Predictors of General Self-Efficacy and Self-Esteem in Occupational Therapy Students:

A Cross-Sectional Study

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ABSTRACT.

A national survey reported college students showed higher risk of mental health problems than the general population. Using self-efficacy and self-esteem as indicators of mental health, this study explores sociodemographic, relational, educational, and work factors associated with these outcomes. A sample of 148 occupational therapy students in Norway participated, and data were analyzed with multiple linear regression. Factors associated with positive self-efficacy and self-esteem were higher general satisfaction with education program, amount of time spent on self-study and being male. Implications are attention towards female students' self-perceptions, improving the learning environment, and encouraging students to do more self-study.

KEYWORDS. Self-esteem, general self-efficacy, mental health, education, students

Introduction

In Norway, there has been an increase in students' mental health problems over the last few years. The latest national survey on students' health and thriving (the SHoT survey) (Nedregård & Olsen, 2014), including data from more than 13.000 students, showed that 19 % of the students reported serious complaints about their mental health. Compared to the general population, this is twice the proportion reporting mental health complaints. Female students had twice the risk of reporting mental health problems when compared to male students. In addition, the risk of experiencing mental health problems in combination with poor coping with the student role was higher among single students, students with briefer experience in higher education, students with low self-esteem, and students spending less time studying (Nedregård & Olsen, 2014). Internationally, sources have increasingly acknowledged the need for attention to mental health issues among students in higher education (O'Brien et al., 2008), to an extent that specific intervention programs have been reviewed and evaluated (Conley, Durlak, & Dickson, 2013; Reavley & Jorm, 2010).

The large Norwegian SHoT survey indicates that students' mental health problems are related to a variety of factors, including the students' sociodemographic background – gender in particular – in addition to less stable personalities and factors related to the educational context itself. It appears that the gender differences are not unique to Norway. An American study assessed mental health in medical students, and found that anxiety, depression, and eating disorders were more prevalent among the female participants (Ghodasara, Davidson, Reich, Savoie, & Rodgers, 2011). Problems related to drug and alcohol use, however, were more prevalent among the male students. With regard to personality factors, a multi-site study of 9.500 American college students found that a stable and mature identity, as well as a measure of moral identity, predicted a range of health outcomes (Hardy et al., 2013). Personality characteristics like conscientiousness, high self-esteem (Doherty & Nugent, 2011)

and self-efficacy (Richardson, Abraham, & Bond, 2012) have also been found to relate to academic performance.

One factor not addressed in the Norwegian SHoT survey (Nedregård & Olsen, 2014) was the students' concurrent employment and their time spent working. A study comparing a sample of working people with a sample of people on long-term sick leave found significantly higher self-efficacy levels in the working sample (Labriola et al., 2007). Similarly, in a sample of persons with chronic illness, those who were working showed a more favorable trajectory of self-efficacy over time (Bonsaksen, Fagermoen, & Lerdal, 2014). This may indicate a positive effect of work on self-efficacy, in line with Bandura's (1997) view of successful performance in activities as the main source of self-efficacy beliefs. For students in an educational context, however, it may rather be that extensive work participation detracts from their participation in, and mastery of, study-related tasks and assignments. Thus, in this specific context, work may also affect self-efficacy negatively.

Summarizing, the literature is consistent about the higher risk of mental health problems in students compared to the general population. Moreover, there seems to be a consistent pattern of linking female students with a higher risk of mental health problems compared to males, whereas other influencing factors need further exploration. To date, articles in occupational therapy journals have focused largely on occupational therapy students' personal learning process and their attitudes toward mental health problems in others (e.g., Beltran, Scanlan, Hancock, & Luckett, 2007; Bonsaksen, Granå, Celo, Ellingham, & Myraunet, 2013; Graessle, 1997; Penny, 2001), whereas factors related to the students' own mental health have been largely overlooked. Given their relationships with both mental health and academic performance, general self-efficacy and self-esteem are highly interesting variables to explore in occupational therapy students.

Purpose

The present study explores factors related to sociodemographic background, relationships, education, and work associated with general self-efficacy and self-esteem in occupational therapy students. An overview of the proposed model is provided in Figure 1.

[Figure 1 about here]

Methods

Study Design and Ethics

In this cross-sectional design study, data related to general self-efficacy, self-esteem, education, work, and sociodemographic factors were collected by questionnaires in January 2015. Approval from the Norwegian Data Inspectorate for the Social Sciences was obtained as required, and informed written consent was received from all participants.

