JCEPT
JOURNAL OF CLINICAL EDUCATION IN PHYSICAL THERAPY

ORIGINAL RESEARCH ARTICLE

Examining relationships between the clinical learning environment and clinical reasoning in physical therapy education

Sidney M. Stoddard[1]*, Lori Kupczynski[2] and Crissie Jameson[3]

[1]Department of Clinical Sciences, Georgia Southern University, Savannah, GA, USA; [2]Department of Educational Leadership & Counseling, Texas A&M University-Kingsville, Kingsville, TX, USA; [3]National University, San Diego, CA, USA

Abstract

***Purpose*:** Newly graduated physical therapists are expected to demonstrate high levels of clinical reasoning. Doctor of Physical Therapy (DPT) programs should ensure clinical education experiences foster clinical reasoning. Minimal evidence exists regarding factors that influence physical therapy clinical learning environments (CLE). The purpose of this study was to examine associations between factors DPT students perceive to impact CLE and students' self-efficacy in clinical reasoning.

***Methods*:** This quantitative exploratory correlational study electronically surveyed 45 graduate physical therapy students enrolled in their final year of DPT education programs upon completing their terminal clinical education experience. The Physical Therapy Self-Efficacy Scale and the abbreviated Clinical Learning Environment Inventory-19 (CLEI-19) were used to assess self-efficacy in clinical reasoning and perceived personalization, student involvement, task orientation, innovation, and student satisfaction in CLE, respectively. Inferential and descriptive statistics assessed the relationships between self-efficacy in clinical reasoning and the previously mentioned CLEI-19 factors.

***Results*:** Very weak to weak, positive relationships that were not statistically significant were identified between self-efficacy in clinical reasoning and perceived personalization ($r_s(43) = 0.21$, $P = 0.163$), student involvement ($r_s(43) = 0.14$, $P = 0.375$), task orientation ($r_s(43) = 0.03$, $P = 0.867$), innovation ($r_s(43) = 0.16$, $P = 0.286$), and student satisfaction ($r_s(43) = 0.28$, $P = 0.064$), respectively, in CLE.

***Conclusion*:** DPT programs can use this study to determine which factors in physical therapy CLE relate to self-efficacy in clinical reasoning. The results of this study can be used to guide future research in identifying perceived influential factors in physical therapy CLE.

Keywords: *clinical competence*; *self efficacy*; *clinical reasoning*; *physical therapy*; *clinical education*

Received: 12 July 2024; Revised: 28 May 2025: Accepted: 29 May 2025; Published: 4 November 2025

Physical therapy (PT) education programs are responsible for developing students into entry-level clinicians.[1] Core competencies emphasizing the necessary knowledge and actions for entry-level PT practice have been developed and incorporated into PT education programs.[2] Through the development of clinical reasoning skills, clinical education represents one essential component of PT education that prepares students to become clinically competent practitioners upon graduation.[2–5] Clinical reasoning is defined as the application of didactic knowledge and clinical experience in patient care problem-solving.[6] Previous research has identified clinical reasoning as the primary skill needed for students to function as entry-level practitioners.[7] By engaging in hands-on experiences within real-world clinical environments, students are provided the opportunity to translate theoretical knowledge into practical application, thereby honing their clinical reasoning and decision-making capabilities.[3,6]

Clinical education experiences are also influential in altering students' levels of self-efficacy.[8] Self-efficacy is defined as one's belief in their ability to succeed at a given task based on prior success in completing a similar task.[9] Self-efficacy plays a critical role in developing students' clinical reasoning skills in PT education.[10] PT students with high levels of self-efficacy in both the classroom and clinical settings experience increased

Citation: Journal of Clinical Education in Physical Therapy 2025, **7**: 12874 - http://dx.doi.org/10.52214/jcept.v7.12874

intrinsic motivation to succeed, improved academic outcomes, and elevated levels of task selection related to PT practice.[11,12] Self-efficacy in clinical reasoning has been shown to support developing students' cognitive processing and critical thinking in PT education.[10] Similarly, the role of specific self-efficacy in clinical reasoning in the clinical setting delivers improved task selection and outcome achievement related to students' clinical reasoning skills.[6] Decreased levels of self-efficacy in the clinical setting were associated with impaired clinical accuracy, decreased intrinsic motivation, and lower task selection.[6] Incorporating meaningful clinical education experiences in PT education improves students' clinical reasoning skills, increases their self-efficacy in clinical reasoning, and achieves the goal of practicing as quality entry-level practitioners.

