RESEARCH IN PROGRESS

AN EXAMINATION OF ANTECEDENTS AND CONSEQUENCES OF TECHNOSTRESS AMONG UNIVERSITY STUDENTS: TASK -TECHNOLOGY FIT PERSPECTIVE

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Drawing on the task-technology fit framework, this study examines the antecedents and consequences of technostress students face in an online/blended-learning environment. The effect of task, technology, and individual students' characteristics was hypothesized as predictors of technostress. The impact of technostress was also examined on students' satisfaction with online learning and expected performance. Preliminary findings based on a sample of 261 university students suggest that tasks requiring interdependence and cooperative learning caused higher technostress, while technology characteristics such as perceived ease of use and usefulness negatively effect technostress. Students' conscientiousness positively affect perceptions of technostress. Unlike previous research, which examined a few antecedents of technostress, this study provides a more nuanced understanding of the causes of technostress in an online higher educational context.

Keywords:
technostress, interdependence, ease of use, conscientiousness, self-efficacy online learning

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1 Introduction

Universities are pursuing technology-enhanced learning as an important agenda for the upgradation of students' learning experiences. Newer learning methods (e.g., flipped classrooms and blended learning) are ways to incorporate the digitalization of teaching and learning resources. This technology-enhanced delivery of instructions enriches students' learning experience and improves their knowledge acquisition and access to learning resources (Brooker, Corrin, De Barba, Lodge, & Kennedy, 2018; Tuapawa, 2017). However, these new forms of learning require time, skills, and effort investments and may create strain for the students (Mehta et al., 2019; Paul & Glassman, 2017). As a result, students can experience technostress –distress associated with the need to use and adapt to new digital technology (Gaudioso, Turel, & Galimberti, 2017; Vuori, Helander, & Okkonen, 2019). Although the use of technology itself can be a source of technostress, the optimal fit among tasks, technology, and individual characteristics can alleviate this stress (Ayyagari et al., 2011). In addition, technology can be a source of motivation for individuals when it eases the task and enables them to achieve the desired outcome in an efficient manner (Cascio & Montealegre, 2016). There can be situations where task, technology, and individual capabilities present a poor fit, which causes technostress, and individuals engage in a coping process to manage that stress. The following sections explain the main constructs of this study, the methodology employed to assess the hypotheses, and the preliminary findings.

2 Literature Review and Theoretical Framework

2.1 Task Technology Fit (TTF)

Task-technology fit (TTF) theory suggests an interrelationship of three components. First, task requirements, technological functionality, and individual capabilities should be matched to achieve optimal performance (Goodhue, 1995; Goodhue & Thompson, 1995). For example, a task may require a different level of detail, and individuals performing this task will use different cognitive and physical resources (capabilities) to complete the task when technological functionality (e.g., tools used, support services available) matches with the task requirements, individual experience high motivation. Furthermore, individual characteristics represent attributes of their technological proficiency and capabilities to perform the assigned task. Internal

resources such as self-efficacy, conscientiousness motivation, and experience using different technologies can contribute to high TTF perceptions. A high level of TTF perceptions will increase technology utilization as it matches the task requirements and individual characteristics. On the contrary, distress and frustration are experienced when technology characteristics do not match task requirements and individual capabilities.

2.1.1 Task Requirements

Tasks requiring collaboration and interaction among students are essential for students' learning (Laurillard, 1993; Ramsden, 1992). Although prior research on collaborative learning has mainly focused on students' face-to-face interactions, it is unclear how technology and teamwork can be integrated. Furthermore, the extent and depth of interaction are expected to be limited in an online learning environment, and students experience anxiety and frustration in collaborative learning activities (Bakhtiar, Webster, & Hadwin, 2018). Causes of anxiety stem from delayed responses from group members, misinterpretation, and worrying about grades affected by other members' performance (Donelan and Kear, 2018).

2.1.2 Technological Characteristics

Technological characteristics related to ease of use and usefulness determine the utilization of any technological change. However, the adoption of technology is usually beyond the control of a user because the use of technology is based on compliance (decided by the university). Thus, involuntary adoption of not-so-useful technology creates a perception of demands-resources misfit. Individuals perceive that technology does not help facilitate the completion of required tasks and believe there could be better ways to accomplish the task. These perceptions increase stress and anxiety (Sami & Pangannaiah, 2006).

2.1.3 Individual Characteristics

Self-efficacy is people's self-appraisal of their abilities to perform the designated tasks (Bandura, 1986). Positive self-appraisal in any situation significantly affects perceived stress. In addition, individuals with high self-efficacy can learn new skills and adapt to technological changes (Ellen, Bearden, & Sharma, 1991).

Conscientiousness is a personality trait that directs an individual's attention toward personal growth and work accomplishment. Personality predisposes individuals to pursue certain goals, espouse particular values, and behave differently (Lazarus & Folkman, 1984). Individuals high in conscientiousness place greater emphasis on personal growth and success. Thus, any changes that can reduce their opportunities for success and growth make them stressed (Rodell & Judge, 2009). Changes in the learning environment by introducing technology and collaborative task requirement can be stressful for conscientious students as it may reduce their prospects of growth and accomplishments.

2.2 Technostress

Technostress is described as "a modern disease of adaptation caused by an inability to cope with new computer technologies in a healthy manner" (Brod, 1984, p.16). Technostress captures five dimensions: 1. techno-overload (a perception of overload experienced due to excessive use of technology), 2. techno-invasion (feeling of no boundaries between personal and work life), 3. techno-complexity (difficulties in learning technology and related features), 4. techno-insecurity (job insecurity due to technology) and 5. techno-uncertainty (difficulty in keeping pace with technological changes).