Sample and Data Collection

The sample was recruited early in 2015. All students in the three cohorts enrolled in the undergraduate occupational therapy program in Oslo were given verbal and written information about the study and invited to participate. Out of a total number of 245 eligible students at the time of the data collection, 160 (65.3 %) gave their consent to participate. Those who consented completed the questionnaires and returned them in a sealed envelope.

Persons with missing responses on the self-esteem scale, or with missing responses on categorical variables, were excluded from the sample. Missing data up to 20 % on the self-efficacy scale was considered acceptable, and missing item scores were replaced with the mean value of the person's valid scores. Following this procedure, 12 persons were excluded, leaving a total sample of 148 participants for this study.

Measures

Both outcome measures (the general self-efficacy scale and the self-esteem scale) had been translated into Norwegian and validated before being used in this study. All the data used in the study were based on self-report.

Sociodemographic Background

Data for age (years), sex (male = 1 *versus* female = 2) and ethnicity (Norwegian = 1 *versus* other than Norwegian = 2) were collected.

Relationships

Data concerning the students' relationships were collected with two variables. These variables classified the students as living with a spouse or partner (1) or as not living with spouse or partner (0), and as living with children (1) or as not living with children (0).

Education Factors

The occupational therapy program in Oslo has three years duration after which the students obtain a bachelor's degree. Traditionally, there has not been much ethnic diversity among the students, and all eligible students are required to speak and write Norwegian (alternatively Swedish or Danish), given that all classes are taught in Norwegian.

Each participant was registered as belonging to one of the three cohorts involved (1st year student = 1, 2nd year student = 2, and 3rd year student = 3). Educational priority was registered as having occupational therapy as the prioritized education choice at the time of starting the course (1) or having some other education as the priority choice (2). Similarly, previous higher education experience was dichotomized into two categories; having prior education from university or college (1) *versus* not having any prior education in university or college (2). The average number of weekly hours spent on self-study was registered as a continuous variable. The level of general satisfaction with being a student in the occupational therapy education program was categorized as very poor (1), poor (2), neither good nor poor (3), good (4), and very good (5). Student performance was registered as the grade average

based on completed exams so far in the education program, and was categorized as highest

grade (1), very good (2), good (3), adequate (4), pass (5), and fail (6).

Work Factors

Paid work was registered as the average number of weekly working hours (a continuous

variable).

Personal Factors

The *Rosenberg Self-Esteem Scale* (RSES; Rosenberg, 1965) was used to assess

participants' global self-esteem. The original RSES consists of ten statements with responses

ranked from 1 (strongly agree) to 4 (strongly disagree). Our study used a Norwegian

abbreviated 4-item version (RSES-4), selected according to linear regression analysis and

showing high correlation ($r = 0.95$) with the full 10-item version (Tambs & Røysamb, 2014;

Ystgaard, 1993). The sum score on the RSES-4 ranges from 4 to 16, with higher score

representing higher self-esteem. Cronbach's α was 0.67 for this study, which is lower than the

internal scale consistency shown in other Norwegian studies (Bonsaksen, Fagermoen, &

Lerdal, 2014; Tambs, 2004).

The *General Self-Efficacy Scale* (GSE) (Schwarzer & Jerusalem, 1995) measures

optimistic self-beliefs related to coping with challenges and demands in life. The scale

consists of 10 items rated on a scale from 1 (not at all true) to 4 (exactly true), and a sum

score is calculated for each individual. The score range is 10-40, with higher scores indicating

higher general self-efficacy. High correlations with self-appraisal, self-acceptance, and

optimism indicate theoretical accuracy of the concept (Posadzki, Stockl, Musonda, &

Tsouroufli, 2010), and psychometric studies of the GSE have consistently produced a one-

factor solution (Bonsaksen, Kottorp, Gay, Fagermoen, & Lerdal, 2013; Leganger, Kraft, &

Roysamb, 2000). Internal consistency of the GSE scale in the present sample was Cronbach's

$\alpha = 0.86$. This is lower than in another Norwegian study with the GSE (Bonsaksen et al.,

2014), but nonetheless considered very good (Fayers & Machin, 2007).

