Exploring the Effects on Students from Converting On-Campus Classes to Online due to the COVID-19 Pandemic

Anita Whiting, Wendy Ritz, and Joie S. Hain

Purpose of the Study: This study explores the impact on students majoring in business courses from emergency conversion of on-campus classes to online due to the Covid-19 pandemic. The gap in the literature is addressed and explores the impact of class format conversion on student stress, emotions, enjoyment, satisfaction, and engagement. This study also explores which groups were impacted the most by the conversion.

Method/Design and Sample: Using the Stimulus Organism Response Framework, an exploratory study was conducted with business students (n=179) from three southeastern universities in April 2020. Students completed a survey about perceptions of class when it was on campus and when converted to online. Paired sample t-tests were conducted to assess differences. Change variables were calculated using before and after conversion scores. ANOVA analyses were conducted on demographic variables and the calculated change variables.

Results: The results are: (1) stress and negative emotions increased, (2) positive emotions, enjoyment with class, satisfaction with class decreased, (3) engagement with class, engagement with professor, engagement with university, engagement with college/department, and engagement with other students on campus decreased, and (4) extroverts and those who prefer on campus classes were impacted the most by the conversion to online.

Value to Marketing Educators: Ten recommendations are provided for business professors and university administrators with the intent of reinventing how education builds value for the students as customers. Recommendations help increase engagement by incorporating sensitivity towards students, support students equitably, and increase student satisfaction with their learning environment. For marketing educators within business majors and programs, updating the 'business of education' with 21st century technology prepares students for the job market. *We practice what we teach*.

Keywords: COVID-19, Student Engagement, Student Satisfaction, Online Classes, Stimulus Organism Response

Anita Whiting*, Professor of Marketing, Clayton State University, Department of Management, Marketing and Supply Chain Management, Clayton State University, 2000 Clayton State Boulevard, Morrow, GA 30260, Tel: 678 -466-4553, Email: AWhiting@clayton.edu, https://orcid.org/0000-0002-7051-9444. **Wendy Ritz,** Assistant Teaching Professor of Marketing, Florida State University Panama City, 4750 Collegiate Drive, Office Bldg., # B105A, Panama City, FL 32405, Tel: 850-770-2214, Email: writz@fsu.edu, https://orcid.org/0000-0002-3207-2856, Twitter @wendy_ritz. **Joie S. Hain,** Assistant Professor of Marketing, Department of Management, Marketing and Supply Chain Management, Clayton State University, 2000 Clayton State Boulevard, Morrow, GA 30260, Tel: 678-466-4547, Email: joiehain@clayton.edu, https://orcid.org/0000-0002-09933-4328, Twitter @joie_hain. *Corresponding Author

INTRODUCTION

Converting on-campus classes to an online format became the dominant response of most universities when the COVID-19 pandemic hit. Over 1,100 colleges and universities in the United States cancelled their in-person classes and shifted to online-only instruction (Smalley, 2020). Hundreds of thousands of college students were told to clear out their belongings and head home (Carey, 2020). Despite the widespread conversion to online classes, there is little knowledge and research about the implications and effects on college students who had their on-campus classes converted abruptly to online. Past studies have shown that student performance, especially for those who are academically struggling, can suffer in online classes (Xu & Jaggars, 2013). Research shows that 20 percent of college students had problems maintaining access to effective technology (Indiana University, 2018), with only a few research studies having been conducted on the effects on students converting their on-campus class to online (Cao et al., 2020). The importance of 21st century technology skills development should now be at the forefront of higher education, especially for business related majors and programs administrators, professors, and students, as business modality is likely forever changed, as well. The inclusion of online communication technology in the classroom improves the educational value for students and builds job skills; as illustrated with social or digital selling technology in sales and marketing courses which has shown to influence student career choices towards marketing and sales (Cummins, Loe, and Peltier 2016).

The purpose of this study is to address this gap in the literature and explore the effects on students from this "unplanned, unwanted, and fraught experiment in online learning" due to the COVID-19 pandemic (LeBlanc, 2020, p 1). In particular this study explores the effects of online class conversion on student stress, student emotions, student satisfaction with their class, and student enjoyment of their class. Also investigated is how the online conversion impacted student engagement on multiple levels such as engagement with class, engagement with university, engagement with professor and engagement with other classmates on campus. This study also explores potential differences in outcome behaviors among gender, rank, age, course type/subject matter, preference for on-campus classes, ethnicity, personality type, and experience with online classes. University administrators and professors use lessons learned and reinvent the educational experience to prioritize strong relationships with students, the use of 21st century skills, and promote educational equity. The semester was approximately halfway complete when the course transitions occurred. At that time, the course syllabus was already presented to the students. The terms 'on campus' and 'face-to-face' refer to the student's physical presences in the course assigned classroom, on campus with the instructor of record present for the class meeting. The authors recognize that there is a difference in synchronous and asynchronous delivery of material albeit there was no significant difference in our results associated to these two groups (e.g., lectures held synchronously via Zoom or Microsoft ® Teams during regularly scheduled class meeting times and recorded for later viewing – asynchronously or a shift to fully asynchronous classes). As such, for the rest of this document, the term 'online' refers to a course that is administered 100% online.

