Student Satisfaction with Use of an Online Peer Feedback System

Magda Donia, Ph.D. *
University of Ottawa
Telfer School of Management,
55 Laurier Avenue East, Ottawa, ON, K1N 6N5
donia@telfer.uottawa.ca

Merce Mach, Ph.D.
University of Barcelona
Faculty of Economics & Business
Diagonal 690 # 2238 - 08034 Barcelona, Spain
merce.mach@ub.edu

Tom O'Neill, Ph.D.
University of Calgary
Department of Psychology
Calgary, Alberta, Canada T2N 1N4
toneill@ucalgary.ca

Stéphane Brutus, Ph.D.
University of Ottawa
Telfer School of Management,
55 Laurier Avenue East, Ottawa, ON, K1N 6N5
brutus@telfer.uottawa.ca

***** Corresponding author.

Reference: Donia, M. B., Mach, M., O'Neill, T. A., & Brutus, S. (2022). Student satisfaction with use of an online peer feedback system. *Assessment & Evaluation in Higher Education*, *47*(2), 269-283.

Student Satisfaction with Use of an Online Peer Feedback System

Abstract

We contribute to the growing evidence of the positive effect of use of online peer feedback tools on students' teamwork skills development. We do so by exploring individual and contextual factors underlying satisfaction with using a peer feedback system alongside team projects. Employing path analytical framework and bootstrap methods, we analyzed data from an international sample of 100 project teams in management studies. Drawing on procedural justice theory, we theorized and found support that students' uncertainty avoidance orientation and virtuality in collaboration were positively related to their satisfaction with use of a peer feedback system. Such satisfaction in turn allowed them to be more effectively team members. Our findings provide evidence for higher education institutions and instructors considering the adoption of online peer feedback systems alongside teamwork in their curricula. Specifically, peer feedback appears to be effective in the development of teamwork skills and students appreciate the opportunity to provide feedback to their peers in a structured and dedicated environment. Our findings are timely and of important practical significance as educational institutions increasingly rely on the use of computer-mediated technology during the Covid-19 pandemic.

Keywords: Peer feedback; uncertainty avoidance; virtuality; satisfaction with use of an online peer feedback system.

Student Satisfaction with Use of an Online Peer Feedback System

As teamwork becomes increasingly ubiquitous in the workplace (O'Neill and Salas 2018), a growing focus has been placed on the development of teamwork skills of future graduates throughout higher education. The use of peer feedback systems as a tool toward this end has been studied for decades and garnered increasing support in recent years employing both cross-sectional (e.g., Villanova et al. 1993) and longitudinal research designs (e.g., Brooks and Ammons 2003). Research has also established these benefits to students in both cohort-based (e.g., Dominick, Reilly, and McGourty 1997) and repeated-measures designs (e.g., Brutus and Donia 2010). As such, team members' unique positioning to observe and provide feedback on their peers' behaviors is increasingly recognized as a valuable means of developing teamwork skills of students throughout higher education (O'Neill et al. 2019).

Importantly, research focusing on post-secondary school education found benefits to use of a peer feedback system including enhanced teamwork skills (Brutus and Donia 2010), better team health and stronger project grades (O'Neill, Boyce, and McLarnon 2020), increased confidence evaluating and communicating feedback to peers (Brutus, Donia, and Ronen 2013). Research evidence further suggests that such observed benefits transfer to the workplace (Donia, O'Neil, and Brutus 2018). This multi-decade body of research increasingly points to the benefit of incorporating a peer feedback system in post-secondary education. Use of an online peer feedback tool can be especially valuable in the current context with the sudden move to online education driven by the pandemic, whereby some students never get the opportunity to meet face-to-face.

While research provides evidence regarding the effectiveness of using of an online peer feedback system for students (e.g., O'Neill et al. 2020), we have much to learn about students'

attitudes towards using these online feedback tools. For example, there are studies looking at students' reactions to peer assessments and evaluations for content revision and grading (e.g., Srichanyachon 2012; Wen and Tsai 2006), whereby peers' evaluation and scores are incorporated into final grades. However, we do not know much about students' attitudes toward the developmental use of a teamwork skills tool (see O'Neill et al. 2019). As Levy and Williams (2004, 890) explain in their review, "good psychometrics cannot make up for negative perceptions on the part of those involved in the system." Knowledge about student satisfaction with the use of such tools is therefore needed to help understand barriers and opportunities to using peer feedback systems.

In a timely response to the need to develop teamwork skills among students (Weiss 2018), use of peer feedback systems has been found to be effective in the development of these soft skills. Managerial soft skills such as teamwork, communication, professionalism, and reliability are increasingly recognized to be as important as hard skills to success in the workforce (e.g., Andrews and Higson 2008). As mentioned above, an understanding of student attitudes toward the use of such systems is the necessary next step to enable a better deployment in post-secondary institutions. Drawing on procedural justice theory we suggest that in addition to providing valuable and actionable feedback to students, incorporating a feedback system alongside teamwork activities may reduce students' uncertainty regarding teamwork by giving them the assurance that they will have a safe conduit to voice any concerns to team members at the end of their teamwork project. Given that teamwork by nature involves outcome interdependence, providing a formal channel for the provision of peer feedback may be viewed positively by students, especially those who are high on uncertainty avoidance orientation and thus concerned about sharing control of their final project (we will explain this rationale further

below). Also, as students increasingly collaborate virtually (even those taking classes face-to-face), the opportunity to provide and receive feedback via a peer feedback online tool may compensate for the decreased verbal and non-verbal information exchanges that happen naturally in face-to-face interactions (McLarnon et al. 2019).

We therefore theorize that the use of an online peer feedback system provides a means of increasing perceptions of accountability (O'Neill et al. 2020), and that this might beneficially affect student attitudes toward peer feedback. As such, we suggest that student satisfaction with the use of a peer feedback system mediates the positive relationships between uncertainty avoidance and students' performance working in teams, and between virtuality and students' performance working in teams.