The clinical learning environment (CLE) also plays a critical role in advancing healthcare students into safe, clinically competent entry-level practitioners through the facilitation of clinical reasoning skills.[6,7,13] Factors that influence the CLE are well documented in various healthcare disciplines.[14,15] While previous research in nursing education has identified innovation, personalization, involvement, task orientation, and student satisfaction as influential factors in the nursing-specific CLE, minimal evidence exists in the literature examining the relationship between the perceived quality of the CLE and clinical reasoning in PT students who completed a terminal clinical education experience.[14–17] For the purpose of this study, innovation is defined as the incorporation of modern educational opportunities utilizing advanced clinical treatments in the CLE, while personalization in the CLE focuses on the unique learning experiences between the student and the clinical facilitator.[15] Task orientation represents the overall clarity of the clinical education experience and student satisfaction is identified as the level of overall gratification students experience in the CLE.[14] Finally, involvement examines students' experiences during active participation in learning activities.[15]

Given the absence of known relationships between student-perceived factors that impact the CLE and clinical reasoning skills in PT students, PT education programs lack a true understanding of the role CLE plays in developing entry-level practitioners in PT practice. Understanding how student perceptions impact the CLE to ensure the provision of a high-quality clinical education experience provides one method of exploring the role of the CLE in PT education. The examination of factors found to be influential in the CLE of similar healthcare disciplines may help PT education programs better ensure the development of PT students into competent entry-level clinicians through clinical education experiences.

The purpose of this quantitative exploratory correlational research study was to examine the associations between the factors that PT students perceive to impact the quality of CLE and students' self-efficacy in clinical reasoning following the completion of a final clinical education experience in a Doctor of Physical Therapy (DPT) education program at an institution of higher education. By examining the relationship between the factors that PT students perceive to impact the quality of the CLE and self-efficacy in clinical reasoning, PT programs can ensure their clinical education programs are adequately preparing students to function as effective entry-level practitioners.

Methods

Research design

This study employed a quantitative exploratory correlational study methodology. Institutional Review Board approval was obtained from the researchers' academic institution and written permission to recruit participants was obtained from all involved institutions of higher education prior to participant recruitment.

Participants

Forty-five current PT students (27 females and 18 males) enrolled in their final year of graduate education in a traditional residential DPT education program at five institutions of higher education in Georgia were recruited for this study. Students who have completed their final clinical education experience were included due to the expectation that these students should be operating at an entry-level physical therapist level in clinical reasoning and professional practice. A sample of convenience was utilized. PT education programs in Georgia were selected due to previously existing professional relationships between the researcher and the Directors of Clinical Education (DCEs) and Program Directors (PDs).

Materials/procedures

Participants completed an electronic survey using Qualtrics (Qualtrics, Provo, UT). Email addresses provided by the DCEs and PDs in graduate PT education programs were used to distribute the electronic survey. An initial recruitment email was sent to each institution's respective cohort by the institution's DCE or PD within 1 week of completing their final clinical education experiences. A follow-up recruitment email was sent in similar fashion 2 weeks after the initial recruitment email was sent. Data collection occurred from the date the first recruitment email was sent until 2 weeks after the final reminder recruitment email was sent.