To explore the effects on students of converting on-campus classes to online, we adapted and applied the Stimulus Organism Response (S-O-R) framework (Mehrabian & Russell, 1974). The S-O-R framework helps explain how the conversion to online (stimuli) impacts students' stress and emotions (organism) which then effects enjoyment, satisfaction, and engagement (responses). See Figure 1. The S-O-R framework has been widely recognized as an applicable paradigm for exploration and model development (Laesser, Luo, & Beritelli, 2019).

This study contributes to existing literature in several ways. First, it investigates a new phenomenon of rapidly converting on-campus classes to online classes. Prior research has focused mostly on the shortcoming or challenges of online classes but not the actual conversion of an on-campus class to online halfway through the semester. Second, this article identifies which groups were most impacted by the conversion to

online. Third, this study identifies which student outcomes had the largest amount of change or decline when class was converted to online. Fourth, this paper applies the stimulus organism response (S-O-R) framework to the new phenomenon of converting on-campus classes to online. Last, this article provides implications and recommendations for universities and professors.

Research Questions
The following research questions delineate the areas of focus.
1. Impact on students:
   a. What effects did the stimulus (converting on-campus classes to online) have on students?
2. Largest effects:
   a. What student outcomes were most adverse and had the largest impacts on students?
   b. What were the greatest challenges for the students when classes were converted to online classes?
3. Groups affected:
   a. Which groups, if any, were most affected by the conversion to online?
4. Feedback from students:
   a. What did students say about converting their on-campus classes to online?
   b. What are the students' suggestions on making the conversion to online a better experience?

S-O-R Framework
The S-O-R framework was created by Mehrabian and Russell (1974). It has been used in multiple studies and in different academic fields such as marketing (Donovan & Rossiter, 1982; Turley & Milliman, 2000), environmental psychology (Mehrabian & Russell, 1974), information sciences (Cao & Sun, 2018; Zhang et al., 2014), atmospherics (Eroglu et al., 2001), tourism (Su, Hsu, & Boostrom, 2020,) and online learning (Zhai, Wang, & Ghani, 2020). The S-O-R framework has been used to predict and explain outcomes and behaviors (Gao & Bai, 2014; Jacoby, 2002), to explain how consumers respond to environmental stimuli and to stressors (DeNora & Belcher, 2000). S-O-R has been widely used and universally accepted for model creation and theory development (Laesser, Luo, & Beritelli, 2019). The S-O-R framework has been effective in analyzing consumer responses and explaining consumer behavior during the COVID-19 pandemic (Laato et al., 2020). S-O-R was chosen for this study, due to its widespread usage among different fields, its effectiveness to explain consumer responses during COVID-19 and its ability to help with model creation for our exploratory study.

Figure 1

Model of Effects on Students from Converting On Campus Classes to Online Due to Covid19
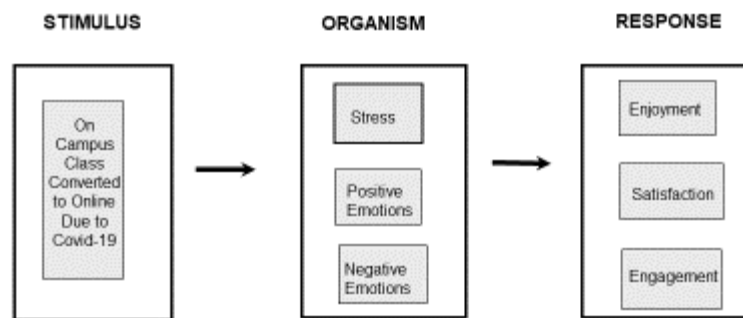
The S-O-R framework is based upon the premise that stimuli (S) affects the organism (O) leading to a behavioral response (R). An advantage of this three-part framework is that it enables the creation of models in which affective states and/or intermediate layers are included instead of only demonstrating direct casual links between stimuli and response (Xu, Benbasat, & Cenfetelli, 2014). The stimuli are defined as variables or events that influence and stimulate the individual (Eroglu, Machleit, & Davis, 2001). It is important to note that stimuli are external to the individual. In this study, the stimuli (S) is the external event of converting classes to online due to the COVID-19 pandemic. The organism (O) refers to the internal processes of the individual. These internal processes include perception, physiological, feelings, and thinking (Bagozzi, 1986). The organism (O) has also been labeled as the emotional states of the individual (Donovan & Rossiter, 1982). In this study, stress is the physical, emotional, and psychological strain of performing in this course. Students can be stressed over a course without a change in modality which is why students were asked to respond with their perceptions at two points in time during the semester (before the pivot and after the pivot to online).

In this study, the internal processes are the students' perception of stress and their feelings resulting from the conversion of their class modality being changed mid-semester from being hosted on campus in a classroom to 100 % online, representing the affective aspects of the organism. Response (R) in the S-O-R framework represent the behaviors and outcomes of the individual. Outcomes have been categorized into two types of responses: approach and avoidance (Donovan & Rossiter, 1982). Approach responses are positive behaviors such as move toward stimulus, stay in environment, and explore environment. Avoidance behaviors are negative behaviors such as dissatisfaction, boredom, unfriendliness, and leave environment (Turley & Milliman, 2000). The responses (R) represent the student outcomes of enjoyment, satisfaction, and engagement. Students will either exhibit positive or negative behaviors. Guided by the S-O-R framework, we explore the impacts on students from the conversion to online classes due to the COVID-19 pandemic.