Theory and Hypotheses

Anecdotal evidence provided by students in our classes suggest that the nature of teamwork has undergone important changes in keeping with the pace of technology. Even before the pandemic, students increasingly relied on technology to work collaboratively on online documents using platforms such as Google Docs, and communicating amongst each other using various forms of computer-mediated technology (Conole et al. 2008). Lack of time and difficulty of coordinating among group members were found to be the main reasons for relying less on face-to-face meetings to collaborate and more on virtual communication (e.g., Conole et al. 2008). At the same time, there appears to be increasing student pre-occupation with grades in teamwork (Maiden and Perry 2011), especially as a growing reliance on computer-mediated collaborations (and less time spent working face-to-face) involves invariably reduced control over team members' contributions, and in turn, their final group grade (Ocker and Yaverbaum 2001; Taras et al. 2013). These issues and concerns seem to have become exacerbated with the

combination of online teaching and the pandemic, when students are facing multiple challenges (including personal) while attempting to maintain their performance and working virtually with team members who they may have never met face-to-face. Use of a tool that allows for reflection and sharing of constructive feedback anonymously has been found to be effective in collocated teams (Donia et al. 2018) and may be especially useful with greater reliance on computer-mediated collaboration.

Given this context, below we theorize that use of a peer feedback system may increase students' perceptions of procedural justice whereby students who are higher on uncertainty avoidance and who utilize more virtuality are more likely to be satisfied with use of a peer feedback system, and in turn, perform better in their teams.

Theoretical Underpinning

Drawing on procedural justice theory, we believe that in the current and future work context of virtual collaborations and uncertainty in their outcomes when working in teams, students' favorable attitudes toward use of a peer feedback system will have a positive impact on their performance. Procedural justice refers to perceptions of fairness toward the procedures used to arrive at a decision, with voice being one of the key factors contributing to procedural justice perceptions (Colquitt 2001). When they have a voice, participants tend to view a procedure as fairer, and in turn experience more positive attitudes (Cohen-Charash and Spector 2001). We believe that the structured nature of an online peer feedback tool that is assigned as part of the teamwork exercise gives students the sense that they have a voice and that their concerns will be heard by their peers and in turn explain their better performance in teams (c.f. Donia et al. 2018; O'Neill et al. 2020). While the higher sense of procedural justice resulting from grade calibrations involved in use of a peer feedback tool for administrative purposes are

more obvious, even when a peer feedback system is used solely for developmental purposes (i.e. not for grade adjustment), its use signals to students that their experiences and opinions regarding the teamwork processes are important. Indeed, in a study of employee reactions to participation in a feedback process, Cawley, Keeping, and Levy (1998) found that users expressed more positive reactions when they engaged in feedback that was value-expressive (i.e., "for the sake of having one's 'voice' heard", 615), compared to when feedback was instrumental and summative.

In addition to the sense that they will have their voice heard via the peer feedback tool used at the end of term, or team's project, knowledge of its upcoming use can also raise the sense of accountability of team members who might otherwise feel that withholding effort would not result in a major loss for their team (i.e., reduce free riding; O'Neill et al. 2020). Use of a formal tool that ensures all team members having a voice may be an effective intervention for instructors to consider. This is consistent with findings indicating the importance of equality of participation (e.g., Woolley et al. 2010) and of perceptions of justice among team members (e.g., Cropanzano and Benson 2011) on team effectiveness. Given that many individual factors (e.g., disposition; Morrison 2011) can affect individuals' natural tendency to express voice, lower disparity in voice contributions (Brykman and O'Neill, in press) – and therefore a better team performance outcome – should result from reliance on a formal mechanism such as an online peer feedback tool.

Collaborating Under Uncertainty

To better understand the role of student attitudes toward using a peer feedback system we focus on two determinants of satisfaction with its use, one that is individual and the other that is structural. First, we explore the role of uncertainty avoidance to understand whether the

structure provided by using a peer feedback system contributes to a sense of assurance and guidance that students high on uncertainty avoidance appreciate. Second, we explore the role of virtuality to determine whether students who rely mostly on virtual collaborations report greater benefit from using the system, as it provides a structured environment for greater accountability and meaningful exchanges about their teamwork interactions.

Uncertainty avoidance orientation, a relatively stable individual orientation, has been increasingly recognized as an important predictor of individuals' attitudes and behaviors. In their meta-analysis, Taras, Kirkman, and Steel (2010) found that, compared to personality and demographic variables, uncertainty avoidance better predicted individual attitudes toward teams (i.e., preference for teamwork). As such, individuals with a higher score on this construct tend to react more negatively to challenges such as unreliable group members or unclear team responsibilities, compared to their lower-scoring counterparts.

Individuals preferring work arrangements involving clear rules and guidance (Hofstede 2001; Taras et al. 2010) may find group work uncomfortable because of the relative lack of control over outcomes. Indeed, the need for control has been argued to be a central human motivation (White 1959). The need for control may be further activated in the context of teamwork that is inherently related to diffusion of responsibility (Forsyth, Zyzniewski, and Giammanco 2002). Diffusion of responsibility helps to explain social loafing and the tendency for individuals to feel less responsibility toward outcomes when working in groups than when working alone (Williams, Harkins, and Latané 1981). Importantly, this reduced sense of responsibility tends to increase with group size (Forsyth et al. 2002). This is aligned with the reduced motivation and effort in the form of social loafing from working in teams (Karau and Williams 1993). Thus, students may find using a peer feedback system a helpful means of

discouraging free riding while holding their team members more accountable. That is, using a peer feedback system provides to students a structured environment at the end of term or the project, when they know they will be expected to provide feedback to their peers (O'Neill et al. 2020). This structured peer feedback environment signals accountability of team members. Therefore, for students who are high on uncertainty avoidance and tend to prefer unambiguous situations, it may help lessen their discomfort of having their group grades not be entirely within their control. As a result, the more uncomfortable they tend to be in ambiguous situations, the more they are likely to appreciate the use of a peer feedback tool, and in turn, the better they will perform in their teams as their uncertainty and strain is lessened and they can better focus on goal accomplishment.

It is therefore expected that students will hold a positive attitude toward use of the system given that it would likely be viewed as a means of increasing accountability. In other words, knowing that they will be providing feedback to each other likely increases accountability and will predispose students to view the upcoming use of the system favorably. As such we expect that:

H1. *Satisfaction with use of a peer feedback system will mediate the positive relationship between uncertainty avoidance and performance.*

Collaborating Relying on Computer Mediated Technology

Today software tools that allow for virtual collaborations are widely available and increasingly used by students. In fact, while in the past tools that were embraced by organizations as revolutionizing team work (Balteset al. 2002) were available at a cost and not easily accessible, various options are now available entirely or in part for free and increasingly used by students when working in teams (e.g., file collaboration such as Google Docs, Microsoft

Office, file sharing such as Dropbox, Google Drive, Microsoft OneDrive, instant messaging such as Slack and Discord, and shared calendars). Given the convenience these tools afford, even students working in teams with relative ease of interacting face-to-face incorporate at least some of these tools in their collaborations. Computer-mediated collaboration involves reliance on tools such as shared online documents and instant messaging, thereby creating a higher degree of virtuality (i.e., reliance on electronic collaboration tools) than face-to-face teams. This increasing reliance on tools high on virtuality has been associated with decreased group effectiveness and decreased member satisfaction (Baltes et al. 2002; Hambley, O'Neill, and Kline 2007).

