

An Examination of the Relationship Between Cheating in Online Classes and Technostress: Perceptions of Business Faculty

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ABSTRACT

This research study investigated the relationship between technostress creators (techno-complexity, techno-insecurity, techno-invasion, techno-overload, and techno-uncertainty) and faculty perceptions of student cheating in online classes. Data were collected from faculty members of the Management and Organizational Behavior Teaching Society (MOBTS), a member of the AACSB Business Education Alliance, the American Society of Business and Behavioral Sciences (ASBBS), an interdisciplinary professional organization comprised of faculty teaching in accounting, finance, management, marketing, organizational behavior, and computer information systems, and other research panels during 2021 (N = 94). Findings from regression analysis indicated that the techno-complexity subconstruct is positively related to a faculty's perception of student cheating in online classes. In contrast, the techno-insecurity subconstruct was marginally significant and positively related to the faculty's perception of student cheating in online classes. Techno-overload, techno-invasion, and techno-uncertainty subconstructs were not identified as statistically significant in predicting a faculty's perception of student cheating in online classes.

Keywords: Technology stress, student cheating, academic integrity, business, higher education

Introduction

Online learning has become a widely accepted, well-respected, and often preferred learning modality by students for many reasons. Since the pandemic, student preferences for online learning have grown to over 220%, and over half of the faculty are more optimistic about teaching in the online learning space (EduCause, 2022; Online Learning Consortium, 2021). Virtual learning facilitates balance in the work-life

interface (Buelow et al., 2018; Devlin & McKay, 2018). Rural learners and learners with mobility, transportation, or other challenges may need access to in-person learning (Ren, 2023). Distance learning is often more affordable than on-campus programs (Moore et al., 2011; Quality Matters & Eduventures Research, 2021). With a slow rise in the U.S. population (0.4% from 2021 to 2022) and a steep cliff on the horizon, more stopped-out students, students entering the trades, and those taking a gap year or years, institutions of higher learning are competing for students (NSCRC, 2022; U.S. Census Bureau, 2022). Nationwide enrollments have steadied but trend well below pre-pandemic levels, with approximately 1.2 million fewer students compared to 2019 (NSCRS, 2022). Colleges and universities have and continue to invest billions of dollars in online learning programs, faculty lines, and educational technologies (ed-tech) (Carragher-Wolverton & Zhu, 2021). Despite that, given the educational climate, shrinking student population, and increased demand for remote learning, online teaching is shifting from optional to compulsory (Belt & Lowenthal, 2020). Of utmost importance to this end is faculty readiness to teach online. Even though faculty may be more positive about online teaching learning since before the pandemic, over 70% still prefer in-person teaching (Bauer-Wolf, 2019; Gallup & Inside HigherEd, 2019; Kebritchi et al., 2017). One often cited reason by faculty for not being motivated to teach online is their perception that cheating happens far more than in traditional classroom settings. Faculty assert that more academic integrity issues occur online than traditional in-person learning (Alessio & Messinger, 2021).

Literature Review

Student Cheating

Volumes of research have been devoted to the investigation of cheating behaviors of college students. Bowers (1964) classic study of approximately 5,000 students representing 99 institutions revealed that over 75% of students admitted to cheating. Nearly 50 years later, McCabe et al. (2012) surveyed over 70,000 undergraduate students about cheating, and, with similar findings, 68% reported cheating on tests, exams, and written assignments. These landmark investigations catapulted the scholarship of teaching and learning related to student cheating. Additional areas of emphasis in the literature include how to define academic integrity, misconduct, or cheating and tap into the individual factors that may influence cheating, such as student characteristics, demographics, attitudes, perceptions, emotional intelligence, and academic preparedness (Bloodgood et al., 2008; Bowers, 1964; Elias, 2009; McCabe et al., 2012; Yu et al., 2017). Some investigations evaluate how technology provides more or less opportunities for students to cheat (King et al., 2009; Lancaster & Cotarlan, 2021). ChatGPT has recently taken center stage with debates regarding artificial intelligence's impact on student cheating (Cotton et al., 2023).

Despite the considerable focus on cheating in higher education, research provides limited perspective regarding faculty perceptions of student cheating behaviors (Blau et al., 2018). These studies tend to concentrate on the types of cheating behaviors, observations of classroom frequency, and cheating

prevention strategies (Bennett et al., 2011; Hard et al, 2006). Faculty assert that more academic integrity issues occur online than traditional in-person learning (Alessio & Messinger, 2021). Several studies have reported that faculty believe it is easier to cheat in online classes (Guyette et al., 2008; Harton et al, 2019; Kennedy et al., 2000), even though there have been mixed findings of the results of studies that have examined whether there is more cheating online than in traditional in-class settings (Walsh et al., 2021).