Two instruments were used to collect the quantitative data associated with this study in addition to participant age, gender, ethnicity, and clinical education site setting. PT students' perceptions of the factors that impact the quality

of the CLE were measured using the abbreviated Clinical Learning Environment Inventory-19 (CLEI-19).[18] Given its extensive use in previous research with other healthcare disciplines,[19–21] as well as the lack of an available assessment tool that measured similar constructs designed specifically for the PT clinical learning environment, the CLEI-19 was chosen for use in this study. PT students' self-efficacy in clinical reasoning was measured using the Physical Therapy Self-Efficacy Scale (PTSE).[6] The PTSE was selected due to its use in previous studies to assess self-efficacy in clinical reasoning in PT students.[6,22,23]

Clinical Learning Environment Inventory-19

The abbreviated CLEI-19 contains 19 items that assess students' perceptions of personalization, innovation, task orientation, involvement, and satisfaction in the clinical learning environment.[18] Each CLEI-19 item required participants to rate their responses on a Likert scale from 1 (strongly disagree) to 5 (strongly agree). Cronbach's alpha coefficients for the CLEI-19 were identified as 0.93 for the total scale, 0.92 for the 'Clinical Facilitator Support of Learning' subscale, and 0.94 for the 'Satisfaction with Clinical Placement' subscale.[18] The corrected item-total correlations for all 19 items was found to be greater than 0.30.[18] All 19 items were retained due to no alpha values being noted as higher than 0.93 when the item was deleted.[18] Principal component analysis of the CLEI-19 identified two factors that explained 63.37% of the variance.[18] Factor loadings for all 19 instrument items ranged from 0.49 to 0.88, which were all above the 0.4 factor loading threshold.[18]

Physical Therapy Self-Efficacy Scale

The PTSE contains five items that measure students' self-reported self-efficacy in clinical reasoning.[6] Participants rated each PTSE item on a Likert scale from 0 (strongly disagree) to 4 (strongly agree). Two independent factors were found to be responsible for 95.6% of the data variance in the initial validation study.[6] Due to the relatively new development of the PTSE and its limited use in the literature to date, the instrument's reliability is not yet established. The PTSE was validated using the New General Self-Efficacy Scale.[6,24]

Data analysis

To evaluate the relationship between PT students' PTSE mean construct scores and the personalization, involvement, task orientation, innovation, and student satisfaction mean construct scores for the CLEI-19, a separate Spearman's rho correlation coefficient was calculated for each CLE construct. For the purposes of this study, the strength of the correlations were interpreted as very weak (0–0.19), weak (0.2–0.39), moderate (0.40–0.59), strong (0.6–0.79), and very strong (0.8–1).[25] Descriptive statistics including the frequency and percentage for participant gender, ethnicity, and clinical education site setting were also considered. All inferential statistical significance was set a priori to $\alpha < 0.05$. Statistical analysis was completed using SPSS Version 28 software (IBM SPSS Inc., Armonk, NY).

Results

Descriptive data, including participant gender, ethnicity, and clinical education site setting, is presented in Table 1. A weak, positive correlation was noticed between self-efficacy in clinical reasoning and PT students' perception of personalization in the CLE ($r_s(43) = 0.21$, $P = 0.163$) and self-efficacy in clinical reasoning and PT students' perception of student satisfaction in the CLE ($r_s(43) = 0.28$, $P = 0.064$). A very weak, positive correlation was observed between self-efficacy in clinical reasoning and PT students' perception of involvement in the CLE ($r_s(43) = 0.14$, $P = 0.375$), self-efficacy in clinical reasoning and PT students' perception of task orientation in the CLE ($r_s(43) = 0.03$, $P = 0.867$), and self-efficacy in clinical reasoning and students' perception of innovation in the PT CLE ($r_s(43) = 0.16$, $P = 0.286$). Full visualization of the CLEI-19 and PTSE construct means, standard deviations, and Spearman's rho correlation coefficients computed in this study are presented in Table 2.

Table 1. Descriptive analysis of student demographic characteristics

Population Characteristic	*f*	%
Gender Assigned at Birth		
Female	27	60.0
Male	18	40.0
Ethnicity		
Asian/Pacific Islander	2	4.4
Black or African American	1	2.2
White/Caucasian	42	93.3
Clinical Education Setting		
Inpatient – Acute Care	10	22.2
Inpatient – Pediatrics	1	2.2
Inpatient – Rehab	2	4.4
Inpatient – Sub Acute/LTACH	1	2.2
Military Medicine	1	2.2
Other	2	4.4
Outpatient – General Orthopedics	18	40.0
Outpatient – Neuro Rehab	4	8.9
Outpatient – Pediatrics	3	6.7
Pelvic Health	2	4.4
Sports Medicine	1	2.2

N = 45, *f*: frequency, %: percentage, LTACH: long-term acute care hospital.