METHOD AND PROCEDURE

Data was collected from three AACSB accredited, southeastern universities representing both public and private institutions. *Approximately one month after classes were converted to online,* and before final exams, students were asked to complete an online survey. Specifically, students were asked to think about one of their classes that had been converted from on campus to online due to COVID-19. Respondents were then asked to list the name of the class and answer the questions based on that class. The name of the course was used to categorize course type into quantitative and nonquantitative (Lightner and Lightner-Laws, 2013). Courses where the subject matter was foundationally "based in quantitative methods" such as supply chain/logistics, accounting, economics, or finance were designated as quantitative (Overall and Marsh ,1980), p. 323). Courses where the subject matter was foundational based in social sciences, law, or management are categorized as nonquantitative (Overall and Marsh ,1980). In this study, supply chain/logistics represents the largest quantitative group at fifty-three percent (30/56) and marketing courses represented most of the nonquantitative group at thirty-three percent (39/118) with two unreported responses.

Students were first asked to think back to when the class was on campus and then answer a set of questions about their experience with the class. Next, students were asked to think about that class after being converted to online and then answer the *same set* of questions about their experience with the online version. Finally, students were asked to answer a series of questions about themselves.

All questions were asked about their experience with the class when it was on campus and then again, when the class was online. The questionnaire included

questions about (a) stress toward class (physical, emotional, and psychological strain of performing in this course), (b) positive emotions toward class (joy, peacefulness, content, and interest), (c) negative emotions toward class (anger, fear, and sadness), (d) enjoyment of class, (e) satisfaction with class, (f) engagement with class, (g) engagement with university, (h) engagement with the business school, college, or related majors/program, (i) engagement with professor, and (j) engagement with other students on campus. The last set of questions on the questionnaire were demographic questions such as gender, age, rank, university enrolled at, major, ethnic background, preference for online classes, number of online classes taken, and personality type. The demographic data and course preferences were collected to investigate any correlations such as the trait differences between marketing and accounting students (Kochunny, Roger, and Ogbuehi, 1992).

Student stress (Organism in S-O-R) was measured using a scale adapted from Siddiqui and Pondey (2003) and consisted of questions, such as this class is a source of distress for me, this class makes me feel stressed, and this class causes tension for me. Satisfaction with class was measured using questions such as I am satisfied with this class, I would recommend this class to others, and this class is how I would like for a class to be (Gruber et al., 2010). The variables representing emotions were measured using Izard's (1977) Differential Emotions Scale (DES) and Richins' (1997) scale of emotions. Emotions measured were joy, sadness, interest, anger, fear (Izard 1977), peaceful, and content (Richins 1997).

Student engagement with class was defined as students being actively involved in their learning tasks and activities (Lei et al. 2018). Engagement in class was measured by a single item statement of I feel engaged in this class. Engagement with others is different than engagement in class. Engagement with others pertains to a students' sense of belonging and their identity as being a member of the course, discipline, and institution (Trowler, 2010). Engagement with others was measured with the questions of I feel connected to my university, I feel connected to the College of Business (refers to the business school, college, or related majors/program), I feel connected to this professor, and I feel connected to other students at this university. Respondents responded on a 7-point Likert scale with 1 representing strongly disagree and 7 representing strongly agree.

Approximately 300 students were recruited from ten undergraduate business classes. A total of 179 students participated in the study for a response rate of sixty percent. Approximately sixty-one percent of the respondents were female. The ages ranged from 19 to 74, with an average age of 26. Approximately fifty-four percent of respondents were African American. The survey was administered online by Business instructors. All students were surveyed during a business class in which they were enrolled. Courses listed by students represented a variety of business and non-business courses. Responses from marketing courses represented the largest concentration of classes with twenty-one percent (39/179). The respondents had varying levels of experience with prior online classes ranging from zero to twenty classes with an average of five online classes taken.

FINDINGS AND RESULTS

This study was conducted across three universities in the southeast United States. This convenience sample is a limitation of this study. We expected significant differences across and between university samples given that one of the universities had to pivot from face-to-face course mode to online mode, two years prior, due to extensive hurricane damage in the area. We found no significant differences for engagement (university, COB, class, professor, other students), satisfaction, or emotions. The change in stress levels was not significant across universities however, the private university students experienced the least change in stress when compared to the two public universities.

To assess if there were differences in student perceptions between when the class was offered on campus and when the class was online, a comparison of means, and paired sample t-test, was performed for the key variables. The means, standard deviations, and absolute difference (Δ) in means was calculated and reported for comparison (see Table 1).

For this analysis, the means representing level of stress when the class was on campus (μ = 3.08, SD = 1.95) versus when the class was converted to online (μ = 3.45, SD = 1.90) reflects a significant ($p \leq .05$) change in stress levels (μ = 0.38) because of the university's response to COVID-19. This finding demonstrates that students felt more stress toward the class after it was converted to online. Overall, the students' emotional state (organism) was negatively affected as stress increased when the course was converted online with a significant difference in means. The change in the student's learning environment resulted in significant changes in both positive and negative emotions. Positive emotions such as joy, content, peacefulness, and interest decreased. Negative emotions such as fear, sadness, and anger all increased at a significant rate.