Technostress

Technostress, also known as computer stress, technological stress, and technophobia, is a psychosomatic disorder that originates from and is intensified by an inability to adapt to or cope with new technologies in a healthy way (Brod, 1984; Fuglseth & Sorebo, 2014). Technostress has been organized into five categories, which are: 1) techno-complexity, 2) techno-insecurity, 3) techno-invasion, 4) techno-overload, and 5) techno-uncertainty (Ragu-Nathan et al., 2008). Techno-complexity is a stressor imposed on faculty compelled to constantly learn about and keep pace with increasingly sophisticated evolving technologies (Marchiori et al., 2019; Ragu-Nathan et al., 2008). Techno-insecurity refers to faculty feeling inadequate when comparing themselves to others with more ICT skills and capabilities and the fear of being replaced by them or teaching and learning technologies. Techno-invasion occurs when ICTs infringe upon and upset the work-life balance and compel faculty to stay connected during non-teaching, research, and service hours. Techno-overload is described as a condition in which university faculty are forced to work more and faster due to ICT demands. Techno-uncertainty is the apprehension that can perpetuate from and the indeterminate future outcomes that can result from the use of technology, the fear of the unknown.

Technostress research is framed through the person-environment (P-E) fit theory (Ayyagari, Grover, & Purvis, 2011). The P-E theory centers on the alignment between a person and the environment in which they interact. With this theory, stress does not originate from the person or the environment in isolation; rather, stress materializes when a misalignment occurs between the person and their complex multidimensional environment (Chuang et al., 2016).

Technostress can intensify role overload, or the conflict between work demands and the resources available to fulfill them (Tarafdar et al., 2011). Role overload is an antecedent of inferior work performance, linked to decreased productivity, job satisfaction, organizational commitment, innovation, and creativity (Hung et al., 2011; Muir, 2008; Ragu-Nathan, et al., 2008; Shropshire & Kadlec, 2012; Tarafdar et al., 2007, 2010, 2011). With prolonged exposure to technostress, faculty can burn out (Shropshire & Kadlec, 2012). Job burnout is evidenced to have a direct relationship with demotivation, performance problems, and job turnover (Simmons, 2009).

The literature is sparse concerning technostress experienced by university faculty, the negative consequences imposed upon them, and the universities in which they teach (Joo et al., 2016). Of the

studies available, few emphasize technology stress in higher education where information and communication technologies (ICTs) incorporated as tools of the trade are precipitously emerging and perpetually changing (Ortagus et al., 2018). The latest teaching technologies include flipped classrooms, artificial intelligence, virtual and augmented reality, Chat GPT, cloud computing, and game-based learning, all of which are more complicated than sage-on-the-stage teaching and learning (Hatlevik & Hatlevik, 2018). Learning new complex technologies with a constantly evolving job can lead to feeling overwhelmed and overworked (Skaalvik & Skaalvik, 2017).

Technostress is a faculty well-being concern and an administrative issue in higher education. During the pandemic, faculty were more techno-stressed (Boyer-Davis, 2020; Boyer-Davis & Berry, 2022). Technostress has been identified as a prime catalyst for faculty to leave the teaching profession, especially when ICTs and virtual learning environments lack support and reliability (Roberts, 2016). With greater demand for ICT use in higher education, technostress will continue to ensue. Recently, Boyer-Davis et al. (2023) investigated the relationship between the technostress creators and the motivation to teach online. The findings indicated that techno-stressed faculty were less motivated to teach online. Specifically, the subconstructs of techno-insecurity and techno-overload were found to be statistically significantly related to the motivation to teach online.

Purpose of the Study

Few studies, if any, have attempted to explain faculty views of student cheating in the online learning environment (Harton et al., 2019). To shed more light on the factors influencing these views, this study examines the relationship between faculty perceptions of student cheating in online courses and the five individual subconstructs of technology stress. Recently, Boyer-Davis et al. (2023) investigated the relationship between the technostress creators and the motivation to teach online. The findings indicated that techno-stressed faculty were less motivated to teach online. Specifically, the subconstructs of techno-insecurity and techno-overload were found to be statistically significantly related to the motivation to teach online. This research study, in conjunction with several others, serves as a bridge to connect the literature between online student cheating, faculty perceptions of online student cheating, and the impact that technostress may have on faculty perceptions related to online student cheating (Boyer-Davis et al., 2020, 2022, 2023).

