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A comparison of student and faculty attitudes on the use of Zoom, a video conferencing platform: A mixed-methods study☆

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ABSTRACT

Aim: The COVID-19 pandemic has generated opportunities and challenges for nursing education, with many nursing programs transitioning in-person courses to online delivery with varying degrees of success. This study aimed to compare the attitudes of baccalaureate nursing students and nursing faculty members towards the use of Zoom for nursing education in Alberta, Canada.

Design: A mixed-methods design was used to measure student and faculty attitudes.

Methods: Data were collected using a Likert-scale survey with the opportunity to share additional perceptions in the form of qualitative data. Quantitative data underwent descriptive analysis as well as inferential analysis comparing results from both groups. A thematic analysis was conducted for qualitative data.

Results: Most student and faculty participants favour in-person learning approaches to online platforms. Students’ attitudes toward online practice experiences were overwhelmingly negative, citing concerns with lack of relational practice and skill development. Achievements and barriers were also identified with online learning.

Conclusions: With an uncertain future in nursing education, opportunities exist to examine current nursing education program delivery and thoughtfully augment in-person learning approaches with online methods.

1. Introduction

The COVID-19 pandemic has created many challenges for nurse educators and students around the globe over the past year (Ali, 2020; Seah et al., 2021). The pandemic forced many nursing programs to make hasty decisions about course delivery, with many programs transitioning from traditional face-to-face delivery to online approaches (Morin, 2020; Seah et al., 2021). Nurse educators faced this considerable challenge with determination and rapidly modified course delivery methods to adapt to public health restrictions while fostering positive learning outcomes (Morin, 2020; Seah et al., 2021). Educators ensured that students received a quality nursing education online while also continuing to meet entry-to-practice competencies, as determined by regulatory bodies in each jurisdiction (Morin, 2020; Seah et al., 2021). Nursing students also keenly felt the transition to online learning, and many faced a period of confusion and uncertainty regarding their educational experience (Ramos-Morcillo et al., 2020).

2. Background

The COVID-19 pandemic has presented challenges and opportunities for nursing education, with significant advancement along the continuum of technology and online course delivery (Seah et al., 2021). Nursing education is primarily delivered through traditional means of instruction, including face-to-face classroom instruction and clinical experiences in various practice settings (Gaffney et al., 2021), including at the University of Lethbridge located in Alberta, Canada.

Zoom Video Communication Inc., an online video conferencing platform, has been used extensively in educational institutions since the COVID-19 pandemic forced faculty to move to online modes of instruction (Serhan, 2020; Tsai et al., 2020). Video conferencing allows for synchronous communication using audio and visual data between two or more groups of people (Correia et al., 2020). Zoom can replicate classroom environments online (Henriksen et al., 2020). Functions, such as the ability to record sessions, sharing screens and files, breakout rooms and polling, are all attractive features for faculty members attempting to replicate traditional classroom settings (Zoom Video
On March 13, 2020, all in-person classes and experiential learning activities were abruptly cancelled at the University of Lethbridge due to the COVID-19 pandemic and public health restrictions enacted by the Government of Alberta (Government of Alberta, 2021). Nursing practice courses were suspended for the remainder of the semester, given potential risks to students and the community (University of Lethbridge, 2021a). Theory classes across campus transitioned to online platforms the following week and Zoom was used to continue offering instruction to students. Faculty also continued to employ Moodle as the learning management system to communicate with students, share pertinent course information, deliver course exams and grade assignments (University of Lethbridge, 2021b).

Course content, learning activities and assessment strategies were adapted for online learning to provide students with positive learning experiences during this challenging time. Klemm et al. (2020) reported that this perplexing transition was felt by nurse educators globally as they attempted to provide uninterrupted learning experiences for students not permitted to attend campus or practice settings.

Faculty members at University of Lethbridge have used Zoom for all nursing theory courses, as well as for the mental health and community health nursing practice courses since March 2020. Synchronous, asynchronous and blended online learning methods were employed by faculty to help students meet course outcomes and entry-to-practice competencies. Students were permitted to enter acute clinical sites for practice experiences and complete their final preceptorship beginning in the summer semester of 2020 and this process has continued until the present. The University of Lethbridge has recently announced a goal for a significant in-person return to campus for the 2021–2022 academic year; however, no details or specifics have been shared at this time.

