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Healthcare Students' Approaches to Studying in Association With Self-Efficacy and Mental Health: Repeated Cross-Sectional Analysis

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ABSTRACT

There has been increasing concern about student mental health, self-efficacy, and their impact on approaches to learning. Little is known about how these three constructs relate and change over time. This is a second study exploring graduate occupational and physical therapy students' approaches to studying, mental health factors, self-efficacy, and changes in relationships between these factors over time. We found that higher self-efficacy was related to higher deep approach ratings, while higher mental health ratings were related to higher strategic approach ratings and lower surface approach ratings. Self-efficacy and mental health show relatively consistent associations over time with student approaches to learning.

KEYWORDS

Approaches to learning; self-efficacy; mental health

Introduction

In the past decade, many occupational therapy (OT) and physical therapy (PT) professional training programs in the United States have converted to the clinical doctorate level, increasing in intensity, often lasting 3 years, and requiring completed capstone or research projects (AOTA, 2019; Standards and Required Elements for Accreditation, 2020). Students must learn technical skills and also how to think critically, find evidence, and create new ideas for the complex healthcare needs of their patients (ACOTE, 2018; Commission on Accreditation in Physical Therapy Education, 2017). Perhaps not unexpectedly, there has been a significant rise in overall graduate student mental health issues, such as anxiety and depression (Allen et al., 2020; Evans et al., 2018). The recent worldwide public health crisis of COVID-19 appears to have compounded student mental health issues as well as impacted their sense of self-efficacy and the ways they approach studying (Browning et al., 2021; DaLomba et al., 2022; Li et al., 2020).

OT and PT students showed a decrease in strategic approaches to learning with a large effect size from their first to second years of graduate study, suggesting that students experiencing crises might need tailored support to organize their studying (DaLomba et al., 2022). Collectively, these issues present a clear need to identify and explore factors that influence student approaches to studying, self-efficacy, and mental health factors in graduate allied healthcare programs and how these may change over time.

Approaches to learning

Student approaches to learning (ATL) have been of interest to educators for some time. Martin and Saljo (1976) introduced the concepts of deep (i.e., searching for connections and deeper meaning in learning) vs. surface (i.e., rote memorization, unreflective) learning. With more exploration into student approaches, the third category of strategic learning (achievement-oriented, managing time and approach based on perceived demand of the situation) was added to the model (Entwistle, 2018). Research in higher education has vigorously explored the student studying process and its influences on it. Some effort has been aimed at enhancing deep approaches, as it is asserted that it may stimulate a lifelong learning mindset (Asikainen & Gijbels, 2017) and has been associated with academic success (Gasevic et al., 2017). DaLomba et al. (2022) found that students decreased their use of strategic approaches during the COVID-19 pandemic, becoming more reflective about their learning, but no longer-term information was reported in that study. In their systematic review of 43 ATL studies, Asikainen and Gijbels (2017) found no conclusive evidence that student approaches to learning develop or change over time. More data on OT and PT student approaches to learning over time are thus required.

Positive mental health

Traditional views of mental health have been primarily unidirectional, with the identification of signs and symptoms that lead to decreases in function or effectiveness. However, there is a movement toward a view of mental health that occurs on a spectrum of both positive and negative aspects, such as described by Keyes (2006). This is a key feature of the World Health Organization's (WHO) definition of mental health as well-being that comprises effective coping, contributing to one's community, working productively, and realizing one's potential (WHO, 2005). Positive mental health factors can mitigate emotional distress (Grant et al., 2013; Keyes et al., 2010) and are correlated with student academic success (Antaramian, 2015). Understanding the nature of the relationship between positive

mental health and student ATLs may inform more effective educational processes.

Self-efficacy

Self-efficacy is defined as one's belief in their ability to organize and execute actions to reach specific goals (Bandura, 1997). Academic self-efficacy, therefore, is broadly defined as one's competence and/or belief in their ability to organize and meet academic challenges (Bandura, 1997; Schunk & Ertmer, 2000). Higher self-efficacy has been found to correlate with increased academic performance in higher education students (Brady-Amoon & Fuertes, 2011; Putwain et al., 2013). More specifically, higher self-efficacy showed positive correlations with increased clinical performance in PT students (Jones & Sheppard, 2011). Higher reported self-efficacy has been linked to higher scores in positive mental health and in the use of deep and strategic studying approaches in graduate OT and PT students (DaLomba et al., 2021). The relationships among self-efficacy, mental health factors, and learning approaches over time remain under-explored in allied health students. If relationships between these variables change over the course of the study, this might indicate that the impacts of mental health and self-efficacy on students' learning approach vary according to study progression. Uncritically assuming stable relationships among variables over time may limit educator effectiveness and efficiency in planning and teaching.