Statistical Analyses

Initially, descriptive analyses were performed on all included variables. Differences

between men and women in the sample were examined with the Chi-square or the

independent *t*-test as appropriate. Pearson's coefficient *r* was used for bivariate correlation

analysis. In the subsequent hierarchical linear regression analyses, independent predictors of

general self-efficacy and self-esteem were assessed. The models also assessed the amount of

variance these factors accounted for by each block in the model, structured as 1)

sociodemographic background (age and sex), 2) relationship factors (living with spouse or

partner), 3) education factors (cohort, education priority, educational experience, weekly

hours of self-study, satisfaction with study program, and student performance), and 4) work

factors (weekly hours of paid work). The level of statistical significance was set at $p < 0.05$

and all tests were two-tailed. Effect sizes were calculated as standardized β coefficient and as

Cohen's *d*. Standardized $\beta > 0.30$ and Cohen's $d > 0.50$ were considered medium sized

effects, and therefore important (Cohen, 1992). Data were analyzed using IBM SPSS

Statistics for Windows, Version 22.0 (IBM Corp., 2013).

Results

Sample Characteristics

The sample is described in Table 1. Fifty-three participants were 1st year students (10

men and 43 women), 49 participants were 2nd year students (12 men and 37 women)**.** Forty-

six were 3rd year students (nine men and 37 women). Compared to the female participants, the

male participants spent less time on self-study, they spent more hours in paid work, and they

had higher self-esteem and higher general self-efficacy. These results were all statistically

significant and showed large effect sizes.

[TABLE 1 ABOUT HERE]

Bivariate Associations with General Self-Efficacy and Self-Esteem

The bivariate relationships between general self-efficacy, self-esteem, and each of the

other included variables are shown in Table 2. Two variables – male sex, and being more

satisfied with the occupational therapy program – were significantly associated with having

higher general self-efficacy. The same variables showed statistically significant associations

with higher self-esteem. In addition, students who had higher general self-efficacy also had

higher self-esteem ($r = 0.56$, $p < 0.001$).

[TABLE 2 ABOUT HERE]

Multivariate Associations with General Self-Efficacy and Self-Esteem

The results from the hierarchical regression analyses are shown in Table 3. Controlling

for all other variables in the model, male sex and being more satisfied with the occupational

therapy program were both directly associated with higher general self-efficacy scores and

with higher self-esteem scores. Spending more hours on self-study was significantly related to

higher self-esteem, and was borderline related with higher general self-efficacy. The final

models explained 18.9 % of the variance in general self-efficacy, and 22.6 % of the variance

in self-esteem, respectively.

[TABLE 3 ABOUT HERE]

Discussion

This study explored factors related to sociodemographic background, relationships, education, and work, and their associations with general self-efficacy and self-esteem in a sample of occupational therapy students in Norway. Male sex was directly associated with higher general self-efficacy and higher self-esteem, as was higher satisfaction with the occupational therapy education program in general. Spending more hours on self-study was directly related to higher self-esteem, and showed a similar trend towards being associated with higher general self-efficacy.

Predictors of General Self-Efficacy and Self-Esteem

The most important effect detected was that of sex – being male was associated with higher general self-efficacy and with higher self-esteem. This finding concurs with both American (Ghodasara et al., 2011) and Norwegian studies (Moksnes & Espnes, 2012; Nedregård & Olsen, 2014) comparing self-esteem and mental health of male and female students. In line with the reasoning in the ShoT survey (Nedregård & Olsen, 2014), we may consider general self-efficacy and self-esteem as closer to the person's experience, compared to more distal, general measures of mental health. Following this view, mental health includes specific aspects of a person's view of self. These include feeling like a person of worth (self-esteem) and feeling that one is generally competent and able to cope with daily tasks and challenges (general self-efficacy). The present study has shown that male students had higher levels of general self-efficacy and higher self-esteem, when compared to female students. As these factors appear to be indicators, possibly even some of the working mechanisms, of better mental health, the results point to the possibility that female students may be more at risk of experiencing poorer mental health. A similar argument was used by Bonsaksen (2012) who analyzed quality of life differences between men and women with severe mental illness.

The association between sex and quality of life was weakened when controlling for depression levels, suggesting that the initial association was mediated by depression. A similar model may be proposed to the results of the present study – male students may have better mental health than females because of their higher levels on the indicator variables (general self-efficacy and self-esteem).

A range of variables related to the education domain were assessed, but only two were significant predictors of outcome. The first was related to the students' general satisfaction with the occupational therapy course – those who were more satisfied with the course showed higher scores on both outcome measures. It is possible that this association can be explained with reference to a general positive approach to life and events among these students. Persons who are generally optimistic and content with life may tend to be happy about themselves *and* about their environment. It is, however, also possible that satisfaction with the occupational therapy program is unrelated to general life satisfaction, but such a view does concur with a review of personality factors related to success in medical school. A factor like "conscientiousness" was considered important for "getting ahead", whereas factors like extraversion, openness, and sociability were considered important for "getting along" (Doherty & Nugent, 2011). Students who "get along" may be more prone to feel satisfied about their current line of study, as well as feel good about themselves. Alternatively, the relationship between the variables may be directional, perhaps even cyclical: Students who are content with who they are and feel generally competent may be well placed to make a positive contribution to the learning environment. In turn, a positive learning environment that increases students' satisfaction with the course, may add to students' feelings of being competent and of value.