Embracing online technology, such as Zoom, can be stressful, especially for educators not familiar with or uncomfortable with technology (Ramlo, 2021). This is particularly true when the transition is abrupt and can determine the success of these platforms at an institutional level. In addition, factors such as familiarity with technology, faculty’s willingness to transition and student accessibility have an impact on the successful implementation of platforms, such as Zoom (Ali, 2020). Many academics report that online instruction methods are inferior to traditional classroom instruction (Broussard and Wilson, 2018; Markova et al., 2017). However, Holges et al. (2020) stress that caution should be used in evaluating the success of online learning experiences in an emergency, such as COVID-19, because vigilant course design may not have occurred. Time constraints during these crisis situations may prevent faculty from fully exploring online learning possibilities (Holges et al., 2020).

### 2.1. Advantages of Video Conferencing Platforms

Online classrooms using video conferencing platforms can promote feelings of connectedness between faculty and students and allow for real-time discussions, information sharing and feedback (McDaniels et al., 2016; Prince and Clayton, 2020). Students learn to develop professional means of communication in a virtual setting and reluctant classroom participants may be more willing to participate in online platforms (Mathur et al., 2020). Increased flexibility, limited travel commuting and innovative engagement strategies in online settings are additional advantages for both faculty and students discussed in the literature (Mathur et al., 2020). McDonald et al. (2018) found that online learning strategies can enhance learning outcomes when combined with traditional classroom instruction.

Konrad et al. (2021) found that nursing students’ clinical reasoning skills improved following the transition of a nursing fundamentals course online compared with the traditional classroom setting. Simulation, virtual reality activities and telehealth opportunities may promote student learning in online nursing courses (Morin, 2020). However, Sanderson et al. (2020) stress that interpersonal relationships are fundamental in practice disciplines, such as nursing and online learning experiences should not replace the necessary face-to-face aspects of education. Similarly, other researchers found that online learning in practice disciplines can hinder the development of communication and psychomotor skills and have a negative impact on students’ learning outcomes (Bramer, 2020; Klemm et al., 2020; Seah et al., 2021).

### 2.2. Disadvantages of Video Conferencing Platforms

Roth et al. (2020) noted that decreased course satisfaction by students and lower academic grades are legitimate concerns with the use of video conferencing when compared with in-person learning environments. Feelings of isolation and loneliness may be present, resulting from a lack of interaction with peers and educators in an online setting (Bramer, 2020; Klemm et al., 2020; Orhan and Beyhan, 2020). A further concern for faculty and students transitioning to online classroom environments is ‘Zoom fatigue,’ which is a new term identified recently in published research and refers to feelings of tiredness, worry, or burnout with the overuse of virtual communication platforms, such as Zoom (Lee, 2020).

Both students and faculty can experience barriers to online learning. Technological deficiencies, lack of necessary equipment, unreliable internet connection, competing demands and lack of an appropriate workspace, free from distractions, are all barriers to online instruction, as outlined in the literature (Bramer, 2020; Fatani, 2020; Ghazal et al., 2015; Klemm et al., 2020; Morin, 2020; Richter and Schuessler, 2019).

Systematic processes are crucial for successfully transitioning to online learning, especially if the move is permanent (Morin, 2020). Online learning opportunities can create unique experiences where faculty can foster the development of excellence in nursing practice by educating and empowering students (Sanderson et al., 2020). With an uncertain future in nursing education, opportunities exist to reconsider traditional methods of teaching and learning in the development of engaged, innovative, reflective and lifelong learners.

The purpose of this study was to explore the attitudes of baccalaureate nursing students and nursing faculty members towards the use of Zoom for nursing education in both theory and practice courses at the University of Lethbridge since the public health restrictions were enacted in Alberta, Canada in March 2020. The research questions guiding this study include: (1) What are baccalaureate nursing students’ attitudes toward the use of Zoom for undergraduate nursing education? (2) What are faculty members’ attitudes toward the use of Zoom for undergraduate nursing education? (3) How do students’ attitudes compare with the perceptions of faculty members regarding the use of Zoom in nursing education? The purpose of this manuscript is to present a comparison of the attitudes of students and faculty members toward the use of Zoom in nursing education.

