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Factors Associated with Academic Performance Among Second-Year Undergraduate Occupational Therapy Students

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Factors Associated with Academic Performance Among Second-Year Undergraduate Occupational Therapy Students

Abstract

Background: Research into occupational therapy education and its outcomes for students is growing. More research is needed to determine the factors of importance for occupational therapy students' academic outcomes. This study aimed to investigate factors associated with academic performance among second-year undergraduate occupational therapy students in Norway.

Methods: Occupational therapy students ($n = 111$) from two education programs completed questionnaires asking for sociodemographic, work-related, and education-related information. Hierarchical linear regression analysis was used to examine factors independently associated with the students' academic performance.

Results: A higher age was associated with better average academic performance among the students, whereas having higher education experience before entering the occupational therapy program was associated with poorer average academic performance.

Conclusions: Students of a higher age may have life experience that easily translates into good academic results, and they may represent an under-used resource for improving the academic climate and understanding subsequent exam results among undergraduate occupational therapy students. However, prior higher education experience from disciplines different from occupational therapy, and that hold different expectations toward students, may hinder good academic performance in occupational therapy coursework.

Comments

Dr. Bonsaksen reports no potential conflicts of interest.

Keywords

education, grades, higher education, occupational therapy, students

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Higher education institutions' (HEIs) success are in large part dependent on their students' success. Success is important for students, but the economy of HEIs is also reliant on students successfully completing their program of education (St. Meld. 27, 2000-2001). Students with a good academic record prior to enrollment are more likely to have academic success in higher education programs (Richardson, Abraham, & Bond, 2012) and may be less likely to drop out than students with less favorable records. As a result, HEIs are in constant competition with each other to attract students with good academic records who are assumed to fit the profile of the given education program. HEIs reputations for student success is an important feature for recruiting students (Oslo and Akershus University College of Applied Sciences, 2012). The factors associated with academic success, however, may relate to the students' background characteristics as well as to their individual experience with and dedication to studying.

Across various research fields, age and gender are the background characteristics most commonly employed. A higher age has been generally associated with better academic outcomes among students in higher education, but effect sizes have been small (Richardson et al., 2012).

Study behaviors have often been researched from the "approaches to studying" framework (Entwistle, 1998, 2007; Entwistle, McCune, & Tait, 2006; Entwistle & Ramsden, 1983; Tait, Entwistle, & McCune, 1998). According to this theory, students using a deep approach to studying have a desire to enhance their understanding and seek to combine and contrast ideas to gain personal meaning from the study materials. By contrast, students using a surface approach to studying have a desire to avoid failure and rely on rote learning to reproduce facts at exams. Students using a strategic approach to studying are highly competitive and have a desire to get the best grades, and they may combine strategies related to deep and surface approaches to obtain the best possible results.

Some studies have investigated associations between student characteristics and approaches to studying. Zeegers (2001) found that a higher age predicted both productive study approaches (higher levels of deep and strategic study strategies and lower levels of surface strategies) as well as better academic assessment outcomes and linked these findings; stating that the positive effect from a higher age on academic performance may be a result of the more productive study strategies employed by the older students. An association between a higher age and higher levels of a deep study approach has in fact been reported (Kreber, 2003).

Relating the issue to occupational therapy education specifically, a similar line of reasoning has been put forward by Shanahan (2004) and Bonsaksen (2016). In both studies, it was found that the initial effect of age was cancelled out in multivariate analyses controlling for students' previous degree (Shanahan, 2004) or when controlling for having prior experience in higher education altogether (Bonsaksen, 2016). However, a recent cross-cultural study, including 712 occupational therapy students from four countries, indicated that a higher age was independently associated with better academic performance, even when controlling for prior higher education experience and approaches to studying (Bonsaksen, Brown, Lim, & Fong, 2017).

Richardson and colleagues' (2012) systematic review and meta-analysis reported that being a woman had a small effect on better academic performance. This finding has been confirmed in studies with occupational therapy students (Watson, 2013), whereas other studies have concluded with absent gender effects (Bonsaksen, 2016). An explanation for possible gender effects in occupational therapy education may relate to the profession's overrepresentation by women, both historically and currently (Bonsaksen, Kvarsnes, & Dahl, 2016; Pollard & Walsh, 2000). Occupational therapy is overrepresented by women in practice, in education, and in research. As a result, male occupational therapy students may struggle to find acceptance and recognition for their

values, knowledge, practical skills, and communication skills. Emphasizing estrangement according to gender role models may, therefore, help to explain poorer academic outcomes among male students.