Interestingly, there was also a relatively small, but statistically significant effect related to self-study. Students who spent more time on self-study showed higher scores on the

self-esteem measure (with a similar, borderline significant trend for the general self-efficacy measure). Thus, in one sense, women may counteract their gender-based tendency of lower self-esteem and lower general self-efficacy by increasing the time they spend on self-study. This strategy may not be an appropriate option for the women who have children living at home, but for the larger proportion not living with children (90 %), this might be one route to improved self-perceptions.

The findings resonate with previous research on identity and health in college students. Persons with a firm identity formation, encompassing the making of and sticking to commitments, showed less anxiety and depression symptoms and less hazardous alcohol use, but higher levels of self-esteem (Hardy et al., 2013). It seems reasonable that self-study at home is one expression of having made a commitment towards oneself as a student. Thus, a firm identity as a student, and consistently performing the occupations related to a student role (which could include spending time on self-study), seems to be positively related to these students' self-esteem.

In spite of the small and only borderline significant effect size, the findings are also in line with Bandura's (1997) view of how self-efficacy develops: A student who invests time and effort in self-study may more easily become familiar with the study materials and learn from them. The student who learns is successful, and attributing success to effort put forth is considered a most important source of self-efficacy. This resonates with previous research in other areas. For example, a study of persons with morbid obesity found that those who were more physically active also had higher general self-efficacy (Bonsaksen, Lerdal, & Fagermoen, 2012). The logic of this association is similar: Persons with morbid obesity who want to lose weight and increase their health and fitness probably need to increase physical activity. Those who perform more physical activity are doing the right thing, and they know it – and thus their feelings of competence increase. Moreover, increased self-efficacy has also

been associated with increased self-esteem in two different illness groups (Bonsaksen, Fagermoen, & Lerdal, 2015), and the strength of associations (r ranging from 0.60 to 0.64) were similar to the strength of association shown in this study ($r = 0.56$). Although conceptually distinct, general self-efficacy and self-esteem therefore appear to be closely related concepts. This may also contribute to explaining the very similar associations between the independent and the dependent variables used in this study.

Study Limitations and Directions for Future Studies

A cross-sectional study design was used, and therefore, no causal effects between the variables should be inferred. The relationships shown in the study may be of a bi-directional or even cyclical nature – for example, hours of self-studying may translate into good grades and a positive sense of self and one's capabilities as a student. Such feelings about oneself may in turn lead the students to place more efforts on self-study.

The internal consistency of the self-esteem scale was not optimal with this sample. Usually, a scale consistency of at least 0.70 is considered appropriate (Streiner & Norman, 2008). When evaluating the results for self-esteem, this lower scale reliability should be taken into consideration. All the data used in this study were based on self-report. Although we have no reason to question the accuracy, future studies relying more on objective data, or data derived from several sources, might serve to support or challenge our findings. Direct measures of mental health should also be used as outcome measures, in addition to measures assessing possible mediating variables. Lastly, only a moderate amount of variance in the outcome measures was explained by the included independent variables. In essence, this means that future studies may look towards other factors that may better explain issues related to students' mental health.

Conclusion and Implications

Being male, being generally satisfied with the occupational therapy education program, and spending more time on self-study were all significantly associated with the study outcomes, in this study conceptualized as general self-efficacy and self-esteem. Given the close relationships between these outcomes and mental health, the results imply that a general attention to female students' self-perceptions is warranted. The effect of course satisfaction is interesting and may indeed warrant closer investigations of the factors of importance for students' satisfaction and thriving at the university. Lastly, students may be more firmly assisted in identifying with the student role, with which the aspect of self-study should be highlighted.

Conflict of Interest

The author reports no conflicts of interest.