The means representing positive emotions of joy decreased at a significant level ($p \leq .01$), content decreased, peacefulness decreased, and interest decreased. The decrease in each positive emotion was greater than the increase in negative emotions. The means representing negative emotions increased at a significant level ($p \leq .01$) were anger, sadness, and fear (See Table 1 and Table 3).

The analysis of impact on student outcome factors (the response) resulted in significant decreases ($p \leq .01$) or negative impact to enjoyment with the class, satisfaction with the class, engagement with the university, engagement with the business school, college, or related majors/program, engagement with other students on campus, and engagement with the professor. The greatest erosion of engagement was

between the student and the university. The smallest negative relational impact was engagement with the professor although the difference was still significant. The change in course delivery had negative implications on the student's overall satisfaction with their learning experience.

Table 1: Means, Standard Deviations, & Change of Organism and Response Variables

Variable	On-Campus	Online	Δ Change
Organism (Stress & Emotion)			
Stress **	µ3.08, SD 1.95	µ3.45, SD 2.19	µ0.38, SD 1.90
Joy*	µ5.31, SD 1.62	µ4.01, SD 2.26	µ-1.30, SD 1.90
Content*	µ5.24, SD 1.73	µ3.95, SD 2.06	µ-1.27, SD 1.84
Peaceful*	µ5.21, SD 1.72	µ4.05, SD 2.15	µ-1.12, SD 1.79
Interest*	µ5.52, SD 1.38	µ4.43, SD 1.81	µ-1.12, SD 1.66
Fear*	µ1.85, SD 1.19	µ2.60, SD 1.71	µ0.78, SD 1.49
Sadness*	µ2.10, SD 1.81	µ3.00, SD 2.04	µ0.90, SD 1.82
Anger*	µ1.81, SD 1.46	µ2.82, SD 2.04	µ1.04, SD 1.88
Response (Enjoyment, Engagement, & Satisfaction)			
Enjoyment of Class*	µ5.94, SD 1.54	µ4.19, SD 2.26	µ-1.73, SD 2.63
Engagement with Class*	µ5.82, SD 1.49	µ4.15, SD 2.21	µ-1.66, SD 2.28
Engagement with University*	µ5.56, SD 1.47	µ3.84, SD 2.09	µ-1.70, SD 1.90
Engagement with C.O.B.*	µ5.45, SD 1.72	µ3.81, SD 2.21	µ-1.66, SD 2.22
Engagement with other students*	µ5.50, SD 1.67	µ3.92, SD 2.18	µ-1.57, SD 2.15
Engagement with professor*	µ5.66, SD 1.59	µ4.31, SD 2.14	µ-1.31, SD 2.11
Satisfaction with class*	µ5.82, SD 1.47	µ4.38, SD 2.09	µ-1.42, SD 1.90

**p ≤ .05, * p ≤ .01*

Calculating Change Variables

For the next level of analysis, we calculated and created new variables called Δ change. The Δ variables were calculated by subtracting the before means when class was on campus from the after means, when online. This calculation best represents the directional results of the effect. For example, the Δ in stress was calculated by subtracting the stress scores when class was on campus from the stress scores when the class was online (Δ_{stress} = 0.38). To answer the question, *which groups, if any, were most affected by the conversion to online,* we conducted ANOVA analysis on nine individual difference or demographic variables and the Δ change variable. (See Table 2).

Calculating change variables has been previously used in other marketing studies such as Martin, Borah, and Palmatier (2017) and Whiting and Donthu (2009). Martin et al. (2017) calculate change in vulnerability by asking respondents a series of questions about vulnerability and then asking respondents the same set of questions after an assigned email treatment. The change in 'vulnerability' is then used as the dependent

variable. Whiting and Donthu (2009) calculated the change variable, 'estimation error' by subtracting actual wait times from perceived wait times. The variable 'estimation error' was then used as the dependent variable.

Table 2: ANOVA Tests and Means for Prefer Online

Dependent Variables	Means Prefer Online	Means Prefer On-Campus	F value	df	Sig.
Δ Stress	0.25	0.75	10.88	167	**.00**
Δ Joy	-0.36	-1.82	25.88	163	**.00**
Δ Peaceful	-0.42	-1.49	14.52	165	**.00**
Δ Content	-0.28	-1.77	27.95	163	**.00**
Δ Interest	-0.43	-1.48	15.83	159	**.00**
Δ Anger	0.38	1.38	11.03	164	**.00**
Δ Fear	0.58	0.88	1.55	162	.22
Δ Sadness	0.41	1.16	6.41	162	**.01**
Δ Enjoyment with Class	-0.57	-2.55	38.64	169	**.00**
Δ Satisfaction with Class	-0.37	-2.00	33.31	166	**.00**
Δ Engagement with Class	-0.53	-2.25	24.49	169	**.00**
Δ Engagement with University	-0.66	-2.27	21.18	167	**.00**
Δ Engagement with College	-0.57	-2.23	24.25	169	**.00**
Δ Engagement with Professor	-0.47	-1.77	15.63	168	**.00**
Δ Engagement with students	-0.67	-2.05	16.99	169	**.00**

Analysis of Organism and Response with Change Variable

After calculating the change variables, we then analyzed individual differences and their impact on Δ in stress, Δ in emotions, Δ in enjoyment with class, Δ in satisfaction with class, and Δ in engagement. The individual differences that we investigated were the following: (1) preference for online class, (2) personality type, (3) gender, (4) age, (5) rank/level of student, (6) level of class, (7) course type (quantitative vs nonquantitative class), (8) experience with online classes, and (9) ethnicity. Extant research reflects these variables can affect student success. For example, quantitative courses have a higher dropout rate when offered online when compared to face-to-face on campus modality (Lightner and Lightner-Laws, 2013). Demographic variables which demonstrated no effect or significance included: experience with online classes, course level, course type (quantitative or non-quantitative), student rank (e.g., sophomore, junior, senior), age, and ethnicity.