A higher level of actual study efforts—more time spent studying—is reasonably linked with stronger motivation and with better academic performance (Kusurkar, Ten Cate, Vos, Westers, & Croiset, 2013). The time spent on self-organized studying may indicate a student's level of motivation and effort. Empirically, more time spent on self-studies has been associated with academic performance in a cross-cultural sample (Bonsaksen et al., 2017), whereas this association was not found in the country-specific analysis for the Australian subsample (Brown & Murdolo, 2016).

As argued by Galbraith and Merrill (2015), students' concurrent participation in paid work may reduce their amount of time available for studying and may, therefore, decrease their chances to achieve good academic results. However, a contrasting argument is also of interest: mature and engaged students' work experiences may translate into learning experiences highly relevant for occupational therapy. Thus, the nature of a possible association between work and study results may depend on a range of other factors. A previous study with occupational therapy students did not find a significant association between these variables (Brown & Murdolo, 2016).

There is a need to build a research capacity for education research (American Occupational Therapy Association, 2014; Gupta & Bilics, 2014), and research concerned with occupational therapy education needs to address students' characteristics and competencies as well as their socialization into the profession (Hooper, 2016). These issues may vary considerably; for example, between cultural and geographical contexts, between levels of education (entry-level vs. graduate level), and between students in different years of study. Building the larger evidence base in occupational therapy education research, but also differentiating between groups for which the evidence may apply, will support educators in addressing factors of importance for their students' success (Burke & Harvison, 2014).

Aim of the Study

This study examined sociodemographic, work-related, and education-related factors associated with academic performance among second-year undergraduate occupational therapy students in Norway.

Method

Design and Data Collection

The study is related to a larger project concerned with self-efficacy for therapeutic use of self among Norwegian occupational therapy students. The data for this cross-sectional design study were collected by self-report questionnaires in the autumn, 2016.

Sample and Recruitment

A convenience sample was recruited among second-year students enrolled in either of the two occupational therapy education programs involved in the study: Oslo and Akershus University College of Applied Sciences, Oslo; and Norwegian University of Science and Technology, Trondheim. At the two respective universities, the questionnaires were distributed to the students by two of the researchers (first and last author) in the classrooms during breaks. At the time of the data collection, all of the participants were taking an "Occupational Therapy in Mental Health" study module. There were 142 students enrolled in the relevant cohorts of the two education programs, yielding a response rate of 78.2%. The non-responders ($n = 31$) included 29 (93.5%) women and 2 (6.5%) men. The mean age was 23.9 years ($SD = 5.2$ years).

Measures

Sociodemographic variables. This information included gender (0 = men, 1 = women) and age in years.

Work and education. Paid work was treated as a categorical variable: (1) having a paid job or (0) not having a paid job. Previous higher education experience was dichotomized with two categories: (1) having prior higher education experience or (0) not having prior higher education experience. The average number of weekly hours spent on independent study was registered as a continuous variable. Academic performance was registered as the self-rated grade average based on the completed exams so far in the education program. With reference to the general grading system in higher education in Norway (The Norwegian Association of Higher Education Institutions, 2011), grades were categorized as (6) excellent, (5) very good, (4) good, (3) satisfactory, (2) sufficient, and (1) fail.

Data Analysis

Initially, descriptive analyses were completed. Differences between students from the sample subsets from Oslo and Trondheim were examined with the Chi-square test or the independent *t*-test as appropriate. In the hierarchical linear regression analyses, factors independently associated with academic performance were assessed. The models also assessed the amount of variance these factors accounted for by each block of hierarchically included independent variables. The regression model was structured as (a) sociodemographic background (age and gender) and (b) work and education-related variables (paid work, previous higher education experience, and average weekly hours of independent study). All statistical analyses were performed using SPSS version 24 (IBM Corporation, 2016). The level of statistical significance was set at $p < 0.05$, and effect sizes were reported as standardized β weights.

Ethics

The study was conducted according to ethical guidelines for research (World Medical Association, 2008). At the two respective universities, the researchers (first and last author) informed the participants about the study's aims and procedures, and all of the participants provided a written consent form. The participant information emphasized that the collected data would be analyzed at an aggregated group level. In addition, to minimize the risk of coercion, it was emphasized that participation in the study was optional. No benefits were related to individuals' participation, and conversely, no disadvantages were related to non-participation. The study received approval from the Norwegian Data Protection Official for Research (project number 49433).

Results

Sample Characteristics

The sample characteristics are shown in Table 1. The mean age of the sample was 24.5 years, and the participants studying in Oslo were significantly older than their counterparts studying in Trondheim ($p < 0.01$). About one in five of the participants were men. More than half of the students (56.8%) had paid work, and half of them (49.5%) had higher education experience prior to starting the occupational therapy education course. The participants reported that they spent about 10 hr self-studying during a typical week. The participants' average grades were between *good* and *very good* (mean score 4.3), with significantly better grades reported among the students from Oslo ($p < 0.01$).