Study aim

Conducted as a follow-up study with a cohort of healthcare students surveyed 1 year previously, this study aimed to assess whether associations among self-efficacy, mental health, and approaches to studying were consistent over time in this same cohort, but in their second year of study. Our research question was the following: Are associations among positive mental health, perceived self-efficacy, and students' learning approaches stable across time?

Methods

Study design and commencement

This cross-sectional survey design study was conducted in the fall of 2020. Applying the identical set of questionnaires and analyses used with the same sample 1 year previously, we explored the degree to which associations

between approaches to studying, general self-efficacy, and mental health were consistent or changed over time.

Participants and recruitment

All methods were carried out in accordance with relevant guidelines and regulations. Informed consent to participate was obtained after institutional review board committee approval. In this study, the participants were in their second year in the doctoral OT and PT education programs at a health sciences university in California. Students were recruited in their classrooms by author SJ, a student health representative. The students were encouraged to ask questions about the study and procedures and were assured of their anonymous participation. All students had bachelor's degrees or higher upon entry.

Data collection

The Approaches and Study Skills Inventory for Students short version (ASSIST) is an 18-item self-report questionnaire that identifies student approaches to learning and studying in higher education and measures student engagement in deep, surface, and strategic learning approaches (Entwistle, 2018; Entwistle et al., 2013; Tait et al., 1998). Participants rate the degree to which they agree or disagree with statements on a scale from 1 (disagree) to 5 (agree). Six items pinpoint student preference for each approach: surface, deep, and strategic. While the short ASSIST has undergone less psychometric testing compared with the full 52-item version, evidence from Norway suggests that the structure of the scales is as theoretically proposed and that scale items have good internal consistency (Bonsaksen, 2018). However, as somewhat diverging psychometric results have been found in other contexts, researchers have been advised to consider the validity and reliability of the scales before their use (Bonsaksen & Breen-Franklin, 2019). In our study, the scale structure was as theoretically proposed, with 6 items loading on the deep, strategic, and surface approach scales, respectively. However, the reliability of the deep approach scale improved when omitting item 12. As a result, a 5-item scale was used to measure the deep approach to studying. After this adjustment, the internal consistency (Cronbach's α) was 0.66 (mean inter-item correlation, 0.30) for the deep approach scale, 0.78 (mean inter-item correlation, 0.38) for the strategic approach scale, and 0.72 (mean inter-item correlation, 0.29) for the surface approach scale.

The General Self-Efficacy Scale (GSE) is a 10-item questionnaire for measuring general self-efficacy, with scores positively correlating with

optimism and work satisfaction and negatively correlated with depressive and anxious thoughts, stress, and burnout (Schwarzer & Jerusalem, 1995). Participants respond to each item (a positively phrased statement) on a 4-point Likert scale: 1 (not at all true) to 4 (exactly true). Scores range from a minimum score of 10 to a maximum score of 40, with higher scores indicating higher levels of self-efficacy. Previous studies have consistently produced a one-factor solution, implying that all items function as indicators of only one underlying dimension, and high internal consistency (>0.80) between items. In our study, a preliminary factor analysis reproduced the one-factor solution and internal consistency (Cronbach's α) for the GSE scale was 0.82 (mean inter-item correlation, 0.30) (Bonsaksen et al., 2019; Juarez Acosta & Contreras, 2008; Scholz et al., 2002).

The Mental Health Continuum-Short Form (MHC-SF) questionnaire is a 14-item self-report tool used to identify positive mental health factors by focusing on emotional, psychological, and social well-being (Keyes, 2009). Emotional well-being items measure constructs, such as happiness, interest in life, and life satisfaction. Social well-being items assess perceptions of social integration, social actualization, social acceptance, and social coherence. Psychological well-being items measure self-acceptance, environmental mastery, positive relations with others, personal growth, autonomy, and purpose in life. Items are rated on a 6-point Likert scale that ranges from 1 (never) to 6 (every day). Previous studies have yielded varying factor structures—while some have supported the theoretically proposed three-factor structure separating among constructs of emotional, social, and psychological well-being (Lamers et al., 2011), others have supported the use of one general underlying dimension (Silverman et al., 2018; Söderqvist & Larm, 2021) suggesting that all items serve as indicators of one broad "mental health and well-being" construct. The internal consistency of the total scale is >0.80 (Guo et al., 2015; Rafiey et al., 2017). In our study, the one-factor solution was confirmed by factor analysis, and internal consistency (Cronbach's α) for the MHC-SF scale items was 0.96 (mean inter-item correlation, 0.64).