As students increasingly rely on computer-mediated tools for collaboration because of their practicality and convenience, we expect that use of a peer feedback tool will constitute an effective complement to provide feedback that would have been more naturally occurring in face-to-face interactions. As such, use of a peer feedback tool may help compensate for the decreased exposure to informal feedback, body language, vocal cues, and synchronous interactions of team members who collaborate virtually relative to their counterparts engaging in more face-to-face interactions (McLarnon et al. 2019). For example, in a face-to-face discussion it is possible to gauge others' opinions to one's suggestions through their tone of voice and non-verbal expressions, in addition to their verbal commentary. As such, interactions carried out through media low in "richness" (Hambley, O'Neill, and Kline 2007) benefit less from informal feedback cues that naturally occur and may especially benefit from and value the opportunity to use a peer feedback system. Also, less informal feedback may lower accountability and along with a greater sense of anonymity in more virtual environments may be associated with greater difficulty in identifying free riding behaviors.

In line with research findings that virtual team performance is enhanced with use of a peer feedback system (McLarnon et al. 2019), we explore the role of student attitude toward use of the system. We anticipate that knowing that team members will provide feedback to each other using a peer feedback system at the end of term raises expectations of shared accountability, in turn increasing team member satisfaction working in teams, and consequently their performance.

H2. *Satisfaction with use of a peer feedback system will mediate the relationship between team virtuality and performance.*

Methods

Participants

Our sample is comprised of 414 international students from 60 different countries enrolled in a large European business school. Two hundred and eighty of them were master's students (Master of Business Administration and Human Resource Management Masters), and 134 were enrolled in the business management undergraduate program. All students were assigned to teams as part of their class work. We collected data from 100 different 3- to 5-member teams in 11 different courses. The overall response rate was 94.5% as twenty-two students declined to participate, and two returned incomplete questionnaires. Two hundred and fifteen participants were women (52%) and 199 were men (48%). We also collected data on work experience and found that 30% had less than 1 year of experience, 23.6% had 1 year, 33.1% had between 2 to 4 years, and 13.3% had 5 or more years of experience.

We collected data from the master's classes during the winter semester of 2019, and from the undergraduate classes during the spring semester of that year. Consistent with the language of instruction of the course, 61.1% of the respondents used the English version of the survey (6

courses) and the rest used the Spanish version. For the Spanish version, survey scales were translated from English to Spanish, back translated, and pilot-tested to ensure that the translation did not change the meaning of the items used.

Procedure

All students participated in a 7-week mandatory team project in a Talent Management class (a written case study essay and an oral poster presentation). Teams were also informed at the start of the term that as part of their group project, they would be providing feedback to their peers using an online peer feedback system. After the delivery and presentation of their project at the end of term, students were enrolled in the *ITPMetrics.com* peer feedback survey (O'Neill et al. 2019), where they provided feedback to their team members. We provided students with guidelines from the *ITPmetrics* system on how to provide effective feedback to their peers (i.e. that it will be future oriented, accurate, provided with a caring tone, and targeting a team member's behavior). To ensure students understood the dimensions of effective teamwork, and to make these behaviors salient in their minds as they worked in their teams, the instructor repeated this information in the classroom. In addition, students were assured that the *ITPmetrics* system would permit them to provide feedback confidentially and anonymously, as student names would not appear in the summary reports (O'Neill et al. 2020). In addition to the experience of providing and receiving feedback, the peer feedback system provided the performance data used in this study.

We also distributed self-report surveys to participants in their last class of the term. To reduce the risk of common method bias from the self-report data, we collected this data in two parts (Podsakoff et al. 2012): at the start and at the end of a two-hour class. The first part contained items assessing satisfaction with use of a peer feedback system, and the second part

contained items assessing uncertainty avoidance and virtuality. Each class was divided into two, so that each half of students received the two parts of the survey in a different order (i.e., half of the students in each course were asked to complete the first part first, and the other half was asked to complete the second half first). No significant differences in levels of satisfaction were found between the two halves.

To summarize, to test our hypotheses, we collected multisource (self-report and peers) and time-lagged data (at Time 1 every team member provided feedback to their peers using the *ITPmetrics.com* system, at Time 2 they answered a paper-and-pencil survey).

Measures

All measures included in this study were rated on a seven-point Likert scale (ranging from 1= strongly disagree to 7 = strongly agree).

Team Virtuality. Virtuality was assessed using Suh's (1999) 8-item media richness scale, where participants indicated how they felt about general communication conditions due to the computer-mediated collaboration methods used. An example item includes: "There were ideas I couldn't relate to the other party because of the communication conditions" ($\alpha = 0.84$).

Uncertainty Avoidance. The uncertainty avoidance cultural dimension was assessed using Wu's (2006) 5-item measure. A sample item includes: "It is important to have job requirements and instructions spelled out in detail so that employees always know what they are expected to do." ($\alpha = 0.80$).

Satisfaction with Use of a Peer Feedback System. To assess participants' satisfaction with use of a peer feedback system, we used the 24-item *Reactions to the system* measure developed by the *ITPmetrics.com* Lab (O'Neill et al. 2017). This scale is a first-order construct related to three second-order constructs (e.g. appropriateness, usefulness, and ease of use). A

sample item of the 5-item appropriateness subscale is: “My team members will provide reliable feedback regarding my performance in the team.” (α = 0.82). A sample item of the 10-item usefulness subscale includes: “I intend to focus on improving certain teamwork behaviors in light of my peer feedback.” (α = 0.92). Finally, a sample item of the 9-item ease of use subscale is: “It was easy to understand the format of the tool” (α = 0.89). The average Cronbach’s alpha for the satisfaction unidimensional scale is 0.94.

Performance. Team members provided anonymous feedback to each other on five competencies that are associated with team effectiveness on the ITPmetrics.com system. The specific competences assessed are commitment to the team’s work, communication with team members; having a strong foundation of knowledge, skills and abilities (KSAs); emphasizing high standards; and focus, keeping the team on track. Each students’ score is comprised of the average ratings provided by each team member on the five competencies (see Ohland et al. 2012; and O’Neill et al. 2019 for validation evidence).