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TABLE 1

Characteristics of the Study Participants (N = 148)

Variables	Men (*n* = 31, 20.9 %)	Women (*n* = 117, 79.1 %)	*ES*	*p*
Sociodemographic factors	Mean (*SD*)	Mean (*SD*)		
Age	23.1 (2.0)	24.0 (4.7)	-0.25	0.13
	n (%)	*n* (%)		
Norwegian background	28 (90.3)	103 (89.6)		1.00
Relationship factors	*n* (%)	*n* (%)		
Living with spouse or partner	12 (38.7)	50 (42.7)		0.69
Living with children	0 (0.0)	12 (10.3)		0.07
Education factors	*n* (%)	*n* (%)		
Occupational therapy as first choice	16 (51.6)	69 (59.0)		0.46
Previous higher education experience	10 (32.3)	54 (46.2)		0.17
	Mean (*SD*)	Mean (*SD*)		
Weekly hours of self-study	7.3 (4.5)	9.8 (5.3)	-0.51	0.02
Satisfaction with education program	3.9 (0.5)	4.1 (0.7)	-0.33	0.31
Student performance	3.0 (0.9)	2.8 (0.8)	0.23	0.38
Work factors	Mean (*SD*)	Mean (*SD*)		
Weekly hours of paid work	10.6 (7.7)	7.3 (6.8)	0.45	0.02
Personal factors	Mean (*SD*)	Mean (*SD*)		
Self-Esteem	13.5 (1.5)	12.0 (1.8)	0.90	< 0.001
General Self-Efficacy	30.4 (4.1)	27.6 (5.0)	0.61	< 0.01

Note. Differences between men and women in the sample were examined with independent *t*-test, Chi-Square test, and Fisher's Exact test as appropriate. Effect sizes (ES) are provided as Cohen's *d*.

TABLE 2

Bivariate associations with General Self-Efficacy and Self-Esteem (N = 148)

Variables	General Self-Efficacy		Self-Esteem	
	r	*p*	*r*	*p*
Age	0.03	0.76	-0.02	0.82
Sex	-0.23	< 0.01	-0.34	< 0.001
Living with spouse or partner	-0.00	0.96	-0.09	0.30
Student cohort	0.09	0.26	0.09	0.29
Occupational therapy as first choice	0.14	0.09	-0.07	0.43
Previous higher education experience	0.05	0.52	0.09	0.28
Weekly hours of self-study	0.15	0.08	0.12	0.15
Satisfaction with education program	0.29	< 0.001	0.23	< 0.01
Student performance	-0.02	0.80	-0.02	0.86
Weekly hours of paid work	0.05	0.54	0.08	0.35

Note. Table content is Pearson's correlation coefficient *r*, and corresponding probability values *p*. Male = 1, female = 2. Occupational therapy as first choice = 1, not first choice = 2. Previous higher education experience = 1, not previous experience = 2. Higher satisfaction score is more satisfied, whereas higher student performance score is worse performance.

TABLE 3

Multivariate Hierarchical Regression Analysis with General Self-Efficacy and Self-Esteem as

Dependent Variables (N = 148)

Variables	General Self-Efficacy		Self-Esteem	
Sociodemographic	β	p	β	p
Age	0.01	0.88	0.01	0.89
Sex	-0.26	< 0.01	-0.39	< 0.001
Explained variance	4.8 %	0.03	11.9 %	< 0.001
Relationships				
Living with partner	-0.01	0.91	-0.06	0.49
R^2 change	0.0 %	0.84	0.8 %	0.26
Explained variance	4.9 %	0.07	12.6 %	< 0.001
Education factors				
Student cohort	0.09	0.29	0.13	0.12
OT as first choice	0.09	0.27	-0.09	0.25
Prior higher education	0.06	0.50	0.05	0.53
Hours of self-study	0.16	0.06	0.17	0.04
Satisfaction	0.28	< 0.01	0.22	< 0.01
Student performance	-0.00	0.98	0.03	0.69
R^2 change	14.0 %	< 0.01	9.9 %	0.01
Explained variance	18.9 %	< 0.01	22.6 %	< 0.001
Work factors				
Hours of paid work	0.02	0.85	0.01	0.88
R^2 change	0.0 %	0.85	0.0 %	0.88
Explained variance	18.9 %	< 0.01	22.6 %	< 0.001

Note. Table content is standardized β coefficients and corresponding probability values *p*, showing associations with the dependent variables controlling for all other variables in the model. Male = 1, female = 2. Living with partner = 1, not living with partner = 0. Occupational therapy as first choice = 1, not first choice = 2. Prior higher education = 1, no prior higher education = 2. Higher satisfaction score is more satisfied, whereas higher student performance score is worse performance.

FIGURE 1. A Model of Proposed Factors Associated with

General Self-Efficacy and Self-Esteem