Table 2. Construct means, standard deviations, and Spearman's rho correlation analysis between clinical reasoning and environmental factors

Variable	M	SD	Self-Efficacy in Clinical Reasoning	P
Self-Efficacy in Clinical Reasoning	3.39	0.401	–	–
Personalization	4.36	0.725	0.21	0.163
Student Involvement	3.41	1.019	0.14	0.375
Task Orientation	3.71	1.236	0.03	0.867
Innovation	3.63	1.041	0.16	0.286
Student Satisfaction	4.35	0.659	0.28	0.064

N = 45, M, sample mean; SD, standard deviation; *p*, probability value.

Discussion

To our understanding, this study represents the first to explore the relationships between self-efficacy in clinical reasoning and the perceived influence of innovation, personalization, involvement, task orientation, and student satisfaction in the PT-specific clinical learning environment. The purpose of this study was to examine the associations between the factors that PT students perceive to impact the quality of CLE and students' self-efficacy in clinical reasoning following the completion of a final clinical education experience in a DPT education program. Despite the very weak to weak, positive correlations between self-efficacy in clinical reasoning and the perceptions of personalization, involvement, task orientation, innovation, and satisfaction in PT students who completed their final clinical experience, no statistical significance was noted for any of the Spearman's rho correlation coefficients performed.

Previous research in healthcare and nursing education highlighted the value of perceived involvement,[26,27] personalization,[28] innovation,[29–31] task orientation,[32,33] and student satisfaction[34–37] in the clinical learning environment in fostering academic success. However, the results of this study differed from these findings in that none of the same factors were perceived by PT students to be significantly associated with self-efficacy in clinical reasoning in the PT clinical learning environment. There may be multiple reasons for such a large discrepancy in the current findings compared to previous results.

Nursing education differs from PT education in that many nursing education programs are undergraduate programs, while DPT education programs are graduate programs that bestow a clinical doctorate degree upon graduation. Stress has been shown to affect academic performance in college students, with 39.2% of undergraduate college students noting that stress negatively impacted their academic performance,[38] while 30.0% of graduate students felt that stress had a negative impact on their academic success.[39] Previous research examined the differences in stress levels and coping mechanisms between undergraduate and graduate students.[40] While no significant differences in stress and coping were observed between the two groups, the level of social support was higher for graduate students.[40] These findings suggest that graduate students may perceive other influential factors on academic performance differently than undergraduate students. Therefore, the findings presented in this study suggest that alternative factors focused on graduate students may be influential in the PT clinical learning environment.

Significant differences in students' perceptions of the student–patient relationship and the quality of the CLE between healthcare disciplines have been noticed.[41] Nursing students, for instance, often have more direct and frequent patient interactions compared to PT students, potentially leading to different perceptions of the student–patient relationship. In addition, factors such as pedagogical atmosphere, clinical faculty support, and learning premises, are rated differently by students based on their discipline-specific experiences and expectations.[41] Factors such as the level of supervision and the overall learning atmosphere play a crucial role in shaping these perceptions. Understanding these differences is essential for designing clinical learning environment assessment tools that address the unique needs of each discipline, thereby creating more effective and supportive learning environments.

Limitations

This study demonstrates several limitations. One limitation of this study is the small sample size, which was potentially constrained by the proximity of electronic survey distribution to students' graduation from their respective PT education programs. This limitation may affect the generalizability of the findings and reduce the statistical power of the analyses. A post hoc power analysis ($n = 45$) was conducted to assess the potential power of the study to detect a meaningful effect size, given the observed data. Using G*Power software and an estimated effect size of 0.3, the analysis indicated a power of 54% to detect a significant difference at the alpha level of 0.05. Similarly, external factors affecting students enrolled in academic institutions in Georgia, such as prior undergraduate education, socioeconomic status,

or cultural experiences, may not accurately reflect students' experiences outside of Georgia. While the results provide relevant insights, they should be interpreted with caution. Given the use of a sample of convenience, the overall external validity of the presented findings must also be considered. The abbreviated CLEI-19 has not been validated in PT students to date. Given the minimal amount of previous research on the relationships between factors that students perceive to influence the clinical learning environment and self-efficacy in clinical reasoning in PT education, selecting a previously validated instrument that examined the previously discussed perceived factors proved difficult. In addition, the inability to test for causality given the utilized study design also represented a limitation of this study. The design of this study did not account for differences in students' perceptions based on clinical setting. Finally, none of the respondents who took the electronic survey indicated that they failed their terminal clinical education experience. Therefore, this study was unable to include any students who were unsuccessful in completing their final clinical education experience in the data analysis.