Controls. We controlled for gender (0= male, 1= female), years of professional experience, number of different countries represented in each group, as well as language used (0= English, 1= Spanish). We also chose to control for the other antecedent variable (either uncertainty avoidance or virtuality), given the nontrivial correlation among them (.337). Thus, we ran the mediation models for each antecedent variable with the other antecedent included as a covariate, as this approach provides a better test of the hypothesized model.

Analyses

Before testing the hypotheses, we checked the psychometric properties of the measures and their discriminant validity. We employed the PROCESS macro (version 3.3) for SPSS v.23 developed by Hayes, which estimates the coefficients of the mediation model using ordinary

least squared regression-based path analytical framework (Hayes 2013), and employs the recommended bootstrapping methods (Mackinnon, Lockwood, and Williams 2004) to establish the significance of the indirect effect. For our analyses, we used a 50,000-bootstrap re-sampling and a bias-corrected 95% confidence interval (Preacher, Rucker, and Hayes 2007).

Measurement Model Validity and Common Method Variance. With the aim of controlling for potential common method variance, we used Harman's single-factor test (Podsakoff et al. 2012) to identify any possible effects. Thereby, if there is common method variance, a single-factor confirmatory factor analysis model will provide better fit indices, accounting for the majority of the covariance among all of the studied variables. Our results revealed that a single-factor model did not provide good fit indices [$\chi^2_{(527)} = 3512.848$, $p < 0.000$, $\chi^2/df = 6.666$, CFI = .594, IFI = .597, RMSEA = .117, LO = .113, HI = .121]. In contrast, the hypothesized model which includes the satisfaction with use of feedback tool as second-order factor and three first-order dimensions (appropriateness, usefulness, and ease of use), as well as the virtuality and uncertainty avoidance yielded a good fit to the data [$\chi^2_{(521)} = 1549.526$, $p < 0.000$, $\chi^2/df = 2.974$, CFI = .860, IFI = .861, RMSEA = .069, LO = .065, HI = .073]. These results corroborate that they are three distinct constructs.

Table 1 presents the construct reliability of the study variables, as well as the convergent and discriminant validity of studied variables. The composite reliability (CR) scores were equal to or higher than .80 (Hair et al. 2010) for each of the three variables (satisfaction, as a second-order construct mean score, virtuality, and uncertainty avoidance). The Average Variance Extracted (AVE) was closer or higher than 0.50, and the AVE for the three variables was greater than the variance shared with the remaining constructs, hence supporting convergent validity (Henseler, Ringle, and Sinkovics 2009). Additionally, convergent validity was reinforced, with

all the values higher than the maximum shared variance (MSV). Our findings also confirm the variables' discriminant validity with all of the Average Shared Variance (ASV) scores being below the AVE score (Hair et al. 2010).

[Table 1 near here]

Results

Table 2 presents means, standard deviations, and correlations among the study variables.

[Table 2 near here]

The Mediating Role of Satisfaction with the Use of a Peer Feedback System

Hypothesis 1 predicted that the relationship between uncertainty avoidance and team members' performance is mediated by their satisfaction with the use of a peer feedback system. We conducted a simple mediation analysis using ordinary least squares path analyses and the bootstrapping technique. As shown in Table 3, uncertainty avoidance was positively related to satisfaction with the use of the peer feedback system (a = 0.19), and satisfaction with use of the peer feedback system was in turn found to be positively related to performance as rated by team members' skills (b = 0.10). The bias-corrected bootstrap confidence interval for the indirect effect (ab = 0.02) based on 50,000 bootstrap samples is entirely above zero (0.01 to 0.05). In support of Hypothesis 1, there was no evidence of a direct relationship between uncertainty avoidance and performance when working in teams (c' = -0.01; n.s.).

[Table 3 near here]

Hypothesis 2 anticipated that the relationship between virtuality and teamwork member skills is mediated by the satisfaction in the use of a peer feedback system. Results presented in Table 4 show that virtuality was positively related to satisfaction with the use of a peer feedback system (a = 0.38), and satisfaction with use of the peer feedback system was positively related to

performance as rated by team members (b = 0.10). The bias-corrected bootstrap confidence interval for the indirect effect (ab = 0.04) based on 50,000 bootstrap samples is entirely above zero (0.01, 0.07). Furthermore, there was no evidence of a significant direct effect between virtuality and performance (c' = 0.06; p= ns), in support of Hypothesis 2.

[Table 4 near here]

Discussion

Our findings extend prior research on the effectiveness of using a peer feedback system in the development of teamwork skills by providing evidence of student satisfaction with the use of such systems. This topic is timely and important; while many post-secondary institutions rushed to move to an online education because of the Covid-19 pandemic, this mode of virtual or hybrid delivery may continue to be incorporated in course delivery in a post-pandemic world by regular brick and mortar institutions. As such, at a time when much of higher education relies on computer-mediated communication, and when student satisfaction is increasingly considered in decision-making (Santini et al. 2017), our focus on student attitudes is well timed. Our findings have important practical significance as we have found that students who are high on uncertainty avoidance and working virtually are more satisfied with use of a peer feedback system and in turn are more effective in their teams (i.e., as evidenced by the higher performance ratings they received from their peers).

Theoretical Implications

Research evidence on the contribution of online peer feedback systems to the development of student teamwork skills supports the idea that such systems enhance students' employer-valued soft skills (e.g., Brutus et al. 2013; Donia et al. 2018). Understanding student attitudes following mandatory use of a feedback system is an important step towards

incorporating peer feedback tools in higher education as a means to develop teamwork skills. This is significant because even if research has found the system to be effective in the development of teamwork skills (e.g., O'Neill and Salas 2018), knowledge of the role of student attitudes toward the feedback system is necessary for its effective implementation by post-secondary institutions.

In this study, we explored the role of student uncertainty regarding teamwork in satisfaction with using a peer feedback system. We hypothesized that students' uncertainty avoidance orientation and virtuality in collaboration would be positively related to satisfaction with use of a peer feedback system in turn allowing them to more effectively perform in teams. We anchored our hypotheses on procedural justice theory, which has found to be key to understanding the motivational function of performance feedback, which occur in organizations, rather than educational settings (Levy and Williams 2004). Our results thus contribute evidence of one potential mechanism through which the use of a peer feedback system improves student performance in teams. Knowledge that they will have the opportunity to provide feedback to their team members using a structured and formal tool, while also knowing that they themselves will be held to account in a similar fashion, appears to reduce some of the concern of teamwork that individuals high on uncertainty avoidance experience.