### 3. Methods

This mixed-methods study focused on exploring the attitudes of baccalaureate nursing students and nursing faculty members in the Nursing Education in Southwestern Alberta (NESA) Bachelor of Nursing (BN) programs at the University of Lethbridge on the use of Zoom in nursing education. The theoretical foundation guiding this study was Invitational Education (IE), with Invitational Theory and Practice (ITP) as the broad framework. IE encompasses learners’ affective and cognitive aspects, while ITP fosters the development of collaboration, trust, respect, optimism, care and intentionality through welcoming learning environments (Shaw et al., 2013). This theoretical framework relates to the philosophy of the NESA BN programs, which focuses on intentional teaching to facilitate learning and support students as emerging nursing professionals (NESA BN programs, n.d.). The philosophy also stresses the importance of participatory, transformative, collaborative and respectful learning relationships between teachers and students (NESA BN programs, n.d.).
Attitudes of faculty members and students were measured using a Likert scale survey created using Qualtrics. The Likert-scale survey comprised statements where participants could specify their level of agreement or disagreement with the corresponding item. Statements on the faculty and student surveys included items on the enjoyment and receptiveness of Zoom, comfort with camera on, preference for mode of course delivery, barriers associated with the use of Zoom, opportunities for personal and professional growth and questions related to Invitational Theory and Practice on welcoming, inclusive, respectful and supportive learning environments. Enhancement of knowledge and skills over Zoom were included in the student survey.

Likert-scale items were analyzed in Qualtrics and Statistical Package for the Social Sciences (SPSS) using descriptive statistics, including mode, mean, standard deviation, variance and percentages of responses. SPSS was also used to conduct the non-parametric Mann Whitney U test to compare participant responses on Likert-scale items from the student group and the faculty group and test the null hypothesis. Written responses in the comments section on the survey were analyzed using thematic analysis by coding and then categorizing under key themes.

The survey was disseminated to 250 eligible students and consisted of 21 Likert-scale items, with one additional item where students could enter written responses on their perceptions. 90 out of 250 eligible undergraduate students at University of Lethbridge completed the survey, for a response rate of 36%. The survey was distributed by mass email to all eligible nursing students on three occasions, at two-week intervals, in December 2020 and January 2021 in the BN Programs at the University of Lethbridge. These programs comprise third and fourth-year BN students as well as students in their second year of the BN After-Degree program, which is a two-year program for students who hold a degree in another discipline. The survey link was also posted on the University of Lethbridge Nursing Students’ Association social media site by the Communications Officer of the Nursing Student Association on campus on two occasions in early and mid-December 2020 to assist with recruitment. Students who did not use Zoom for theory or practice courses were excluded from the survey.

An invitation to participate in a 19-item Likert scale survey was also disseminated by email to 23 eligible faculty members who teach in the BN Programs at the University of Lethbridge on four occasions, at two-week intervals, in December 2020 and January 2021. Inclusion criteria consisted of faculty members who have taught undergraduate nursing theory or practice courses using Zoom since March 2020. Eighteen faculty completed the survey, out of twenty-three eligible individuals, for a response rate of 78%. Both faculty and students could access the survey once through the link to prevent participants from submitting multiple responses.

The author’s affiliated academic institution granted ethical approval for this study (HPRC Protocol Number #2020-106). An informed consent document was attached to the Qualtrics survey and participants were required to consent to the survey before submitting responses. The consent outlined participants could opt to exit the survey at any time without their data being recorded. Participant data remained anonymous, as the authors did not collect any identifying or demographic information on respondents. The consent document for student participants explicitly stated that the survey was voluntary and would not have an impact on nursing courses or grades in any manner.

4. Results

Survey results indicate varying attitudes of both faculty members and students toward the use of Zoom in nursing education, as depicted in the Table included in Appendix A. Common themes from the qualitative and quantitative data were identified in both student and faculty survey results and categorized under the following headings: 1) Teaching and Learning Environment, 2) Barriers to Zoom and 3) Receptiveness to the Use of Zoom.