Statistical analysis

Data analysis was completed using SPSS® version 26 (IBM Corporation, 2019). Scale reliability was assessed using Cronbach's alpha and mean inter-item correlations (Briggs & Cheek, 1986; Streiner, 2003; Streiner & Norman, 2008). Descriptive statistics were used for all variables: frequencies and percentages for categorical variables (age group, gender, and education program) and means and standard deviations for continuous variables (scales). Group differences in scale scores were examined with

independent-samples t tests. Linear regression analyses, identical to the analyses run 1 year previously, were used (DaLomba et al., 2021). In these analyses, each of the study approach scales was used as dependent variables in separate models, while education program, general self-efficacy, and mental health were included as independent variables. Coefficients of determination (explained variance; r^2) were used to determine the accuracy of predictions made using the regression analyses. Standardized beta weights were used as effect size, interpreted as small (about 0.10), medium (about 0.30), and large (about 0.50), according to Cohen (1992). Statistical significance was set at $\alpha < 0.05$.

Results

Sample characteristics

Fifty-two students (response rate of 60.5%) completed the study. They were 28 (54%) OT students and 24 (46%) physiotherapy students. Among them, 26 were younger than 30 years, whereas 12 were 30 years or older. Twenty-nine were women and nine were men. Fourteen participants did not state their age group and gender.

Scores on the study approach scales, general self-efficacy, and mental health are displayed in Table 1. There were no statistically significant differences between students in the two education programs, although the difference in mental health was of medium size.

Associations among self-efficacy, mental health, and study approaches

The results from the regression analyses are displayed in Table 2. Higher ratings on general self-efficacy were associated with higher deep approach ratings ($\beta = 0.33$, $p < 0.05$), and the full model explained 14.6% of the variance in deep approach ratings. Higher mental health ratings were associated with higher strategic approach ratings ($\beta = 0.32$, $p < 0.05$), and the full model explained 16.8% of the variance in strategic approach ratings.

Table 1. Characteristics of the Study Sample

Characteristics	Total ($n = 52$)	OT students ($n = 28$)	PT students ($n = 24$)	p	Cohen's d
	M (SD)	M (SD)	M (SD)		
General self-efficacy	32.2 (3.6)	32.0 (3.7)	32.5 (3.6)	0.63	0.14
Mental health	57.3 (15.0)	54.5 (16.6)	60.7 (12.3)	0.14	0.42
Study approaches					
Deep approach	3.74 (0.73)	3.79 (0.60)	3.68 (0.87)	0.59	0.15
Strategic approach	3.76 (0.81)	3.79 (0.88)	3.73 (0.74)	0.79	0.07
Surface approach	2.48 (0.79)	2.48 (0.86)	2.49 (0.72)	0.96	0.01

OT = occupational therapy; PT = physical therapy.
Note. Statistical tests are independent-samples t test. Scores on general self-efficacy and mental health are sum scores, whereas study approach scores are mean scores.

Table 2. Associations With Deep, Strategic, and Surface Approach Scale Ratings ($n = 52$)

Independent variables	Study approaches		
	Deep	Strategic	Surface
Education program	−0.11	−0.12	0.12
General self-efficacy	0.33*	0.14	−0.18
Mental health	0.07	0.32*	−0.49**
Explained variance	**14.6%**	16.8%*	35.4%***

Note. Explained variance indicates the variance proportions of the dependent variable accounted for by the independent variables together. Education program coding: occupational therapy = 1; physical therapy = 2.
Bold value is not statistically significant.
*$p < 0.05$, **$p < 0.01$, ***$p < 0.001$.

Conversely, higher ratings on mental health were associated with lower surface approach ratings ($\beta = -0.49$, $p < 0.01$), and the full model explained 35.4% of the variance in surface approach ratings.

Discussion

This study repeated the cross-sectional analysis from 1 year prior, in which education program, general self-efficacy, and mental health were used as predictors of approaches to studying in doctoral-level healthcare students. The study showed that higher self-efficacy was related to higher deep approach ratings, while higher mental health ratings were related to higher strategic approach ratings and lower surface approach ratings. The results in this study compared to the previous one (DaLomba et al., 2021) support the notion that general self-efficacy and positive mental health show relatively consistent associations over time with student approaches to studying.

Studies that explore the relationship between self-efficacy and ATLs in graduate allied health students are rare and provided some of the motivation for its completion. However, our results seem in agreement with a few undergraduate studies. Bonsaksen et al. (2017) found that general self-efficacy was positively associated with both deep and strategic learning approaches. Hyytinen et al. (2018) found that freshmen science students with higher reported self-efficacy related to their learning were more likely to use deep learning approach behaviors, such as critical thinking. Further, Alt (2015) used a constructivist pedagogical model in an undergraduate classroom and found that students identified factors, such as reflecting on learning, concept investigation, and meaning-making (all deep learning approaches) as fostering the highest levels of self-efficacy. This may suggest reciprocity in the relationship between students' perceived self-efficacy and approaches to learning in that they might influence each other in self-strengthening cycles that may potentially be enhanced by instructor-facilitated deep approaches. While the first study showed that self-efficacy was positively related to the deep and strategic approaches and negatively related to the surface approach (DaLomba et al., 2021), this study only

revealed a significant and positive relationship between the students' self-efficacy and their deep approach ratings. However, all associations were in the same direction as in the previous study, lending support to the notion that associations between self-efficacy and learning approaches are relatively stable over time.