Similarly, our findings suggest that knowledge of the opportunity to provide feedback in a formal environment appears to have a positive benefit when collaborating with the greater distance and anonymity of a virtual environment. Moreover, remote working, teleworking, digitalization challenge organizations and employees. There is a need for ensuring that current and future professionals are adequately prepared for the new shape of work (e.g. collaborate

digitally). Having the competency of providing feedback is a key tool for being able to influence the group's dynamic, its effectiveness, and performance outputs (O'Neill and Salas 2018).

Our study contributes to research on peer feedback systems and teamwork skill development by exploring student attitudes toward use of such tools. Specifically, we found that students appreciate the opportunity to provide feedback to their peers in a structured and dedicated environment. Given that the assignment for providing feedback to peers used in this study was a mandatory learning tool, we can infer that if post-secondary institutions wish to implement use of such a system in a similar manner, it will be well received and appreciated by students.

Practical Implications

Use of online peer feedback tools may be beneficial for enhancing team-work competencies in the virtual and telecommuting world that may outlast the Covid-19 pandemic. Prior research established that repeat use of structured feedback mechanisms requiring students to reflect on their contributions and those of their team members leads to the development of student teamwork skills and increases their effectiveness as team members (e.g., Brutus and Donia 2010; Donia et al. 2018). Importantly, given the current necessary reliance on almost entirely online education, research has also found use of a peer feedback system to lead to performance improvements in global virtual teams (McLarnon et al. 2019).

Our study makes an important practical contribution to this field by exploring students' reactions to the use of such systems. Importantly, the awareness that they will be receiving feedback from their peers also acts as a potential accountability mechanism, because simply being aware that peers will be providing feedback can be sufficient for behavior change. With an increasing number of evidence-based, intuitive, and even free peer feedback systems (such as

ITPmetrics.com, used in this study), the knowledge that students react positively to its use, provides the necessary missing piece to instructors considering incorporating them in their teamwork assignments.

Future Research Directions

Given that our sample was comprised of students in a traditional face-to-face classroom environment where they collaborate virtually by choice, or convenience, one pressing and important avenue for future research is to explore whether perceptions of justice differ when students work together entirely virtually and never have the opportunity to meet their teammates face-to-face.

Having found that uncertainty avoidance is a determinant of satisfaction with use of a peer feedback system, another important avenue for future research involves extending the findings of this study. For example, uncovering additional individual differences that may underlie satisfaction with its use, such as personality (e.g., conscientiousness) and academic performance (e.g., grade point average). Similarly, other structural factors could also be considered, such as team size and type of group assignments.

Also, in this study we focused on uncertainty avoidance and virtuality as key determinants of students' satisfaction with use of a peer feedback system - for developmental feedback (rather than for grade adjustment). Similarly, studies which found use of a peer feedback system to be effective toward the development of students' teamwork skills also did not use the results of the feedback for grade adjustment (e.g., Brutus et al. 2013; O'Neill et al. 2020). As such, an important avenue for future research is to test whether student users of a system adopted for evaluative purposes report similar levels of satisfaction with use of the system to those students who use it solely for developmental purposes.

Finally, the tool used in our study ensures anonymity to raters, which may provide the benefits of being held accountable without the distortions when lack of anonymity is involved (Levy and Williams 2004). Given related evidence in organizational research on performance appraisals that raters may distort their feedback when they are told they will be held accountable to ratees (e.g., Klimosky and Inks 1990), it is possible that attitudes to use of a peer feedback system may change in the absence of the guarantee of anonymity.

Limitations

It is important to note that our research focused on the relationship of a single individual factor (uncertainty avoidance orientation) and a single contextual factor (virtuality) on student satisfaction with use of a peer feedback system and teamwork performance. Research on students' attitudes toward teamwork suggests that if given a choice, students would prefer to work individually rather than in teams (e.g., Bacon 2005) for a number of reasons such as previous poor experiences working in teams (Hillyard, Gillenspie, and Littig 2010), giving up control over their grades (Schultz, Wilson, and Hess 2010), and team members' free riding behaviors (Marks and O'Connor 2013). As such, we do not know to what extent other factors underlying students' negative attitudes toward teamwork relate to their attitudes toward use of a peer feedback system and teamwork performance. Because we were constrained by a short survey that could be administered to the students, we decided to focus on those more strongly relevant to the uncertainty related to the increasing reliance on computer mediated technology.

The cross-sectional and self-report nature of the independent variables (uncertainty avoidance and virtuality) and mediator (satisfaction with use of the system) is a second important limitation of this study. However, as we describe in the Methodology, while these measures were collected on the same day, they were collected nearly two hours apart, at the start and end

of a two-hour class. As such, while we made an effort to provide temporal separation to independent and mediator variables to mitigate threats of common method bias, we acknowledge a more robust design would involve different source data or greater temporal separation. Unfortunately, constraints in our context did not make these possible. First, the nature of predictor measures was such that self-report were the best source. Second, the time period placed limitations on when we could collect the survey data; it had to happen after students had worked together in teams and provided feedback to and received feedback from their peers. However, given that our overall sample was comprised of different sources (i.e., independent variables and mediators were self-report; and dependent variables from peers), as well as data collection methods (i.e., IVs through paper and pencil; and DVs, online), that predictor and criterion variables were distanced in time help to reduce the threat of common method bias (Podsakoff et al., 2012), and that our test of common method bias did not indicate a threat, we believe that a more robust data collection design would yield comparable results.

Conclusion

Multiple studies consistently point to the effectiveness of the use of online peer feedback systems to meet increased demands for business schools to produce workforce-ready graduates that are strong in both technical and soft skills. The results of this study suggest that rather than view it as one more educational requirement, students will appreciate and embrace its use. Furthermore, the increased reliance on remote work that the Covid-19 pandemic has normalized, both in higher education and in the workplace, emphasizes the significant contribution of our findings in this current context of greater uncertainty and reliance on computer mediated collaboration. Finally, given that effective and intuitive online tools are now readily available,

the findings of this study make a practical and actionable contribution to higher education research and practice.

Declaration of competing interest

The authors declare no conflicts of interests with regard to the research, authorship and publication of this paper.