4.1. Teaching/Learning Environment on Zoom

Faculty (M = 3.3) were more likely than students (M = 3.4) to report that they enjoy using Zoom for nursing theory classes (U = 387.00, p = .027). 41% of faculty enjoyed teaching theory courses on Zoom, while only 25% of students enjoyed using Zoom for their theory classes. One student mentioned that “most instructors try very hard to achieve the same level of education and learning through Zoom classes, but ultimately I feel as though I am not getting enough from my courses.” There was also a statistically significant difference between faculty and students for enjoyment of practice courses (U = 320.50, p = .003), with faculty (M = 3.2) being more likely than students (M = 4.3) to report they enjoy online practice courses on Zoom. 47% of practice instructors enjoyed teaching on Zoom, with one faculty member stating: “Teaching community health practice on Zoom went amazingly well with I think better learning than teaching this course face-to-face. Many of the barriers we normally face that get in the way of continuity, flow, progress were not factors. There were disadvantages too of course and some loss in the experience, but I feel way more gain.” Conversely, only 12% of students reported enjoying online practice courses. Comments from students indicated dissatisfaction with the use of Zoom for practice courses, namely that “nursing practice clinicals should NOT be online, we are not learning anything” and “clinical cannot be done over Zoom.”

Faculty were more likely to report that their use of Zoom created a welcoming learning environment (U = 380.00, p = .001), with 89% of faculty (M = 1.9) agreeing with the statement, compared with 49% of students (M = 2.7). There were also significant differences noted between faculty (M = 2.7) and students (M = 4.0) on feelings of connectedness during Zoom classes (U = 405.00, p = .03). Over half of faculty respondents felt connected to their students on Zoom, compared with only 24% of students, who felt disconnected from both peers and their instructor. This was summarized by the following comment by a student: “Zoom classes created a barrier between collaboration with peers.I felt disconnected from my peers.” Alternatively, one faculty member commented: “I believe we have done a good job at meeting course objectives and developing creative ways to engage students in different ways which makes online learning more diverse and meaningful.”

Faculty and student perceptions differed on the Likert-scale item on the use of Zoom in creating a supportive learning environment (U = 44.50, p = .001). 44% of students indicated they felt supported (M = 2.9) compared with 88% of faculty who felt they created a supportive environment for students (M = 2.2). There were no statistically significant differences between faculty and students on survey items addressing feelings of respect and inclusivity, comfort with sharing and discussing ideas, or opportunities for equal participation during Zoom classes.

4.2. Barriers Associated with Zoom

Survey results on faculty and students experiencing technological barriers, including poor internet connectivity or a lack of equipment and psychological barriers, including increased stress or anxiety with the use of Zoom, were not statistically significant between groups. 52% of students and 47% of faculty members faced technological barriers using Zoom, with one faculty member commenting: “both the students and I experienced internet connection problems.”

Similarities existed between groups in terms of experiencing psychological barriers, including increased stress or anxiety, with 54% of students and 47% of faculty agreeing with this item. There were several honest confessions made by students, including: “I want Zoom’s stock prices to crash and for it to go bankrupt.I would rather risk COVID than have to go through Zoom again.” Another student felt that “instructors were not understanding of the psychological impacts this had and it resulted in so many emotional breakdowns.” A third student mentioned: “I am paying thousands of dollars to destroy my mental health and
Most faculty and student participants favour traditional face-to-face classroom and clinical instruction over online learning methods, such as Zoom. This sentiment was similarly found by Roth et al. (2020), namely that decreased course satisfaction by students was a concern with video conferencing compared with traditional learning environments. Students were more receptive to theory course delivery in an online format than practice courses, whereas faculty reported similar receptivity toward online learning environments for both theory and practice courses. Published research echoes the sentiments by students and faculty, namely that online learning in practice disciplines, such as nursing, can hinder fundamental communication and psychomotor skill development, which can have an impact on overall growth and learning for students (Bramer, 2020; Klemm et al., 2020; Seah et al., 2021).

Furthermore, Sanderson et al. (2020) stress the importance of interpersonal relationships in the nursing profession and online learning cannot replace the in-person elements of relational practice.

Feelings of connectedness during Zoom classes also produced statistically significant differences between faculty and students. Most faculty felt connected to students during Zoom sessions, compared with only a quarter of student respondents. McDaniels et al. (2016) and Prince and Clayton (2020) found that online video platforms can promote connectedness between faculty and students. Conversely, other researchers found that feelings of isolation and a lack of interaction with peers and educators may be felt in an online environment (Bramer, 2020; Klemm et al., 2020; Orhan and Beyhan, 2020).

