* $p < 0.001$ ; \*\* $p < 0.01$ ; \* $p < 0.05$ .

**Table 9.** Linear regression model for students' perceived development of their general working life orientation ( $n = 4806$ ).

| Explanatory variable                  | Regression coefficient | Standard error | <i>t</i> statistic | Significance |
|---------------------------------------|------------------------|----------------|--------------------|--------------|
| Female gender                         | Reference category     |                |                    |              |
| Male gender                           | 0.01                   | 0.03           | 0.31               | 0.759        |
| First-year students                   | Reference category     |                |                    |              |
| Third-year students                   | 0.06                   | 0.03           | 2.31               | 0.021*       |
| Fifth-year students                   | 0.21                   | 0.03           | 7.08               | <0.001***    |
| Faculty of Education                  | Reference category     |                |                    |              |
| Faculty of Humanities                 | -0.53                  | 0.04           | -13.81             | <0.001***    |
| Faculty of Sports and Health Sciences | -0.41                  | 0.05           | -8.40              | <0.001***    |
| Faculty of Social Sciences            | -0.65                  | 0.04           | -14.83             | <0.001***    |
| School of Business and Economics      | -0.46                  | 0.06           | -8.08              | <0.001***    |
| Faculty of Math. and Science          | -0.75                  | 0.04           | -17.65             | <0.001***    |
| Faculty of Information Tech.          | -0.66                  | 0.05           | -12.82             | <0.001***    |
| General study guidance                | 0.54                   | 0.02           | 23.74              | <0.001***    |

Note: *R*-squared = 17.8%. Shading designates different classes or variables.

\*\*\* $p < 0.001$ ; \*\* $p < 0.01$ ; \* $p < 0.05$ .

### *Model for the development of general working life orientation*

The linear regression model for predicting the students' perceived development of their general working life orientation is presented in Table 9. The general study guidance played a highly significant and positive role here as well. What is striking is that the average self-perceived gain in working life orientation was remarkably higher in the Faculty of Education than in any other faculty. Again, the level of working life orientation went up with each study phase. There were no differences based on gender.

### *Model for the development of generic skills*

Table 10 shows the results of the linear regression analysis for the students' perceived development of their generic skills. Several results are similar to earlier findings. The effect of the general study guidance was once again positive and significant. The level of perceived skills rose strongly with each study phase. No differences based on gender were observed. On average, again, the highest self-appraisal of skills was found in the Faculty of Education, the reference faculty in the model. However, the Faculty of Sports

**Table 10.** Linear regression model for students' perceived development of their generic skills.

| Explanatory variable                  | Regression coefficient | Standard error | t statistic | Significance |
|---------------------------------------|------------------------|----------------|-------------|--------------|
| Female gender                         | Reference category     |                |             |              |
| Male gender                           | -0.02                  | 0.03           | -0.62       | 0.534        |
| First-year students                   | Reference category     |                |             |              |
| Third-year students                   | 0.19                   | 0.03           | 7.26        | <0.001***    |
| Fifth-year students                   | 0.37                   | 0.03           | 12.83       | <0.001***    |
| Faculty of Education                  | Reference category     |                |             |              |
| Faculty of Humanities                 | -0.10                  | 0.04           | -2.84       | 0.005**      |
| Faculty of Sports and Health Sciences | -0.07                  | 0.05           | -1.48       | 0.138        |
| Faculty of Social Sciences            | -0.39                  | 0.04           | -9.37       | <0.001***    |
| School of Business and Economics      | -0.09                  | 0.05           | -1.68       | 0.093        |
| Faculty of Math. and Science          | -0.49                  | 0.04           | -12.08      | <0.001***    |
| Faculty of Information Tech.          | -0.27                  | 0.05           | -5.58       | <0.001***    |
| General study guidance                | 0.28                   | 0.02           | 13.03       | <0.001***    |

Note: *R*-squared = 11.1%. Shading designates different classes or variables.

\*\*\**p* < 0.001; \*\**p* < 0.01; \**p* < 0.05.

and Health Sciences and the School of Business and Economics did not differ significantly from it.

## Discussion

Our findings show that students were quite satisfied with the availability of study guidance. Significant differences between disciplines were found. These differences are interesting and in line with earlier studies showing that hard and soft sciences differ in student experiences and study approaches (e.g. Parpala et al. 2010; see also Kam-Por 1999; Kember and Leung 2011) as well as students' satisfaction with academic support (Cahill, Bowyer, and Murray 2014; Walsh, Larsen, and Parry 2009). The students of the Faculty of Education and the Faculty of Information Technology were most satisfied with the guidance. As for the students' perception of the development of their academic skills, generic skills and working life orientation, the Faculty of Education positively stands out from the other faculties, whereas the Faculty of Mathematics and Science scored lowest. The regression models show that the general study guidance was a very strong predictor of the development of the students' academic and generic skills as well as working life orientation. It also proved to decrease the probability of slow progress in students' studies.

There were large differences between faculties also in students' study progress. The Faculty of Information Technology had a strikingly higher number of slowly progressing students compared to other faculties. In the Faculty of Education, contrastingly, the proportion was clearly lowest among the faculties. Especially in the area of teacher education, students advanced cohesively. IT students' slow progress may be explained by the incentives of working life in this field already during studies, postponing graduation.