References

Andrews, J., and H. Higson. 2008. "Graduate Employability, 'Soft Skills' versus 'Hard' Business Knowledge: A European Study". *Higher Education in Europe*. 33: 411-422. https://doi.org/10.1080/03797720802522627

Bacon, D. R. 2005. "The Effect of Group Projects on Content-Related Learning". *Journal of Management Education*, 29: 248–267. doi:10.1177/1052562904263729

Baltes, B. B., M. W. Dickson, M. P. Sherman, C. C. Bauer, and J. S. LaGanke. 2002. "Computer-Mediated Communication and Group Decision Making: A Meta-Analysis." *Organizational Behavior and Human Decision Processes* 87 (1): 156–179. https://doi.org/10.1006/obhd.2001.2961

Brooks, C. M., and J. L. Ammons. 2003. "Free Riding in Group Projects and the Effects of Timing, Frequency, and Specificity of Criteria in Peer Assessments." *Journal of Education for Business* 78 (5): 268–272. https://doi.org/10.1080/08832320309598613

Brutus, S., and M. B. Donia. 2010. "Improving the Effectiveness of Students in Groups with a Centralized Peer Evaluation System." *Academy of Management Learning & Education* 9 (4): 652–662. https://doi.org/10.5465/amle.9.4.zqr652

Brutus, S., M. Donia, and S. Ronen. 2013. "Can Business Students Learn to Evaluate Better? Evidence from Repeated Exposure to a Peer Evaluation System." *Academy of Management Learning & Education* 12 (1): 18–31. https://doi.org/10.5465/amle.2010.0204

Brykman, K., and T. A. O'Neill. (in press). "Beyond Aggregation: How Voice Disparity Relates to Team Conflict, Satisfaction, and Performance." *Small Group Research*. https://doi.org/10.1177/1046496420956391

Cawley, B. D., L. M. Keeping, and P. E. Levy. 1998. "Participation in the Performance Appraisal Process and Employee Reactions: A Meta-Analytic Review of Field Investigations." *Journal of Applied Psychology* 83 (4): 615–633. https://doi.org/10.1037/0021-9010.83.4.615

Cohen-Charash, Y., and P. E. Spector. 2001. "The Role of Justice in Organizations: A Meta-Analysis." *Organizational Behavior & Human Decision Processes* 86 (2): 278–321. https://doi.org/10.1006/obhd.2001.2958

Colquitt, J. A. 2001. "On the Dimensionality of Organizational Justice: A Construct Validation of a Measure." *Journal of Applied Psychology* 86 (3): 386–400. https://doi.org/10.1037/0021-9010.86.3.386

Conole, G., M. de Laat, T. Dillon, and J. Darby. 2008. "'Disruptive Technologies', 'Pedagogical Innovation': What's New? Findings from an In-Depth Study of Students' Use and Perception of Technology." *Computers & Education* 50 (2): 511–524. https://doi.org/10.1016/j.compedu.2007.09.009

Cropanzano, R., A. Li, and L. Benson III. 2011. "Peer Justice and Teamwork Process." *Group & Organization Management* 36 (2): 567–596. https://doi.org/10.1177/1059601111414561

Dominick, P. G., R. R. Reilly, and J. McGourty. 1997. "The Effects of Peer Feedback on Team Member Behavior." *Group & Organization Management* 22 (4): 508–520. https://doi.org/10.1177/1059601197224006

Donia, M. B., T. A. O'Neill, and S. Brutus. 2018. "The Longitudinal Effects of Peer Feedback in the Development and Transfer of Student Teamwork Skills." *Learning and Individual Differences* 61: 87–98. https://doi.org/10.1016/j.lindif.2017.11.012

Forsyth, D. R., L. E. Zyzniewski, and C. A. Giammanco. 2002. "Responsibility Diffusion in Cooperative Collectives." *Society for Personality and Social Psychology* 28 (1): 54–65. https://doi.org/10.1177/0146167202281005

Hair, J. F., W.C. Black, B. J. Babin, R. E. Anderson, and R. L. Tatham. 2006. *Multivariate Data Analysis* (6th Ed.). Upper Saddle River, NJ: Prentice Hall.

Hambley, L. A., T. A. O'Neill, and T. J. Kline. 2007. "Virtual Team Leadership: The Effects of Leadership Style and Communication Medium on Team Interaction Styles and Outcomes." *Organizational Behavior and Human Decision Processes* 103 (1): 1–20. https://doi.org/10.1016/j.obhdp.2006.09.004

Hayes, A. F. 2013. *Introduction to Mediation, Moderation, and Conditional Process Analysis: A Regression-Based Approach*. New York, NY: Guilford Press.

Henseler, J., C. M. Ringle, and R. R. Sinkovics. 2009. "The Use of Partial Least Squares Path Modeling in International Marketing." *Advances in International Marketing* 20: 277–319. https://doi.org/10.1108/S1474-7979(2009)0000020014

Hillyard, C., D. Gillespie, and P. Littig. 2010. "University Students' Attitudes about Learning in Small Groups after Frequent Participation". *Active Learning in Higher Education* 11: 9–20. doi:10.1177/1469787409355867

Hofstede, G. 2001. *Culture's Consequences: Comparing Values, Behaviors, Institutions, and Organizations across Nations* (2nd ed.). London, England: Sage Publications.

Karau, S. J., and K. D. Williams. 1993. "Social Loafing: A Meta-Analytic Review and Theoretical Integration." *Journal of Personality & Social Psychology* 65 (4): 681–706. https://doi.org/10.1037/0022-3514.65.4.681

Klimoski, R., and L. Inks. 1990. "Accountability Forces in Performance Appraisal." *Organizational Behavior & Human Decision Processes,* 45 (2): 194–208. https://doi.org/10.1016/0749-5978(90)90011-W

Levy, P.E. and Williams, J.R. 2004. "The Social Context of Performance Appraisal: A Review and Framework for the Future." *Journal of Management* 30 (6): 881-905. https://doi-org.proxy.bib.uottawa.ca/10.1016/j.jm.2004.06.005

McLarnon, M. J., T. A. O'Neill, V. Taras, D. Law, M. B. Donia, and P. Steel. 2019. "Global Virtual Team Communication, Coordination, and Performance Across Three Peer Feedback Strategies." *Canadian Journal of Behavioral Sciences* 51 (4): 207–218. https://doi.org/10.1037/cbs0000135

Mackinnon, D. P., C. M. Lockwood, and J. Williams. 2004. "Confidence Limits for the Indirect Effect: Distribution of the Product and Resampling Methods." *Multivariate Behavioral Research* 39 (1): 99−128. https://doi.org/10.1207/s15327906mbr3901_4