A statistically significant difference between faculty and student responses on whether the use of Zoom created a welcoming environment was also noted, where overall faculty perceived Zoom to be more welcoming than students. The theoretical basis of this study, namely, Invitational Education (IE) and the NESA BN program’s philosophy both focus on the creation of a welcoming learning environment to foster participatory, collaborative and respectful learning relationships between faculty and students (NESA BN programs, n.d.; Shaw et al., 2013). Higher levels of student dissatisfaction with this item should prompt faculty members to evaluate personal teaching and learning methods to ensure the philosophy of the NESA BN program is adhered to.

Although not a statistically significant result, approximately half of students and faculty experienced technological and psychological barriers with the use of Zoom. The University of Lethbridge is situated in a primarily rural geographical location, where poor internet connections are prevalent. Published literature similarly identifies challenges with online learning, such as lack of necessary equipment, unreliable internet connectivity and unfamiliarity with technology, with an impact on the successful implementation of online learning (Ali, 2020; Bramer, 2020; Morin, 2020; Richter and Schuessler, 2019). Furthermore, Chronic Zoom Syndrome is a relatively new disorder classifying Zoom overuse, leading to psychological symptoms, such as distress (Anderson and Looi, 2020).

Agreement with the Likert-scale item on psychosocial barriers produced a statistically significant result. A greater number of students than faculty indicated they experienced psychosocial barriers, such as competing demands and a home life not conducive to online learning. Competing responsibilities and a private workspace for learning were similarly identified in the literature as barriers to quality online learning experiences (Bramer, 2020; Ghazal et al., 2015; Klemm et al., 2020).

Faculty members highlighted benefits with the use of Zoom, including efficiency, cost-effectiveness, and reduced travel burdens. Mather et al. (2020) emphasized several advantages of online learning, such as increased flexibility, limited commuting and innovative engagement initiatives. Most faculty felt that Zoom provided professional and personal growth opportunities, compared with half of the student respondents. This finding demonstrates that systematic processes are needed when transitioning to online learning to promote personal and professional growth; however, online learning experiences can create unique learning opportunities for faculty and students (Morin, 2020; Sanderson et al., 2020).
Study findings indicate that overall, faculty and students prefer in-person learning strategies to the use of Zoom in nursing education. Nursing programs should carefully examine the best learning opportunities for students, particularly in practice courses, which may not be viable when solely educating students in an online format. There may be unique opportunities to augment traditional classroom learning experiences with online learning strategies to meet both faculty and students’ needs. An amalgamation of digital platforms, such as digital clinical experiences and virtual simulation, may provide enhanced learning outcomes and overall course satisfaction for students. Adequate support for both faculty and students is required when transitioning to online methods of learning in nursing education, as this may have an impact on the success of the experience. Furthermore, given the substantial changes in healthcare settings, a stronger focus on population health is warranted and nurse educators should carefully reconsider the content included in their curriculums and entry-level competencies (Morin, 2020).

6. Limitations

There are several limitations to this study despite the findings, which may be of value to nursing programs considering online approaches to nursing education. Sample sizes of both the study and faculty groups were small and may not represent the attitudes of faculty and students in other academic settings. The academic institution where this study was conducted primarily engages in in-person learning strategies and the transition to online learning during the COVID-19 pandemic was a significant shift for both faculty and students. Other educational institutions may have successfully educated nursing students in an online format prior to the pandemic and the results of this study may not be generalizable to these programs. Additionally, “emergency online learning,” such as what has occurred over the past year, may not be an accurate representation of successful online learning strategies. A further limitation is that Zoom only represents one video conferencing platform and there are numerous other strategies to engage students in online learning environments.

7. Conclusions

This small-scale mixed methods study presented a comparison of the attitudes of students and faculty members on the use of Zoom in nursing education at the University of Lethbridge during the COVID-19 pandemic. Study findings indicate that there are similarities and differences between the perceptions of faculty and students on the use of Zoom and these results offer valuable insights for nursing education programs to consider when planning and implementing future course offerings. The future of nursing education is uncertain and opportunities exist to evaluate traditional methods of teaching and consider innovative learning experiences to educate future nurses using best practices to ensure positive outcomes.