In this follow-up study, higher positive mental health ratings were significantly associated with a higher strategic approach and lower surface approach ratings. These findings augment the results of our study from 1 year previously (DaLomba et al., 2021), showing that lower levels of mental health were associated with higher surface approach ratings. Thus, while the relevance of mental health for healthcare students' learning approach appears to be relatively stable over time, mental health seems also to have an increasingly positive influence on students' learning approaches during the study program. Other studies exploring mental health factors and approaches to learning are also in line with some of our findings. A study by Milienos et al. (2021) of undergraduate students revealed general learner types. At the opposite ends of their groupings were *emotionally stable learners,* who are emotionally regulated, use a variety of cognitive strategies to learn, and are highly organized and motivated, while those termed *emotionally dysregulated learners* demonstrate low cognitive involvement in their learning, ambivalence toward learning, and anxiety. These reflect the characteristics seen in our study participants, namely that those with higher reported mental health factors tended to engage in strategic approaches and those with lower reported mental health were more disengaged with their learning and tended to use more surface approaches.

Limitations and future directions

Many factors affect the way students approach their learning, with this study examining only mental health and self-efficacy impact over time. However, this study adds to the information available to educators and academic researchers who may want to design interventions to enhance student learning. Both OT and PT educational guidelines demand that graduate students engage in higher-level thinking and critical/clinical reasoning (deep learning approaches). Studies show that formats such as problem-based learning (Dolmans et al., 2016) and flipped-classroom learning (McLean et al., 2016) evoke the use of a deep approach, but little evidence has been published in graduate allied health arenas. Despite our relatively consistent findings concerned with the relationships among students' self-efficacy, mental health, and learning approaches, these relationships were cross-sectional, and it remains unclear whether interventions to improve mental health factors or self-efficacy might lead to the use of more effective

learning approaches over time. Because this was not an intervention study, no attempt was being made to alter the student learning approach and no information on the learning environment or teaching style/formats was gathered to make develop any hypotheses about this. Longitudinal studies, in particular intervention studies aimed at improving students' mental health in the higher education context, might be a good opportunity to also investigate whether changes in self-efficacy and/or mental health are also reflected in changes in the learning approach.

This study comprised only 52 OT and PT students in a small health sciences university in California, USA; thus, its generalizability may be limited. It also took place at the beginning of the COVID-19 pandemic, and it is impossible to know how this may have impacted participant responses. Unexpectedly, instruction had converted to a predominantly virtual format at this time, the impacts of which could not be explored fully in this study. This was, however, explored at length in a separate analysis of the data (DaLomba et al., 2022). It may be important to explore whether those who engage in surface learning, have poorer mental health, and have lower self-efficacy complete their programs and/or pass national board exams at different rates than those who adopt strategic and deep approaches. Last, intervention studies with graduate OT and PT student populations are scant and are therefore greatly needed in the areas of student learning, mental health, and self-efficacy.

Conclusions

This study repeated the cross-sectional analysis completed 1 year earlier in which education program, general self-efficacy, and mental health were used as predictors of approaches to studying in doctoral-level healthcare students. In this follow-up study, higher self-efficacy was found to be related to higher deep approach ratings, while higher mental health ratings were related to higher strategic approach ratings and lower surface approach ratings. In combination with the previous study, the results of this study showed that general self-efficacy and positive mental health were relatively consistently associated with student approaches to studying. This study adds to the growing literature on graduate OT and PT student approaches to learning, self-efficacy, and mental health and can be helpful for educators to plan classroom activities and support students who use different learning approaches. Supporting students' self-efficacy and mental health may be important for their adoption of fruitful approaches to learning.

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Ethical approval

Informed consent to participate was obtained after institutional review board committee approval by the Institutional Review Board at Samuel Merritt University, Oakland, CA (IRB #19-022, June 2019).

Disclaimer

The view(s) expressed herein are those of the author(s) and do not reflect the official policy or position of Brooke Army Medical Center, the U.S. Army Medical Department, the U.S. Army Office of the Surgeon General, the Department of the Army, the Department of the Air Force, or the Department of Defense or the U.S. Government.

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Data availability statement

The data sets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

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