Maiden, B., and B. Perry. 2011. "Dealing with Free-Riders in Assessed Group Work: Results from a Study at a UK University." *Assessment & Evaluation in Higher Education*, 36 (4): 451−464. https://doi.org/10.1080/02602930903429302

Marks, M. B., and A. H. O'Connor. 2013. "Understanding Students' Attitudes about Group Work: What Does This Suggest for Instructors of Business?" *Journal of Education for Business* 88: 147-158. https://doi-org.proxy.bib.uottawa.ca/10.1080/08832323.2012.664579

Morrison, E. W. 2011. "Employee Voice Behavior: Integration and Directions for Future Research." *The Academy of Management Annals* 5 (1): 373–412. https://doi.org/10.1080/19416520.2011.574506

Ocker, R.J. and Yaverbaum, G.J. 2001. "Collaborative Learning Environments: Exploring Student Attitudes and Satisfaction in Face-To-Face and Asynchronous Computer Conferencing Settings." *Journal of Interactive Learning Research* 12 (4): 427-443.

Ohland, M. W., M. L. Loughry, D. J. Woehr, L. G. Bullard, R. M. Felder, C. J. Finelli, R. A. Layton, H. R. Pomeranz, and D. G. Schmucker. 2012. "The Comprehensive Assessment of Team Member Effectiveness: Development of a Behaviorally Anchored Rating Scale for Self- and Peer Evaluation." *Academy of Management Learning & Education* 11 (4): 609–630. https://doi.org/10.5465/amle.2010.0177

O'Neill, T. A., M. A. Boyce, and M. J. W. McLarnon. 2020. "Team Health is Improved when Peer Evaluation Scores Affect Grades on Team Projects. *Frontiers in Education* 5: 49. https://doi.org/10.3389/feduc.2020.00049

O'Neill, T. A., A. Deacon, K. Gibbard, N. Larson, G. Hoffart, J. Smith, and B. L. M. Donia. 2017. "Team Dynamics Feedback for Post-Secondary Student Learning Teams." *Assessment & Evaluation in Higher Education* 43 (4): 571–585. https://doi.org/10.1080/02602938.2017.1380161

O'Neill, T., N. Larson, J. Smith, M. Donia, C. Deng, W. Rosehart, and R. Brennan. 2019. "Introducing a Scalable Peer Feedback System for Learning Teams." *Assessment & Evaluation in Higher Education* 44 (6): 848–862. https://doi.org/10.1080/02602938.2018.1526256

O'Neill, T. A., and E. Salas. 2018. "Creating High Performance Teamwork in Organizations." *Human Resource Management Review* 28 (4): 325–331. https://doi.org/10.1016/j.hrmr.2017.06.002

Preacher, K. J., D. D. Rucker, and A. F. Hayes. 2007. "Addressing Moderated Mediation Hypotheses: Theory, Methods, and Prescriptions." *Multivariate Behavioral Research* 42 (1): 185–227. https://doi.org/10.1080/00273170701341316

Podsakoff, P. M., S. B. MacKenzie, J. Y. Lee, and N. P. Podsakoff. 2012. "Sources of Method Bias in Social Science Research and Recommendations on How to Control It." *Annual Review of Psychology* 63: 539–569. https://doi.org/10.1146/annurev-psych-120710-100452

Santini, F. O., W. J. Ladeira, C. H. Sampaio, and G. S. Costa. 2017. "Student Satisfaction in Higher Education: A Meta-Analytic Study." *Journal of Marketing for Higher Education,* 27: 1-18. https://doi.org/10.1080/08841241.2017.1311980

Schultz, J. L., J. R. Wilson, and K. C. Hess. 2010. "Team-Based Classroom Pedagogy Reframed: The Student Perspective." *American Journal of Business Education* 3 (7): 17–24. https://doi.org/10.19030/ajbe.v3i7.455

Srichanyachon, N. 2012. "An Investigation of University EFL Students' Attitudes toward Peer and Teacher Feedback." *Educational Research and Reviews* 7 (26): 558–562. https://doi.org/10.5897/ERR12.060

Suh, K. S. 1999. "Impact of Communication Medium on Task Performance and Satisfaction: An Examination of Media-Richness Theory." *Information and Management* 35 (5): 295–312. https://doi.org/10.1016/S0378-7206(98)00097-4

Taras, V., D. V. Caprar, D. Rottig, R. M. Sarala, N. Zakaria, F. Zhao, A. Jimenez, et al. 2013. "A Global Classroom? Evaluating the Effectiveness of Global Virtual Collaboration as a Teaching Took in Management Education." *Academy of Management Learning & Education* 12 (3): 414–435. https://doi.org/10.5465/amle.2012.0195

Taras, V., B. L. Kirkman, and P. Steel. 2010. "Examining the Impact of Culture's Consequences: A Three-Decade, Multilevel, Meta-Analytic Review of Hofstede's Cultural Value Dimensions." *Journal of Applied Psychology* 5 (5): 405–439. https://doi.org/10.1037/a0020939

Villanova, P., H. J. Bernardin, S. A. Dahmus, and R. L. Sims. 1993. "Rater Leniency and Performance Appraisal Discomfort." *Educational and Psychological Measurement* 53 (3): 789–799. https://doi.org/10.1177/0013164493053003023

Weiss, L. 2018. "The Case for Soft Skills: Why More MBA Programs Should Integrate Soft Skills Training into Their Curricula. *AACSB."* Retrieved from: https://bized.aacsb.edu/articles/2019/january/the-case-for-soft-skills

Wen, M. L., and C. C. Tsai. 2006. "University Students' Perceptions of and Attitudes Toward (On-line) Peer Assessment." *Higher Education* 51 (1): 27–44. https://www.jstor.org/stable/29734964

White, R. W. 1959. "Motivation Reconsidered: The Concept of Competence." *Psychological Review,* 66 (5): 297-333. https://doi.org/10.1037/h0040934

Williams, K., S. Harkins, and B. Latané. 1981. "Identifiability as a Deterrent to Social Loafing: Two Cheering Experiments." *Journal of Personality and Social Psychology,* 40 (2): 303-311. https://doi.org/ 10.1037/0022-3514.40.2.303

Woolley, A. W., C. F. Chabris, A. Pentland, N. Hashmi, and T. W. Malone. 2010. "Evidence for a Collective Intelligence Factor in the Performance of Human Groups." *Science* 330 (6004): 686-688. https://doi.org/10.1126/science.1193147

Wu, M. 2006. "Hofstede's Cultural Dimensions 30 years Later: A study of Taiwan and the United States." *Intercultural Communication Studies* 15 (1): 33-42.