Preference for Online Classes.

An ANOVA test with preference for online class and each of the Δ variables was conducted individually. Preference for online classes was measured by a single item scale, yes or no, "*Do you prefer online classes?*". We began our analysis by conducting an ANOVA test on Δ in stress and preference for online classes. The ANOVA results were significant ($p \leq .01$). The change in stress for those who *do not* prefer online classes (Δ -0.75) was significantly higher than the changes in stress for those who *do* prefer online classes (Δ-0.23). (See Table 2). While this finding may be intuitive, when combined with the emotional responses which are significant, it becomes clear this is a group in which faculty and administrators should invest resources to manage expectations.

Next, we analyzed the preference for online classes and positive emotions; all results were significant ($p \leq .01$). The Δ in joy for those students which prefer on campus was 1.82 versus 0.36 for those who prefer online classes. This finding suggests that students who do not prefer online classes had a significantly greater loss of joy when the class was converted from on campus to online. The Δ in peaceful for those who do not prefer online courses was 1.49 versus 0.42 for those who prefer online courses. Students who do not prefer online classes had a greater loss in peacefulness when the class was converted from on campus to online. The Δ in feelings of contentment for those students who do not prefer online was 1.77 versus 0.28 for those who prefer online resulting in a greater loss of contentment for the on campus preferring students. The Δ in interest for students who do not prefer online was 1.48 versus 0.43 for those students that prefer online classes. Resulting in a significantly greater loss in interest toward class than those who prefer online classes.

We also analyzed the preference for online classes and negative emotions; anger and sadness were significant ($p \leq .01$). The Δ in anger for those students who prefer on campus was 1.38 versus 0.38 for those who prefer online classes. This finding suggests that students who do not prefer online classes had a significantly greater increase in anger when the class was converted from on campus to online. The Δ in sadness for those who do not prefer online courses was 1.16 versus 0.41 for those who prefer online courses. Students who do not prefer online classes had a greater increase in sadness when the class was converted from on campus to online. There was not a significant Δ in fear among those who prefer on campus and those who prefer online.

Next, we analyzed the preference for online classes and enjoyment with class and satisfaction with class; both results were significant ($p \leq .01$). The Δ in enjoyment for those students who prefer on campus was 2.55 versus 0.57 for those who prefer online classes. This finding suggests that students who do not prefer online classes had a significantly greater loss of enjoyment with class when the class was converted from on campus to online. The Δ in satisfaction with class for those who do not prefer online courses was 2.00 versus 0.37 for those who prefer online courses. Students who do not prefer online classes had a greater loss in satisfaction with class when the class was converted from on campus to online.

Engagement with Change Variable
The ANOVA analyses for preference for online classes with each of the five types of engagement demonstrated significant effects ($p \leq .01$). Overall, students who do not prefer online class learning experienced greater reduction in engagement with the class (2.25) versus those who do prefer online learning (0.53); greater loss of engagement with the university (2.27) versus those who prefer online learning (0.66); a larger reduction in engagement with the business school, college, or related majors/program (2.23) versus those who prefer online classes (0.57); greater reduction in engagement with the professor (1.77) versus those who prefer online (.47); and finally, greater reduction in engagement with other students on campus (2.05) versus those who prefer online classes (0.67).

Personality Type with Change Variable
Personality type was measured by three questions. Based on the scores on these three questions, respondents were coded as introvert or extrovert. We conducted individual ANOVA analyses on Δ in stress, Δ in emotions, Δ in enjoyment of class, Δ in satisfaction with class, and Δ in engagements. (See Table 3). There was not a significant difference in Δ in stress between extroverts (-0.47) and introverts (-0.34). Both introverts and extroverts had a similar increase in stress when comparing their change in stress after the class was converted from on campus to online. There were no

significant differences in personality type and any of the four positive emotions.

When analyzing the difference among introverts and extroverts with Δ in negative emotions of anger, sadness, and fear; we found that extroverts (-1.36) had a significantly greater ($p \leq .05$) increase in anger versus introverts (-0.77). We did not find that personality type significantly influenced the increase in the negative emotion of fear or sadness. Both introverts and extroverts experienced a similar amount of increase in fear. Sadness was different but not significantly so.

When analyzing personality type and Δ in enjoyment of class and Δ in satisfaction with class results showed that extroverts (2.19) had a greater reduction in enjoyment of class than introverts (1.36) ($p \leq .05$). Extroverts and introverts had similar reductions in satisfaction with class when the class was converted to online. Last, we investigated personality type and Δ in engagement among the five different types of engagement. Results show that extroverts (2.04) had a significantly greater reduction in engagement with their class than introverts (1.35) ($p \leq .05$). This demonstrates that extroverts, who likely need the face-to-face interaction of an on-campus learning environment, disconnected (less engaged) with the change to an online class, more so than introverts.