Study Methodology

Sample and Collection

A survey consisting of demographic questions, questions relating to faculty's perception of cheating, and the Technostress Creators scale (Tarafdar et al., 2007) was electronically administered in 2021. The population included members of the American Society of Business and Behavioral Sciences (ASBBS), an interdisciplinary professional organization comprised of faculty members in business and behavioral sciences disciplines including, but not limited to, accounting, finance, management, marketing,

organizational behavior, and computer information systems. The same survey was distributed to the Management and Organizational Behavior Teaching Society (MOBTS). The survey was also distributed through a separate e-panel.

Table 1 provides detailed demographic information by quantity and percentage for the sample. A total of 94 observations were collected during 2021, with faculty self-reporting their gender as 58.5% male, 39.4% female, and 2 faculty members making no selection. Faculty conveyed their age (in years) as follows: 25-34 (3.2%), 35-44 (21.3%), 45-54 (25.5%), 55-64 (32%), or 65 and older (13.8%) with two faculty not reporting their age. Faculty identified their academic rank as instructor/lecturer (13.8%), assistant professor (16%), associate professor (21.3%), and full professor (45.7%). Two faculty did not report their academic rank, while one faculty member was identified as a Clinical Professor. Demographic information relating to the years of experience teaching online was also collected. For the sample, 52.1% indicated that they had between 0 to 5 years of experience, 25.5% indicated having between 6-to-10 years of experience, 8.5% indicated experience of 11 to 15 years of experience, 13.8% indicated they had greater than 15 years of experience.

Table 1
Frequency and Percentages of Demographic Variables

Gender	Quantity 2021 (N=94)	Percentage
Female	55	58.5%
Male	37	39.4%
Gender-fluid	0	0%
Gender-Neutral	0	0%
Not reported	2	2.1%
Age (in years)		
25 to 34	3	3.2%
35 to 44	20	21.3%
45 to 54	24	25.5%
55 to 64	32	34.0%
Greater than 65	13	13.8%
Not reported	2	2.1%

Rank		
Assistant Professor	15	16.0%
Associate Professor	20	21.3%
Full Professor	43	45.7%
Clinical Professor	1	1.1%
Instructor/Lecturer	13	13.8%
Other	2	2.1%
Not reported	0	0
Years Teaching Online		
0 to 5 years	49	52.1%
6 to 10 years	24	25.5%
11 to 15 years	8	8.5%
Greater than 15	13	13.8%

Research Design

To examine the relationship between the faculty perception of cheating online and the components of technostress, the following regression Model was estimated as follows:

$$FPOC_i = B_0 + B_1OVERLOAD_i + B_2INVASION_i + B_3COMPLEXITY_i + B_4INSECURITY_i + B_5UNCERTAINTY_i + \beta_6ONLINE_i + e_i$$

The dependent variable was the Faculty's Perceptions of Online Cheating (*FPOC*). The test variables in the regression model used to examine the relationship between *FPOC* and the components of technostress were techno-complexity (*COMPLEXITY*), techno-insecurity (*INSECURITY*), techno-invasion (*INVASION*), techno-overload (*OVERLOAD*), and techno-uncertainty (*UNCERTAINTY*). The model also controlled for the years of experience teaching online (*ONLINE*).

Additional Analysis

The study also compared the faculty's perception of cheating online (*FPOC*) and the faculty's perception of cheating in a traditional in-class setting. This was done using Tukey's difference of means test to see if the two variables differed significantly.

Variables and Measures

Dependent Variable

One question was asked and scored to measure the dependent variable, faculty perceptions of online cheating (*FPOC*). Participants were asked to answer, "To what extent do you think a student may take the opportunity to cheat in an online course?" This question was rated using a five-point Likert-type

scale with 1 representing "Never," 2 representing "Occasionally," 3 representing "Moderately," 4 representing "Frequently," and 5 representing "Always."