Table 1
Sample Characteristics (n = 111)

Variables	All (n = 111)	Oslo (n = 47)	Trondheim (n = 64)	
<i>Age</i>	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>	<i>p</i>
Years of age	24.5 (6.0)	26.6 (7.9)	22.9 (3.3)	< 0.01
<i>Gender</i>	<i>n (%)</i>	<i>n (%)</i>	<i>n (%)</i>	<i>p</i>
Men	23 (20.7)	10 (21.3)	13 (20.3)	0.90
Women	88 (79.3)	37 (78.7)	51 (79.7)	
<i>Work</i>	<i>n (%)</i>	<i>n (%)</i>	<i>n (%)</i>	<i>p</i>
In paid work	63 (56.8)	26 (55.3)	37 (57.8)	0.79
Not in paid work	48 (43.2)	21 (44.7)	27 (42.2)	
<i>Education</i>	<i>n (%)</i>	<i>n (%)</i>	<i>n (%)</i>	<i>p</i>
Prior higher ed.	55 (49.5)	24 (51.1)	31 (48.4)	0.79
No prior higher ed.	56 (50.5)	23 (48.9)	33 (51.6)	
	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>	<i>p</i>
Weekly hours of independent studying	10.3 (6.5)	9.9 (6.3)	10.6 (6.7)	0.56
Average grade	4.3 (0.7)	4.5 (0.7)	4.1 (0.6)	< 0.01

Note. Statistical tests are Chi-square tests (for categorical variables) and independent *t*-tests (for continuous variables). Hours of independent studying are average number of hours spent during a typical week. Average grade is a continuous variable rated 1 to 6, where 1 = fail and 6 = best grade.

Factors Associated with Academic Performance

The results from the regression analysis are shown in Table 2. Age and gender accounted for 12.0% of the variance in the students' academic performance, with a higher age being independently and significantly associated with a better average grade ($\beta = 0.36$, $p < 0.001$). An additional 4.4% was explained by including work, prior higher education experience, and hours of self-studying in the second model, and having prior higher education experience was independently and significantly associated with a poorer average grade ($\beta = -0.20$, $p < 0.05$).

Table 2
Hierarchical Linear Regression Analyses Showing Variables Independently Associated with Academic Performance in the Sample (n = 111)

Independent variables	Academic performance	
	β	<i>p</i>
Age	0.36	< 0.001
Gender	0.14	0.14
Explained variance	12.0 %	< 0.01
Work	0.03	0.75
Prior higher education	-0.20	< 0.05
Time on independent studying	0.09	0.37
R² change	4.4 %	0.16
Explained variance	16.4 %	< 0.01
Durbin-Watson	2.03	

Note. Table content is standardized β weights, showing the independent variables' association with academic performance while controlling for all variables in the model. Coding: 0 = men, 1 = women; 0 = not in paid work, 1 = in paid work, 0 = not having prior higher education, 1 = having prior higher education. For all other variables, higher scores indicate higher levels.

* $p < 0.05$. ** $p < 0.01$.

Discussion

Among the students in this sample, a higher age was associated with better academic performance, which is in line with studies in occupational therapy (Bonsaksen et al., 2017) and

across disciplines (Richardson et al., 2012; Zeegers, 2001). However, having previous experience from higher education was associated with poorer academic performance among the students. Considering previous studies employing these variables in models for predicting academic performance among occupational therapy students (Shanahan, 2004), this result was unexpected.

Bonsaksen (2016) assumed clustered relationships between being older, having previous higher education experience, and having formed stable relationships in life. In relation to academic performance, however, the main effect from having previous academic experience would decrease the initial (bivariate) effect of age. This reasoning was in agreement with Shanahan's (2004) findings. With the present sample, the situation was quite different. In the multivariate analysis, higher age remained a significant predictor of better academic performance, whereas there was a reversed effect of previous higher education experience. Some issues should be considered when interpreting these results.

It appears that a higher age may be a resource for performing well academically, and not solely because of its possible link to previous higher education experience. Students of a higher age may have stronger motivation for studying, as well as a more productive approach to studying; that is, they may employ more deep and strategic approaches rather than surface approaches, as suggested from previous research (Beccaria, Kek, Huijser, Rose, & Kimmins, 2014; Richardson, 2005; Salamonson et al., 2013; Wickramasinghe & Samarasekera, 2011). A higher age may also be linked to life experience in general (Zeegers, 2001). That is, persons of a higher age may personally, or by their relationships to others, have experience with illness and recovery, failure and success, and/or loneliness and companionship in a range of settings and domains. Having more experience with the bright and the dark sides of life, and having reflected on and learned from that experience, may place the older student in a favorable position to discuss clinical situations in a broader perspective. Assessment of academic assignments places emphasis on the student's ability to apply a variety of theoretical perspectives to a given situation (Havnes & Raaheim, 2006; Oslo and Akershus University College of Applied Sciences, 2011). As a consequence, an older student may benefit from life experience and thereby achieve good results.