We also found that extroverts (2.29) had a significantly greater decrease in engagement with their university than introverts (1.23) ($p \leq .01$), suggesting that extroverts felt less engaged with their university than introverts after class conversion. Findings show that extroverts (2.26) felt significantly less engaged with their college than introverts (1.16), ($p \leq .01$), yet there were no significant effects with the relationship between personality type and engagement with the professor. Finally, we analyzed personality type and Δ in engagement with other students on campus. Results show that extroverts (2.04) had a greater reduction in engagement with other students on campus than introverts (1.18) ($p \leq .01$). Overall, we found that extroverts had a significantly greater reduction in engagement with class, engagement with university, engagement with college, and engagement with other students on campus. See table 3.

Table 3: ANOVA Tests and Means for Personality

Dependent Variables	Means Introvert	Means Extrovert	F value	df	Sig.
Δ Anger	0.77	1.36	4.12	164	**.04**
Δ Enjoyment with Class	-1.36	-2.19	4.36	169	**.04**
Δ Engagement with University	-1.23	-2.29	46.42	167	**.00**
Δ Engagement with College	-1.16	-2.26	10.77	169	**.00**
Δ Engagement with students	-1.18	-2.04	6.87	169	**.01**

Gender with Change Variable
The gender variable was categorized into two groups: males and females. We conducted individual ANOVA analyses with gender and Δ in stress, Δ in emotions, Δ in enjoyment of class, Δ in satisfaction with class, Δ in engagement with class. From these analyses results

were only significant for Δ in interest and Δ fear. The Δ in peacefulness approached significance at .06, (See Table 4). Results indicate that Males (1.25) lost interest toward class at a more significant level than females (0.97), ($p \leq .05$). Females (0.95) had a greater increase in fear than males (0.40) after the class was converted.

Females (1.38) had a larger decrease in peacefulness than males (0.70) after the class conversion. See Table 4.

Table 4: ANOVA Tests and Means for Gender

Dependent Variables	Means Males	Means Females	F value	df	Sig.
Δ Peaceful	-0.79	-1.38	2.84	165	**.06**
Δ Interest	-1.25	-0.97	2.29	159	**.05**
Δ Fear	0.95	0.40	3.87	162	**.02**

Variables of Interest
We also investigated other variables and their impact/relationship on the Δ in stress, Δ in positive emotions, Δ in negative emotions, Δ in enjoyment of class, Δ in satisfaction with class, and the five Δ's in engagement variables. While we expected that online class and university experience (student rank) would influence the response with the change to online classes, we did not find significant effects. In addition, many students are strategic in their enrollment choices for on-campus classes. In particular, many accounting, math, statistics, and data analytics classes (quantitative based) when moved to an online course format may provoke higher levels of stress more so than non-quantitative based courses. This was not the case. Perhaps this is an indication that quantitative courses are challenging and stressful regardless of the course delivery mode. Other variables of interest resulting in no significance include: (1) experience with online classes (number of online classes taken), (2) level of class (e.g., 1000, 2000, 3000, 4000), (3) course type (quantitative vs non-quantitative classes), (4) rank of student sophomore, junior, senior), (5) age, and (6) ethnicity.

CONCLUSION

This article addresses a gap in the literature and provides a better understanding of the impact on students from converting their on-campus classes to online. This paper provides an exploratory model of how converting classes to online affected students' stress, emotions, enjoyment, satisfaction, and engagement. The results and subsequent recommendations of this research should serve as a template for being agile with modality changes such that the student experience does not erode. The findings and following recommendations can be applicable for all sizes of education institutions. Major findings of this article are:
- After the conversion to online, students experienced more stress and more negative emotions. Students experienced a decrease or loss of positive emotions including less enjoyment with class and less satisfaction with class.
- After the conversion to online, students felt less engaged with class, less engaged with their university, less engaged with their college/dept, less engaged with their professor, and less engaged with other students on campus.

- Enjoyment of class, engagement with their university, and engagement with their college/dept were the three outcomes that had the largest change and thus the largest reductions when classes were converted to online.
- The groups that felt most adversely impacted by conversion to online were those who prefer on-campus classes and extroverts.
- Those who prefer on-campus classes had significantly more stress, more negative emotions, less positive emotions, less enjoyment with class, and less satisfaction with class after the course was converted to online. Those who prefer on-campus classes also had significantly less engagement with class, less engagement with university, less engagement with college/dept, less engagement with professor and less engagement with other students on campus.
- Extroverts had significantly more anger than introverts when their course was converted to online. They also had a significant greater reduction in enjoyment with class, engagement with university, engagement with college/dept, and engagement with other students. There were no differences between introverts and extroverts on stress, positive emotions, satisfaction with class, engagement with class, and engagement with professor.
- Age, rank, ethnicity, number of online classes taken, course type, and level of course did not influence the change in stress, change in emotions, change in satisfaction, and change in engagement when converting on-campus classes to online.
- Most importantly, converting on-campus classes to online created adverse reactions for many students validating the need for this study and future actions by professors, the college, and the university to support the students during transition.

Implications and Recommendations
The review of the literature and the major findings of this study led to the development of ten recommendations for professors and universities. These recommendations are applicable for administrators and professors (1) when on-campus classes are converted to online classes as a result of a crisis or other impacts

such as outbreaks, natural disasters, bad weather, or other disruption to a campus and (2) as administrators and professors implement continuous improvement for their online classes and programs. The recommendations listed below will help professors and administrators engage more with students, provide better levels of support to students, and help students feel more satisfied with their class, their professor, and their university. The first recommendations are for professors and the following five guidelines are for university administrators.