Future research

Future research should seek to identify what specific factors PT students perceive to be influential in the CLE. Future researchers could also consider studying between-group differences for PT students who did and did not successfully complete their final clinical education experience. Examining associations between self-efficacy in clinical reasoning and PT students' perceptions of influential CLE factors based on clinical setting would be beneficial to determining setting-specific differences. A similar study design exploring relationships based on those students who passed their terminal clinical education experience and those who did not pass would also aid in determining the overall value of perceived CLE factors in academic achievement. The identification of any potential relationships between perceived factors that influence the CLE and self-efficacy in clinical reasoning among the different groups would provide valuable feedback to PT education programs.

Conclusion

While the relationships observed in this study were very weak to weak and not statistically significant, they provide insights into the potential relationships between self-efficacy in clinical reasoning and various aspects of the CLE. Future research with larger sample sizes and more robust methodologies is needed to further explore these relationships and their implications for PT education. PT education programs can utilize the results of this study to better focus on alternative factors believed to impact the PT CLE.

Acknowledgments

The authors would like to thank the Directors of Clinical Education and Program Directors who assisted in disseminating the subject recruitment information.

Conflicts of interest and funding

The authors have no conflicts of interest.

Ethics approval

University of St. Augustine for Health Sciences IRB EXEMPT Protocol #EDD-1117-356.

References

1. American Physical Therapy Association. Minimum required skills of physical therapist graduates at entry level. December 14, 2009. Available from: https://www.cmich.edu/docs/default-source/colleges/college-of-health-professions/physical-therapy/minreqskillsptgrad8fe66aa9-d3d9-4706-9550-426ccf66f814.pdf?sfvrsn=4f6cc643_10 [cited 14 December 2009].
2. Commission on Accreditation in Physical Therapy Education. Standards and required elements for accreditation of physical therapist education programs. November 3, 2020. Available from: https://www.capteonline.org/globalassets/capte-docs/capte-pt-standards-required-elements.pdf [cited 3 November 2020].
3. A vision for excellence in physical therapy education: culmination of the work of the Education Leadership Partnership August 2021. J Phys Ther Educ (2021) 35(Suppl 1): 1–35. doi: 10.1097/JTE.0000000000000216
4. Wolden M, Drevyn E, Flom-Meland C, et al. Evaluation and modification of the physical therapist clinical performance instrument. J Phys Ther Educ. (2021) 35(2): 85–94. doi: 10.1097/JTE.0000000000000216
5. Yu M, Tong H, Li S, et al. Clinical competence and its association with self-efficacy and clinical learning environments among Chinese undergraduate nursing students. Nur Educ Pract (2021) 53: 103055. doi: 10.1016/j.nepr.2021.103055
6. Venskus DG, Craig JA. Development and validation of a self-efficacy scale for clinical reasoning in physical therapists. J Phys Ther Educ (2017) 31(1): 14–20. doi: 10.1097/00001416-201731010-00005
7. Kobal KL, Rubertone PP, Kelly SP, et al. A comparison of instructional methods on clinical reasoning in entry-level physical therapy students: a pilot study. J Phys Ther Educ (2021) 35(2): 138–45. doi: 10.1097/JTE.0000000000000181
8. George LE, Locasto LW, Pyo KA, et al. Effect of the dedicated education unit on nursing student self-efficacy: a quasi-experimental research study. Nur Educ Pract. (2017) 23: 48–53. doi: 10.1016/j.nepr.2017.02.007
9. Bandura A. Self-efficacy: the exercise of control. W.H. Freeman; 1997, New York.
10. Scott K, Wissinger J, Hand B, et al. Considering domain-specific experiential learning: self-efficacy in pediatric physical therapy education. Pediatr Phys Ther (2021) 33(3): 163–9. doi: 10.1097/PEP.0000000000000797
11. Bains M, Kaliski DZ. An anatomy workshop for improving anatomy self-efficacy and competency when transitioning into a problem-based learning, Doctor of Physical Therapy program. Adv Physiol Educ (2020) 44(1): 39–49. doi: 10.1152/advan.00048.2019