2.3 Satisfaction with online learning and expected performance.

Students can find online learning an exhausting experience because the deluge of information, the expectation of fast response, and the integration of learning into their daily lives affect their satisfaction with learning and performance (Yin et al., 2018). Exhaustive experience can deplete students' mental resources, thus reducing their willingness to participate (Ayyagari et al., 2011) actively, lowering their satisfaction (Kim et al., 2015), and weakening performance (Ayyagari et al., 2011)

2.4 Hypotheses.

H1: Collaborative learning and goal interdependence positively affect the perceptions of technostress.

H2: Technology characteristics (ease of use and usefulness) negatively affect the perceptions of technostress.

H3: Self-efficacy belief negatively affects the perceptions of technostress.

H4: Conscientiousness positively affects the perceptions of technostress.

H5: Technostress negatively affects satisfaction with online learning.

H6: Technostress negatively affects students' expected performance.

3 Method

Data for this study was collected by distributing an online survey to undergraduate students of one of the United Arab Emirates' private sector universities. Students were enrolled in a management course that was delivered online. Participation in this study was voluntary, and anonymity of responses was ensured. Nevertheless, 470 students were invited, and 261 completed responses were received.

3.1 Measures.

- *Cooperative Learning* (7-items) and *goal interdependence* (4-items) scales by Johnson and Johnson (1983) were used to operationalize task requirements.
- Technology characteristics of *perceived ease of use* and *usefulness* of online learning were assessed using 12 items measure of Davis (1989).
- *Self-efficacy belief* was measured by the 7-item scale of Bandura et al. (1996).
- *Conscientiousness* was measured by Hendriks et al. (1999) 20 traits inventory.
- *Technostress* was measured by Brooks et al. (2017) on 23 items scale.
- *Learning Satisfaction* was measured by Cao et al. (2018) 4-item scale.
- *Expected performance* was measured by Blasco-Arcas et al. (2013) 3-item scale.

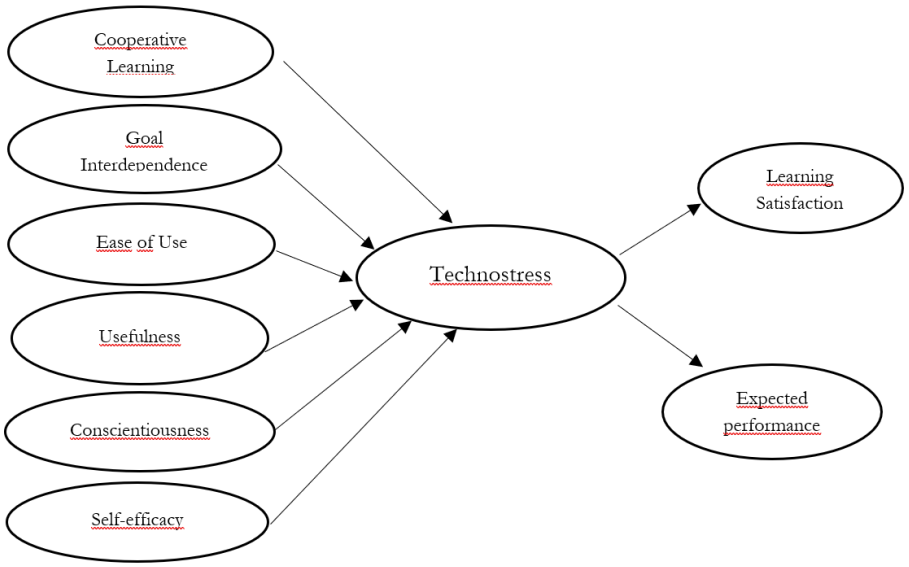

Figure 1: Hypothesized research model

3.2 Analyses and Results.

Path analysis was conducted using AMOS 25. Results are presented in Table -1.

Table 1: Hypotheses testing results.

Hypotheses and Paths	Coefficient	T Statistics	P-values	Supported?
H1: Collaborating learning -> Technostress	0.127**	3.93	0.000	Yes
Goal Interdependence -> Technostress	0.253**	7.93	0.000	Yes
H2: Ease of use -> Technostress	-0.103**	-3.70	0.000	Yes
Usefulness -> Technostress	-0.100**	-2.77	0.000	Yes
H3: Self-efficacy -> Technostress	-0.057	-1.33	0.184	*No*
H4: Conscientiousness -> Technostress	0.303**	9.85	0.000	Yes
H5: Technostress -> Learning Satisfaction	-0.228*	-2.33	0.020	Yes
H6: Technostress -> Expected Performance	-0.134	-1.38	0.166	*No*

*** p<.01 , * p<.05.*

These preliminary findings support our hypothesized model and highlight that technostress results from three interrelated components: technology, task, and individual characteristics. In addition, this study contributes to the existing literature on technostress by identifying task characteristics (collaborative learning and goal interdependence) and individual characteristics (self-efficacy and conscientiousness), which are rarely examined along with technological characteristics as predictors of technostress.

Our findings indicate that when institutions are rolling out technology-enhanced learning, they need to be aware of the ensuing technostress which may impact the academic performance of students, resulting in more dropouts. In order to reduce the technostress, the institutions should focus on all three sets of factors i.e., personal dispositions, environment, and technology-related factors. This calls for a holistic approach to the management of technostress among the student population. These findings represent a work in progress due to the small sample size, and efforts are underway to invite more respondents to replicate these findings with a bigger sample. The next step would be to study the organizational and group-level variables (such as organizational strategy and unit-level goals) to assess their moderating influences on students' technostress and related outcomes.

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