1. *Professors should focus on ways to engage more with their online students.* This study found that engagement with class and engagement with their professor declined when the class was converted to online. Professors could follow up with students who have not logged into their course or who have missed assignments, helping students re-engage with the online class. Faculty can also submit students' names to advisors and academic counselors who can reach out and check in with online students. Students needed reassurance that their professor was still available. Professors could consider adding creative, different, and/or new activities to their courses such as video clips, contests, online speakers, and online service projects. Adding these new activities could help with engagement but also help with enjoyment of class which had the largest decline across all variables when courses were converted to online.

2. *Professors should consider adding activities to facilitate engagement among other students in the class.* This study demonstrated that students felt less engaged with other students on campus when their class was converted to online. Faculty can help increase student to student engagement by adding discussion boards, group projects, study groups, and hang out rooms online. Resources such as Microsoft team channels and meetings can be provided so that students can connect with other students in the class without the professor having direct involvement in these online activities.

3. *Professors should consider utilizing technology to create more online and "real time" interactions with students.* Students in this study reported that they missed being able to ask questions in real time and they missed the interactions with faculty. By utilizing Microsoft Teams, Zoom or other technology, faculty can conduct classes, Q & A sessions and hold office hours online in "real time". These face-to-face interactions can help students feel more engaged with the professor and with the class. Online, virtual classes can be recorded for students who miss an online event. For online synchronous classes, professors can log in to the online class early prior to class or stay after class to answer student questions. These extra before and after times give students the opportunities to ask questions in real time as if they were in an on-campus class. Many technology options exist that professors can utilize for student engagement.

4. *Professors should consider timely communication, repetitive communication, and various forms of communication to online students.* Students in this study reported that they struggled with keeping up with assignments, how to complete assignments online, how to attend class online and getting timely responses from professors. Professors in online classes should consider providing timely responses to questions and providing timely feedback on assignments. Professors should not appear absent in an online class. Professors that teach online classes, especially asynchronous classes, should consider establishing response time expectations (e.g., within 24-48 hours), communicating weekly course summaries, rapid grading (e.g., three days after assessment is closed), and course feedback processes. Notifying the students of an established communication process at the beginning of the course or transition to online may assist in minimizing stress. Students that get lost in an online class may need the professor to help keep them on track while providing online students with more assignment details. Overall, professors should consider being timely in their communication, being repetitive in their communication, and utilize varied communication tools to help students be more successful in their online classes.

5. *Professors should start planning and preparing for short term and long-term conversions to online classes.* Outbreaks and unforeseen events, such as weather will continue to happen. With the advancements in technology, many universities can now rapidly switch to remote/online learning instead of canceling classes. There may no longer be "snow days" as classes would convert to online for short periods of time or completely switch classes to online until the end of the semester.

6. *University and college administrators should seek to connect and engage more with their online students.* This study demonstrated that engagement with university had the second largest decline across all variables when courses were converted to online. In the event of a disruption forcing classes to convert to online, Universities should have contingency plans to remain connected to students. Examples include adding online social activities such as virtual coffee breaks, virtual town hall meetings, and virtual speakers coupled with "fun" online activities. To engage current and ongoing online students, universities must be proactive and seek ways to engage with their online students. Colleges and departments should also seek engagement with their online

students. Colleges and Schools such as the College of Business, Business school, or related majors/program had the third largest decline across all variables when classes were converted to online. The college could offer webinars, virtual speakers, virtual trivia games, contests, and "fun" online activities to engage with online students, with possible class incentives for participating. Online students need to feel connected to their college and their university and to feel a part of the university community.

7. *Universities and college administrators should focus on increasing engagement among other students on campus.* This study reflects that students felt less connected to other students on campus when their classes were converted to online. Universities could develop strategies to further encourage engagement among online students including adding online student activities such as virtual contests, virtual lunch sessions, virtual meet and greet sessions, virtual club meetings etc. Student affairs and campus life provide many on campus activities but perhaps could expand activities focused on including the online student.

8. *University administrators should evaluate online student support services and determine how to best make students aware of current support services offered.* Universities should consider promoting counseling and psychological services especially to students who are transitioned to online due to unforeseen circumstances such as mass shootings, natural disasters, etc. Students in this study experienced higher levels of stress, more negative emotions, and less positive emotions when their class was converted to online. University counseling departments should encourage students to seek assistance. Counseling departments should advise and remind students about availability of offerings, prices of offering and especially free offerings including the confidentiality of services. These services can be available online with expanded hours including evening and weekend hours to meet the needs of online students.

9. *Universities administrators should consider adding more and/or improving technology support and academic support to online students.* Online students need higher levels of technology support. Technology support centers should evaluate extended support hours including evening and weekend hours that may be peak usage time for online students. Many university technology support centers only provide services during the week with no support or reduced technology support after hours. Additional technology resources may need to be provided for high demand times such as beginning of semester and at semester end. Universities should also consider increasing their academic support offerings to online students with remote services. Many students in this study reported they struggled more with the class after it was converted and that their grade declined after the class was converted to online. If not currently offered, universities could consider adding or offering online tutoring, online writing labs, online academic coaching, and online supplemental instruction to help students be more successful in online classes, including promoting these offerings.