12. Hough J, Levan D, Steele M, et al. Simulation-based education improves student self-efficacy in physiotherapy assessment and management of paediatric patients. BMC Med Educ 2019; 19(1): 463. doi: 10.1186/s12909-019-1894-2
13. Milne N, Louwen C, Reidlinger D, et al. Creating a supportive clinical learning environment for physiotherapy students: a feasibility study to enhance collaboration between students and educators using the 'Everything DiSC'. Aust J Clin Educ (2022) 11(2): 37–60. doi: 10.53300/001c.55653
14. Chan D. Development of the Clinical Learning Environment Inventory: using the theoretical framework of learning environment studies to assess nursing students' perceptions of the hospital as a learning environment. J Nurs Educ (2002) 41(2): 69–75. doi: 10.3928/0148-4834-20020201-06
15. Shivers E, Hasson F, Slater P. Pre-registration nursing student's quality of practice learning: clinical learning environment inventory (actual) questionnaire. Nur Educ Today (2017) 55: 58–64. doi: 10.1016/j.nedt.2017.05.004
16. Hamshire C, Wibberley C. Fitting in with the team: facilitative mentors in physiotherapy student placements'. Teach Learn Inq (2017) 5(2) 80. doi: 10.20343/teachlearninqu.5.2.7
17. Reilly M, Beran-Shepler K, Paschal KA. Pedagogy for effective learning of clinical skills: an integrated laboratory model. J Phys Ther Educ. (2020) 34(3): 234–41. doi: 10.1097/JTE.0000000000000145
18. Salamonson Y, Bourgeois S, Everett B, et al. Psychometric testing of the abbreviated Clinical Learning Environment Inventory (CLEI-19): psychometric testing of CLEI-19. J Adv Nurs. (2011) 67(12): 2668–76. doi: 10.1111/j.1365-2648.2011.05704.x
19. Bodys-Cupak I, Ścisło L, Kózka M. Psychosocial determinants of stress perceived among Polish nursing students during their education in clinical practice. Int J Environ Res Public Health (2022) 19(6): 3410. doi: 10.3390/ijerph19063410
20. Williamson GR, Rowe LM, Knowles S, et al. Preparation and support for students in community placements: a mixed methods study. Nur Educ Pract (2020) 44: 102747. doi: 10.1016/j.nepr.2020.102747
21. Salamonson Y, Everett B, Halcomb E, et al. Unravelling the complexities of nursing students' feedback on the clinical learning environment: a mixed methods approach. Nurs Educ Today (2015) 35(1): 206–11. doi: 10.1016/j.nedt.2014.08.005
22. Campbell DF, Brismee JM, Allen B, et al. Self-efficacy with telehealth examination: the Doctor of Physical Therapy student perspective. Philipp J Phys Ther (2023) 2(2): 12–9. doi: 10.46409/002.UDAV8455
23. Lowe L, Flowers M, Fletcher J, et al. The effects of experiential learning on perceived clinical reasoning and self-efficacy of Doctor of Physical therapy students. J Phys Ther Educ(2022) 36(2): 122–7. doi: 10.1097/JTE.0000000000000225
24. Chen G, Gully SM, Eden D. Validation of a new general self-efficacy scale. Organ Res Methods (2001) 4(1): 62–83. doi: 10.1177/109442810141004
25. Swinscow TDV, Campbell MJ. Statistics at square one. 9th ed. BMJ Publ. Group; 1996, London, England.
26. Al-Moteri M. Implementing Active Clinical Training Approach (ACTA) in clinical practice. Nur Educ Pract (2020) 49: 102893. doi: 10.1016/j.nepr.2020.102893
27. Cevik AA, ElZubeir M, Abu-Zidan FM, et al. Team-based learning improves knowledge and retention in an emergency medicine clerkship. Int J Emerg Med (2019) 12(1): 6. doi: 10.1186/s12245-019-0222-2