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Shannon Vandenberg- Conceptualization; Data curation; Formal analysis; Investigation; Methodology; Project administration; Resources; Software; Supervision; Roles/Writing - original draft; Writing - review & editing. Morgan Magnuson- Data curation; Formal analysis; Investigation; Methodology; Project administration; Resources; Software; Roles/Writing - original draft; Writing - review & editing.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Appendix A. Comparison of student and faculty results

| Likert-Scale Survey Item | Students (n = 89) M (SD) | Faculty (n = 18) M (SD) | Test Statistic |
|--------------------------|--------------------------|--------------------------|---------------|
| I enjoyed using [teaching on] Zoom for my nursing theory courses over the past semester(s). | 3.4 (1.08) | 3.29 (1.45) | U = 387** Z = 3.007** |
| I enjoyed using [teaching on] Zoom for my nursing practice courses over the past semester(s). | 4.3 (1.33) | 3.24 (1.7) | U = 320.5** Z = 2.21** |
| I felt comfortable having my camera on during Zoom classes. | 3.31 (1.14) | 2.35 (1.45) | U = 425 Z = 2.804** |
| I experienced technological barriers to accessing or participating in [teaching on] Zoom classes, including poor internet connection or lack of equipment. | 2.97 (1.29) | 3.00 (1.03) | U = 690.5 Z = 0.306 |
| I experienced psychosocial barriers to accessing or participating in [teaching on] Zoom classes, including my home life not being conducive to virtual learning or having competing demands at home. | 3.09 (1.35) | 4.00 (0.97) | U = 414 Z = 2.829** |
| I experienced psychological barriers to accessing or participating in [teaching on] Zoom classes, including increased stress or anxiety. | 2.76 (1.3) | 3.18 (1.20) | U = 576 Z = 1.373 |
| I felt connected to my instructor [students] during Zoom classes. | 3.58 (1.2) | 2.65 (0.84) | U = 405 Z = 2.997** |
| I felt [students were] comfortable sharing and discussing ideas during Zoom classes. | 3.06 (1.1) | 2.76 (0.94) | U = 633 Z = 0.907 |
| I felt the learning environment was welcoming during Zoom classes [for my students]. | 2.7 (0.88) | 1.94 (0.73) | U = 380 Z = 3.382** |
| I could participate equally during Zoom classes [I created an equitable learning environment for my students]. | 3.33 (1.02) | 2.12 (0.83) | U = 604 Z = 0.805 |
| I felt supported during Zoom classes [I created a supportive learning environment for my students]. | 2.9 (0.98) | 2.18 (0.71) |

(continued on next page)
I felt respected during Zoom classes. [I felt I created an inclusive environment where students felt respected].

Using Zoom created opportunities for personal [and professional] growth.

I prefer [teaching using] virtual Zoom classes to traditional face-to-face classes in nursing education.

I prefer [teaching using] virtual Zoom classes to traditional face-to-face classes in nursing education.

I am receptive to using Zoom for future nursing practice courses.

I am receptive to using Zoom for future nursing practice courses.

Likert-Scale Survey Item | Students (n = 89) | Faculty (n = 18) | Test Statistic
--- | --- | --- | ---
I felt respected during Zoom classes. [I felt I created an inclusive environment where students felt respected]. | 2.26 (0.75) | 2.12 (0.76) | U = 344.5*
Using Zoom created opportunities for personal [and professional] growth. | 3.37 (1.08) | 2.06 (0.94) | U = 277***
I prefer [teaching using] virtual Zoom classes to traditional face-to-face classes in nursing education. | 4.55 (0.97) | 3.94 (1.00) | U = 320***
I prefer [teaching using] virtual Zoom classes to traditional face-to-face classes in nursing education. | 4.92 (0.41) | 4.00 (0.91) | U = 269***
I am receptive to using Zoom for future nursing practice courses. | 3.52 (1.29) | 3.24 (1.52) | U = 370*
I am receptive to using Zoom for future nursing practice courses. | 4.43 (0.9) | 3.71 (1.67) | U = 442.5

Notes. [ ] = faculty survey wording; M = Mean; SD = Standard Deviation; * p < .05; ** p < .01; *** p < .001.

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