Table 1. Measurement model: Construct reliability, convergent and discriminant validity.

Variables	CR	AVE	MSV	ASV
1. Uncertainty avoidance	0.80	0.48	0.18	0.17
2. Virtuality	0.84	0.52	0.35	0.27
3. Satisfaction	0.83	0.62	0.35	0.26

Note. *CR* = Construct Reliability; *AVE* = Average Variance Extracted;
MSV = Maximum Shared Variance; *ASV* = Average Shared Variance.

Table 2. Means, standard deviations, coefficient alphas, and correlations among study variables.

Variables	***M***	***SD***	**1**	**2**	**3**	**4**	**5**	**6**	**7**
1. Uncertainty avoidance	5.67	0.82							
2. Virtuality	5.67	0.86	**.337****						
3. Satisfaction	5.65	0.77	**.340****	**.491****					
4. Performance	4.35	0.56	.075	**.149****	**.175****				
5. Years of experience	2.01	2.35	.014	.017	.021	.012			
6. Gender [a]	0.52	0.50	.028	.054	.058	.019	-.020		
7. Language questionnaire [a]	0.39	0.49	-.034	.029	-.017	-.256**	.039	-.016	
8. No. countries in group	3.08	1.37	.123*	-.007	.024	**.147****	**.119***	.021	**-.325****

Note: Significant at: ** $p < .01$; * $p < .05$

[a] Gender was coded as '0' for males and '1' for females. Language as '0' for English, '1' for Spanish.

Table 3. Model coefficients for the mediation model of satisfaction with use of a peer feedback system in the relation between uncertainty avoidance and performance.

	Outcome **Satisfaction (*M*)**			***Outcome*** **Performance (*Y*)**		
	Coefficient	***Std. error***	***Boot CI***	***Coefficient***	***Std. error***	***Boot CI***
X (Uncertainty Avoidance)	**0.19*** **	**0.04**	**[0.10, 0.28]**	-0.01	0.04	[-0.08, 0.06]
M (*Satisfaction*)	**---**	**---**	**---**	**0.10***	**0.04**	**[0.02, 0.18]**
Constant	**2.53*** **	**0.31**	**[1.92, 3.13]**	**3.78*** **	**0.27**	**[3.26, 4.30]**
Years professional experience	0.01	0.02	[-0.03, 0.03]	0.01	0.01	[-0.02, 0.02]
Gender	0.05	0.07	[-0.09, 0.18]	0.01	0.05	[-0.10, 0.11]
Language	-0.07	0.07	[-0.22, 0.07]	**-0.27*** **	**0.06**	**[-0.39, -0.16]**
No. countries in group	-0.01	0.03	[-0.06, 0.04]	0.03	0.02	[-0.01, 0.07]
Virtuality	**-0.38*** **	**0.04**	**[-0.30, 0.46]**	0.06†	0.04	[-0.01, 0.13]
F	**25.13*** **			**7.10*** **		
R^2	0.278			0.113		

Total, direct and Indirect effects of X on Y			
	Boot Effect	***Boot Std. error***	***Bias-corrected and accelerated CI***
Total effect of X on Y	0.01	0.04	[-0.06, 0.08]
Direct effect of X on Y	-0.01	0.04	[-0.08, 0.06]
Indirect effect of X on Y	**0.02**	**0.01**	**[0.01, 0.05]**

Note: *N* = 420 students. Significant at: *** $p < .001$; ** $p < .01$; * $p < .05$. *Coefficient* = Regression coefficients*; SE* = Standard error; *Effect* = conditional effects; *X* = Antecedent variable; *M* = Mediator; *Y* = Dependent variable. *Boot SE* = Bootstrap standard error; *CI* = Confidence interval. *CIs* containing zero are interpreted as non-significant. Control variables included as covariates were years of professional experience, gender, language, n. of different countries in group, as well as virtuality. Results are based on 50,000 bootstrap samples.

Table 4. Model coefficients for the mediation model of satisfaction with use of a peer feedback system in the relation between virtuality and performance.

	Outcome **Satisfaction (*M*)**			***Outcome*** **Performance (*Y*)**		
	Coefficient	***Std. error***	***Boot CI***	***Coefficient***	***Std. error***	***Boot CI***
X (Virtuality)	**0.38*** **	**0.04**	**[0.30, 0.46]**	0.06†	0.04	[-0.01, 0.13]
M (Satisfaction)	---	---	---	**0.10***	**0.04**	**[0.02, 0.18]**
Constant	**2.53*** **	**0.31**	**[1.92, 3.13]**	**3.78*** **	**0.27**	**[3.26, 4.30]**
Years prof. experience	0.01	0.01	[-0.03, 0.03]	0.01	0.01	[-0.02, 0.02]
Gender	0.05	0.07	[-0.09, 0.18]	0.01	0.05	[-0.10, 0.11]
Language	-0.07	0.07	[-0.22, 0.07]	**-0.27*** **	**0.06**	**[-0.40, -0.16]**
No. countries in group	-0.01	0.03	[-0.06, 0.04]	0.03	0.02	[-0.01, 0.07]
Uncertainty avoidance	**0.19*** **	**0.04**	**[0.10, 0.28]**	-0.01	0.04	[-0.08, 0.06]
F	**25.13*** **			**7.097*** **		
R^2	0.278			0.113		

Total, direct and Indirect effects of X on Y			
	Boot Effect	***Boot Std. error***	***Bias-corrected and accelerated CI***
Total effect of X on Y	**0.10**	**0.03**	**[0.03, 0.16]**
Direct effect of X on Y	0.06	0.04	[-0.01, 0.13]
Indirect effect of X on Y	**0.04**	**0.02**	**[0.01, 0.07]**

Note: N = 420 students. Significant at: *** p< .001; ** p < .01; * p < .05; † < .01 Coefficient = Regression coefficients; SE = Standard error; Effect = conditional effects; X = Antecedent variable; M = Mediator; Y = Dependent variable. Boot SE = Bootstrap standard error; CI = Confidence interval. CIs containing zero are interpreted as non-significant. Control variables included as covariates were years of professional experience, gender, language, n. of different countries in group, as well as uncertainty avoidance. Results are based on 50,000 bootstrap samples.