28. Seidel N, Haake JM, Burchart M. From diversity to adaptive personalization: the next generation learning management system as adaptive learning environment. Eleed e-Learn Educ (2021) 14. Available from: https://www.eleed.de/archive/se2021/5242
29. Niederhauser V, Schoessler M, Gubrud-Howe PM, et al. Creating innovative models of clinical nursing education. J Nurs Educ. (2012) 51(11): 603–8. doi: 10.3928/01484834-20121011-02 [cited 11 October 2012].
30. Kruger JS, Doloresco F, Maerten-Rivera J, et al. An innovation sprint to promote problem-solving and interprofessional skills among pharmacy and public health students. Am J Pharm Educ (2023) 87(1): ajpe8852. doi: 10.5688/ajpe8852
31. Papathanasiou IV, Tsaras K, Sarafis P. Views and perceptions of nursing students on their clinical learning environment: teaching and learning. Nur Educ Today (2014) 34(1): 57–60. doi: 10.1016/j.nedt.2013.02.007
32. Chan DSK. Associations between student learning outcomes from their clinical placement and their perceptions of the social climate of the clinical learning environment. Int J Nurs Stud (2002) 39(5): 517–24. doi: 10.1016/S0020-7489(01)00057-8
33. Naghsh Daemi M, Tahriri A, Mahdavi Zafarghandi A. The relationship between classroom environment and EFL learners' academic self-efficacy. Int J Educ Liter Stud (2017) 5(4): 16. doi: 10.7575/aiac.ijels.v.5n.4p.16
34. D'Souza MS, Karkada SN, Parahoo K, et al. Perception of and satisfaction with the clinical learning environment among nursing students. Nur Educ Today (2015) 35(6): 833–40. doi: 10.1016/j.nedt.2015.02.005
35. Löfmark A, Thorkildsen K, Råholm MB, et al. Nursing students' satisfaction with supervision from preceptors and teachers during clinical practice. Nur Educ Pract (2012) 12(3): 164–9. doi: 10.1016/j.nepr.2011.12.005
36. Obiosa N. Effects of students' motivation and engagement on students' satisfaction in a lecture: empirical analysis. Int J Instruction (2020) 13(3): 861–76. doi: 10.29333/iji.2020.13357a
37. DiMattio MJK, Hudacek SS. Educating generation Z: psychosocial dimensions of the clinical learning environment that predict student satisfaction. Nur Educ Pract (2020) 49: 102901. doi: 10.1016/j.nepr.2020.102901
38. American College of Health Association. Undergraduate Student Reference Group: executive summary Spring 2024. 2024. Available from: https://www.acha.org/wp-content/uploads/NCHA-IIIb_SPRING_2024_UNDERGRADUATE_REFERENCE_GROUP_EXECUTIVE_SUMMARY.pdf [cited 21 January 2025].
39. American College of Health Association. Graduate/professional student Reference Group: executive summary Spring 2024. 2024. Available from: https://www.acha.org/wp-content/uploads/NCHA-IIIb_SPRING_2024_GRADUATE_PROFESSIONAL_REFERENCE_GROUP_EXECUTIVE_SUMMARY.pdf [cited 21 January 2025].
40. Ickes MJ, Brown J, Reeves B, Zephyr PMD. Differences between undergraduate and graduate students in stress and coping strategies. *Calif J Health Promot* (2015) 13(1): 13–25. doi: 10.32398/cjhp.v13i1.1810
41. Suikkala A, Timonen L, Leino-Kilpi H, et al. Healthcare student-patient relationship and the quality of the clinical learning environment – a cross-sectional study. BMC Med Educ (2021) 21(1): 230. doi: 10.1186/s12909-021-02676-x

***Sidney M. Stoddard**
Department of Clinical Sciences
Georgia Southern University
11935 Abercorn Street, Savannah, GA 31419, USA
Email: sstoddard@georgiasouthern.edu