Test Variables

Technostress observations were measured using the Tarafdar et al. (2007) Technostress Creators scale. The Technostress Creators scale is comprised of 23 questions, grouped into five constructs: (a) Techno-overload, (b) Techno-invasion, (c) Techno-complexity, (d) Techno-insecurity, and (e) Techno-uncertainty. Aggregated, the construct scores measure technostress. An instrument should demonstrate reliability of $\alpha = 0.70$ or greater (Tabachnick & Fidell, 2007). The Technostress instrument has been tested and retested to yield a reliability of 0.71α to 0.91α (Tarafdar et al., 2007). These questions were rated using a five-point Likert-type scale with 1 representing "Strongly disagree," 2 representing "Disagree," 3 representing "Neutral," 4 representing "Agree," and 5 representing "Strongly Agree."

Each Technostress Creator was an independent variable in the regression model. Six questions were asked to measure Techno-overload (*OVERLOAD*), a condition in which university faculty are forced to work more and faster. Three questions were asked to measure Techno-invasion (*INVASION*), which occurs when information and communication technologies infringe upon and compel professors to stay connected during non-teaching, research, and service hours, upsetting the work-life balance. Five questions were asked to measure Techno-complexity (*COMPLEXITY*), where faculty's perception is that information and communication technologies are so complex that they feel incompetent and obligated to spend more time learning about them. Again, five questions were asked to measure Techno-insecurity (*INSECURITY*), which arises from faculty concerns that those with more advanced technological skills will replace them. Finally, four questions were asked to measure Techno-uncertainty (*UNCERTAINTY*), which is described as the apprehension that can perpetuate from the high-speed turnover of technology and the indeterminate future outcomes that can result, such as university closures and budget cuts. operation, unable to overcome the impact of the pandemic on student enrollment and recruiting efforts (Chung, 2022). The sum of the ratings of the questions asked for each subconstruct was used as the measure for the corresponding variable.

Control Variable

Based on the findings of Harton et al. (2019), the study controlled for the years of experience teaching online (*ONLINE*) in the regression model. *ONLINE* was 1 if the faculty had 0 to 5 years of experience teaching online, 0 otherwise.

Results

Table 2 reports the means and the standard deviations of the variables used in the study. The dependent variable, faculty's perceptions of online cheating (FPOC), had an average score of 3.03 out of a possible five. This indicates that faculty believe that there is a moderate chance that students will

cheat in an online class. This was statistically significantly greater from the faculty's perception of cheating in a traditional in-person course (FPOC) at the $p < 0.001$ level.

Table 2
Descriptive Statistics

Variable	Mean	Standard Deviations
FPOC	3.03	1.629
OVERLOAD	16.46	2.835
INVASION	12.79	2.522
COMPLEXITY	13.44	3.039
INSECURITY	11.47	2.062
UNCERTAINTY	12.78	2.230
ONLINE	.52	.502
FPIC	1.77	1.092

The regression results are presented in Table 3. The table includes the coefficient, t-statistic, and p-value for each Technostress subconstruct and the control variable for online teaching experience (ONLINE). A significant regression equation was found $R^2 = .146$, $F(6, 87) = 2.471$, $p < 0.05$, as six predators explain 15% of the variance. The Technostress subconstruct Techno-complexity (COMPLEXITY) was statistically significant ($t = 2.079$, $p < 0.05$), while the Technostress subconstruct Techno-insecurity (INSECURITY) was marginally significant ($t = 1.796$, $p < 0.08$). The control variable for experience teaching online (ONLINE) was not significant.

Table 3
Regression Analysis - Faculty Perceptions of Online Cheating

Variable	β	t-statistic	p-value
Constant	2.901	2.075	.041**
OVERLOAD	-.021	-.281	.779
INVASION	-.095	-1.093	.278
COMPLEXITY	.127	2.079	.041**
INSECURITY	.162	1.796	.076*
UNCERTAINTY	-.125	-1.656	.101
ONLINE	-.528	-1.621	1.09

* Significant at $p < .10$; ** Significant at $p < .05$; *** Significant at $p < .01$

Discussion

This study examines the relationship between faculty's perception of cheating online and the subcomponents of technostress. The study found that the subcomponent of techno-complexity was

significantly related to the faculty's perception of online cheating. This means that faculty believe that the more complex the technology is, the more likely students are to cheat. A possible explanation for this is that faculty have the perception that if the technology being used is new or complex, then students will have more opportunities to cheat. In addition, this study tested whether the sample group's perception of cheating in a traditional class differed from that of an online class. Results parallel those of previous research (i.e., Harton et al., 2019) that faculty perceive that cheating in an online class is significantly higher than in a traditional class.