In students' opinion, the Faculty of Education has given the most attention to student guidance, which reflected in the students' perceived development of their skills and the low probability of slow progress in these students' studies. Several reasons may explain these findings, one is the teacher education, in which the study programmes are organised in a more school-like and scheduled way. In the Faculty of Social Sciences, for example, there is much more freedom in choosing courses. Furthermore, The faculty of Education has special expertise in teaching and learning by its very nature, including guidance and counselling education.

The students with expected progress were more satisfied with the guidance than those with slow progress. Though satisfaction with the guidance was positively related to study progress, further investigation is needed to clarify whether it was actually the guidance that boosted well-progressing students toward success in their studies or if these students' better skills in self-regulation means their progress was not so dependent on the guidance although they expressed appreciation for it. Furthermore, the various aspects of learning are likely to be interconnected and need further investigation.

The mean of students' self-perceived development of their academic skills was rather high in all of the faculties, a bit higher than the mean regarding their generic skills and clearly higher than the mean regarding their general working life orientation. Thus, one of the most important aims of higher education—scientific understanding and thinking—seems to have been gained by students, in their opinion. On average, the students who were the most satisfied with the guidance and progressed at an expected pace gave the highest appraisal in academic skills, generic skills, and general working life orientation. The fact that the students from the Faculty of Education rated their skills highest in all three of these domains suggests that it has systematically and diversely invested in education, not only in the academic substance but also from the working life point of view. There is lot of practical training in teacher education, which naturally strengthens students' working life orientation. At the low end of the spectrum, in regard to academic skills, generic skills and working life orientation, were the students from the Faculty of Mathematics and Science and the Faculty of Social Sciences. These disciplines are less profession-orientated and educate generalists rather than workers for specific occupations.

On one hand our results are positive and show students' general satisfaction in the study guidance. It seems, that the University has succeeded in organising guidance at the general level. On the other hand, however, there are disciplinary differences regarding the students' slower study progress and the development of their academic and generic skills. The needs of the students, who are not studying at the expected pace could perhaps be met in a better way. At the University of Jyväskylä the faculties have a relatively strong autonomy in organising the guidance systems for their students. This may result in gaps in guidance, but it could also give room for needed disciplinary adjustments in the guidance system.

Based on the used data it is not possible to differentiate the roles of various guidance forms or providers. The roles of different forms of guidance, such as individual and group guidance, could be examined in further studies. Moreover, the survey data expanded with qualitative data would deepen the understanding of the role of guidance in academic study and learning outcomes.

In sum, the main result of our study is that guidance matters. The more students were satisfied with the guidance, the better they progressed in their studies and the better were the gained learning outcomes. This suggests that investment in guidance pays off in the form of students' success. The differences between the disciplines, here operationalised as faculties, were clear and systemic. The Faculty of Education stands out from the other faculties, with its students having reported the highest satisfaction with the guidance, progressed the most, and self-appraised their learning outcomes most highly in regard to the academic skills, generic skills and working life orientation.

An important limitation of the study is that the response rates were not very high: on average 27% and varying yearly from 16–34%. While these are typical response rates in

survey studies, a question arises regarding the representativeness of the data. In our analysis of the loss of the participants, we observed some distortion; however, this was addressed with appropriate statistical techniques. Thus, we have reason to believe that the findings are reliable. The findings were clear, systematic and logical, suggesting that good guidance produces good learning outcomes.

## Disclosure statement

No potential conflict of interest was reported by the authors.

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## Appendix A

Two sum indices formed of the guidance items.

| Index            | General study guidance  | Guidance in IT, library and international skills  |
|------------------|---|---|
| Items            | a) Planning of studies in major subject (e.g. discussions about the Personal Study Plan)<br>b) Choice of minor subjects<br>c) Language and communication studies as part of general studies<br>d) Other language studies<br>e) General study skills (e.g. studying practices)<br>i) Career planning and working life skills | f) IT skills<br>g) Library skills and knowledge searching skills<br>h) Development of international skills (e.g. planning for participation in exchange programmes) |
| Cronbach's alpha | 0.82  | 0.61  |

## Appendix B

The sum index formed of the perceived academic learning outcomes.

| Index            | Development of academic skills   |  |
|------------------|--|--|
| Items            | a) As a result of my studies, my thinking has considerably developed<br>b) I have learned to critically examine things<br>c) I have learned to apply theoretical knowledge in practice<br>d) I have learned to analyse and structure/organise knowledge<br>e) I have learned to develop new ideas<br>f) As a result of my studies, my ability to create a holistic picture of the contents taught has developed<br>g) As a result of my studies, my knowledge base has increased<br>h) My university studies have strengthened my confidence in my competencies<br>i) My learning has remained at the surface level<br>(The scale of negative item 'i' was inverted to agree with the other items) |  |
| Cronbach's alpha | 0.88   |  |

## Appendix C

The sum index formed of the perceived generic learning outcomes.

| Index            | Development of general working life orientation  | Development of generic skills  |
|------------------|--|--|
| Items            | a) In my studies, I have gained a good overall view of the working life requirements in my field<br>b) I have gained useful knowledge about what kinds of jobs graduates in my field get employed for<br>c) I feel that during my studies so far, I have developed a strong foundation on which to build my expertise in my field<br>d) My career plans have become clearer over the course of my studies<br>e) I have gained abilities that demonstrate my competence in job-seeking situations | f) My studies have improved my communication skills<br>g) My studies have improved my collaboration and interaction skills<br>h) My studies have improved my presentation skills<br>i) My studies have improved my ability to take initiative<br>j) My studies have improved my leadership skills<br>k) My studies have improved my problem-solving skills |
| Cronbach's alpha | 0.81   | 0.81   |