The effect of previous higher education experience may depend on the level of similarity between the previous education program and the currently undertaken occupational therapy program. One may assume that a high degree of similarity between the previous line of study and the current one will ease the student's transition into occupational therapy education and its expectations, and that it will assist the student in transferring the previous experience to the new situation. Such a transfer of experience appears to be necessary to draw actual benefit from the experience. According to the cognitive taxonomy of learning (Burwash & Snover, 2016), the transfer and application of experience corresponds with a mature level of learning. It may be that those with previous higher education experience feel the expectations they are faced with in the current study program are different from what they have experienced before. In addition, students who have been used to studying independently at a discipline course at a university may not appreciate the alternative modes of teaching (e.g., group work, problem-based learning, skills training) and assessment commonly used in occupational therapy education (Norwegian University of Science and Technology, 2012; Oslo and Akershus University College of Applied Sciences, 2011). If any of the above is the case, then their previous experience may hinder their performing well academically in the occupational therapy program, rather than prepare them for academic success.

Implications

This study suggests that a higher age is a resource for performing well academically. Older students may have stronger motivation, employ more productive learning strategies, and have more

life experience compared to younger students (Beccaria et al., 2014; Kreber, 2003; Shanahan, 2004; Zeegers, 2001), all of which can place them in a favorable position. In general, as the occupational therapy classroom is filled with young students, often in their early twenties (Bonsaksen et al., 2016; Brown et al., 2011; Brown et al., 2016), the academic environment in the class may be improved if older students are invited more often to share their views and particularly their way of reasoning. In turn, using more such resources of older students may lead to improved learning and academic outcomes even for younger students.

Previous higher education experience may also be an asset, providing the occupational therapy student with resources that can prove beneficial for his or her later academic performance (Bonsaksen, 2016; Shanahan, 2004). However, if the previous and the current lines of study are different, then having previous higher education experience may be a drawback for the student. This study indicates that students who have previous higher education experience may benefit from discussing their prior educational experiences in light of their expectations toward the occupational therapy curriculum, and in light of how they perceive their current study situation. If such discussion can provide some relief from frustrations, adjust maladaptive expectations, and help create a positive collaboration between the student and the teacher, the student may be helped during what can be a difficult transition period.

For future research, the study implies that associations between age, prior higher education experience, and current academic performance should be investigated in a longitudinal perspective. For example, Bonsaksen's (2016) study used a sample drawn from all three year cohorts, whereas the current study used a sample of second-year students only. In fact, as the data for this study was collected during the autumn semester, the students in this sample estimated their academic performance solely based on the exams they had completed during the first year of study. Thus, a hypothesis for future studies may be that previous higher education experience may at first give rise to problems with adjustment: adjustment to a new educational culture, a new set of expectations, and/or to new methods of teaching. Gradually, though, when the transition problems are resolved, the previous higher education experience may transform into a valuable resource for the student's learning and performance.

Strengths and Limitations

The study had a cross-sectional design, so we are generally unable to draw any inferences concerning cause and effect relationships. However, the timeline precludes age and prior experience to be caused by the students' academic performance in the present. The sample size was relatively small, and only five independent variables were controlled for in the multivariate analysis. Thus, the influence from other factors may have played a part in producing the results. The regression model explained only a modest amount of variance in academic performance. This suggests that future research should employ larger samples and a larger and more varied set of independent variables. It is acknowledged that occupational therapy education has three entry levels (bachelor, master, and doctoral level); however, comparisons across these three levels were beyond the scope of this investigation. Thus, caution should be exercised if the study results are applied to education programs concerned with master's or doctoral level students. Future studies may also investigate predictors of occupational therapy students' academic performance in a longitudinal perspective.

Conclusion

Occupational therapy students of a higher age may have life experience that easily translates into good academic results in occupational therapy courses, and they may represent an under-used resource for improving the academic climate and understanding subsequent exam results among undergraduate occupational therapy students. However, prior higher education experience from

disciplines other than occupational therapy that have different expectations of students may hinder good academic performance in occupational therapy courses. Future studies are needed to investigate predictors of academic performance in a longitudinal perspective and to investigate the role of age and previous higher education experience in relationship to the students' year of study.

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