Research Limitations

Like any study, this study has limitations. First, because a convenience sample was used, there may be a lack of generalizability and may not represent the population of business faculty across the nation. The timing of the data collection also resulted in a smaller sample size than expected. This resulted as the two organizations used to administer the survey had a smaller membership than normal due to the pandemic. Both organizations had meetings canceled, resulting in them having a much smaller membership base than normal. However, a power analysis was conducted using G*Power 3.1.9.7 (Faul et al., 2007) to determine the minimum sample size required to test the hypotheses. For multiple regression, the *A priori* power analysis results indicated that a minimum sample size of 89 is needed to yield a statistical power ($1 - \beta$) of 0.95 with $\alpha = p < 0.05$ and a medium effect size. Thus, the obtained sample size of 94 is adequate to test the hypotheses.

Research Implications

This study has both implications for future research as well as practical implications. First, future research must use a larger, more diverse sample. As discussed in the limitations, the current study had a small sample size and was limited to business faculty. Harton et al. (2019) found that faculty perceptions of online cheating varied by discipline. Future research should use a larger discipline-diverse sample. The majority of studies that have examined the difference in faculty perception of online cheating used only demographic characteristics to explain why the perception of online cheating is so high. This study used the technostress subconstructs to explain faculty's perceptions of student cheating in online classes. Future research should consider other psychological or trait-based characteristics grounded in the literature to further explain or expand upon these results. Another statistical modeling should be conducted to explore further the relationships between technology stress and faculty perceptions of online teaching in online classes. Future research should weigh the differences in faculty perceptions between online and in-person cheating. While this study did not find evidence of demographics playing a role in faculty perceptions of online student cheating, future research should evaluate how rank and experience teaching influence viewpoints.

Practical Implications

The results of this study also have practical implications. Techno-complexity is positively related to the faculty's perception of online cheating. Institutions of higher learning should provide more professional development to guide faculty in managing the stress triggered by technology. Training programs must extend beyond how to operate the learning management system to include course design and delivery techniques to mitigate cheating for synchronous and asynchronous learning modalities. Advancements in technology will continue to usher in new gateways for student cheating. Surahman et al. (2021) suggested technology- and pedagogy-based strategies to minimize cheating. Technology-based tactics such as artificial intelligence and machine learning add-ins and applications, plagiarism-detection software, and smart proctoring can be employed to inhibit cheating. Faculty should also consider adopting or enhancing pedagogy-based approaches to obstruct cheating, including oral exams and presentations, reducing multiple-choice exam questions instead of open-ended critical thinking questions, providing an authentic feedback loop, addressing the consequences of cheating in course syllabi, and challenging students according to college and university academic integrity policies if cheating occurs. ChatGPT is likely one of today's top faculty techno-stressors. Faculty should explore the capabilities and limitations of this intelligence tool with guidance from their institutions as a dichotomous approach to understanding this technology better while minimizing technostress and student cheating. Correspondingly, more practice-based research is necessary to explore the impact of technology stress on the faculty who teach in institutions of higher learning.

Results also indicate that a faculty's techno-insecurity relates to their perceptions of online cheating. Institutions need incentives for faculty to work together and continue providing job security for those willing to teach online. As virtual learning continues to grow in popularity post-pandemic, faculty will face more technology stress in their work. Technology stress studies are emerging but do not address best practices to understand, let alone treat the symptoms of it. Chronic technostress can lead to innovation resistance at a time when institutions require more online teaching to meet student demand (Kim & Park, 2018). Institutions and academic associations must take technology stress seriously and offer health and wellness workshops or other professional development sessions specifically designated to manage and lessen the repercussions.

Conclusion

This research study assessed the associations between technostress creators (techno-complexity, techno-insecurity, techno-invasion, techno-overload, and techno-uncertainty) and faculty perceptions of student cheating in online classes. Results from regression analysis revealed a positive relationship between techno-complexity and faculty's perception of student cheating in online classes. Techno-insecurity was relatively significant and positively related to the faculty's perception of student cheating in online classes. Techno-overload, techno-invasion, and techno-uncertainty subconstructs were not identified as statistically significant in predicting a faculty's perception of student cheating in online

classes. These outcomes are notable and should make institutions of learning take notice to champion their faculty, protect their health and wellness on the job, and provide more in the way of professional development better to understand the impact of technology stress in their work. Contrastingly, this study imparts greater awareness of faculty perceptions of student cheating in a digital learning environment. Equipped with this evidence, faculty should continue to join forces to research and support one another in developing high-impact practices to protect the sanctity of academic integrity in a world where technology evolves and is deployed at lightning speed.

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