10. *University administrators and staff should consider surveying online students about ideas and suggestions for improving their online experience with the university.* This survey provided a tremendous amount of information about the effect on students from converting on-campus classes to online. Surveying online students about their online experience would also provide a significant amount of information to the university. The survey should include asking students what they struggle with in the online class format, what they would like to see added to online programs, what support services they need as online learners, what would make them feel more engaged with university, and what the university could do to help students be more successful in their online programs. Existing end of the semester course surveys should be modified to accommodate the changes in course delivery. Feedback from students will provide suggestions and recommendations helping program directors identify areas for continued improvement.

Future Impact and Study

The day may come when a course modality test (switching on campus to online course delivery) is as commonplace as a fire drill or tornado drill. Localized negative weather implications including hurricanes on the gulf coast or freezing weather in Texas can create the scenario for a quick unplanned shift to online classes. Many K-12 public school systems have announced the abolishment of snow or storm days and instead will hold virtual classes. Higher education systems that did not teach online before are now evaluating whether to pursue that untapped source of students. The lessons learned from our recommendations need to be retained and incorporated into ongoing educational training to best meet the students' needs. Future studies should be conducted to evaluate the implementation of these pedagogical recommendation relative to the students' feedback and outcomes assessment. Longitudinal research should be completed to assess any long-term implications on graduate careers as a result of university systems being unprepared. Studies comparing international university' responses and seeking additional best practices are needed. And finally, will this exposure to online education environment for brick and mortar institutions close the demand gap for MOOC hosted by for profit education organizations?

REFERENCES

Bagozzi, R. P. (1986). Attitude Formation Under the Theory of Reasoned Action and a Purposeful Behaviour Reformulation. *British Journal of Social Psychology*, *25*(2), 95-107.

Cao, W., Fang, Z., Hou, G., Han, M., Xu, X., Dong, J., & Zheng, J. (2020). The psychological impact of the COVID-19 epidemic on college students in China. *Psychiatry Research*, *287*(112934), 1-4.

Cao X., & Sun J. (2018). Exploring the Effect of Overload on the Discontinuous Intention of Social Media Users: An SOR Perspective. *Computers in Human Behavior*, *81*, 10–18.

Carey, K. (2020, March 13). *Everybody Ready for the Big Migration to Online College? Actually, No.* New York Times. Retrieved on January 25, 2021 from https://www.nytimes.com/2020/03/13/upshot/coronavirus-online-college-classes-unprepared.html.

Cummins, S., Loe, T., & Peltier, J. W. (2016). Using Sales Competition Videos in a Principles of Marketing Class to Improve Interest in a Sale Career. *Journal for Advancement of Marketing Education, 24*(1), 16-21.

DeNora, T., & Belcher, S. (2000). When You're Trying Something on You Picture Yourself in a Place Where They Are Playing this Kind of Music'– Musically Sponsored Agency in the British Clothing Retail Sector. *The Sociological Review*, *48*(1), 80-101.

Donovan., R., & Rossiter, J. (1982). Store Atmosphere: An Environmental Psychology Approach. *Journal of Retailing*, *58*(1), 34-57.

Eroglu, S. A., Machleit, K. A., & Davis, L. M. (2001). Atmospheric Qualities of Online Retailing: A Conceptual Model and Implications. *Journal of Business Research*, *54*(2), 177-184.

Gao, L., & Bai, X. (2014). Online Consumer Behaviour and its Relationship to Website Atmospheric Induced Flow: Insights into Online Travel Agencies in China. *Journal of Retailing and Consumer Services*, *21*(4), 653-665.

Gruber, T., Fuß, S., Voss, R., & Gläser-Zikuda, M. (2010). Examining Student Satisfaction with Higher Education Services: Using a New Measurement Tool. *International Journal of Public Sector Management,* 23, 105-123.

Indiana University. (2018, September 19). *College Students Have Unequal Access to Reliable Technology, Study Finds.* ScienceDaily. Retrieved January 25, 2021 from www.sciencedaily.com/releases/2018/09/180919100950.html.

Izard, C. E. (1977). *Human Emotions*. New York: Plenum

Jacoby, J. (2002). Stimulus Organism Response Reconsidered: An Evolutionary Step in Modeling (Consumer) Behavior. *Journal of Consumer Psychology*, *12*(1), 51-57.

Kochunny, C. M., Rogers, H. P., & Ogbuehi, A. (1992). Maccoby's Head/Heart Traits: Marketing versus Account Students. *Journal of Education for Business.* *67*(6), 371-376.

Laato, S., Islam, A. N., Farooq, A., & Dhir, A. (2020). Unusual Purchasing Behavior During the Early Stages of the COVID-19 Pandemic: The Stimulus-Organism-Response Approach. *Journal of Retailing and Consumer Services*, *57*, 102-224.

Laesser, C., Luo, J., & Beritelli, P. (2019). *The SOMOAR Operationalization: A Holistic Concept to Travel Decision Modelling.* Tourism Review.

LeBlanc, P. (2020, March 30). COVID-19 Has Thrust Universities Into Online Learning- How Should They Adapt? *Brookings.edu.* Retrieved January 25, 2021 from https://www.brookings.edu/blog/education-plus-development/2020/03/30/COVID-19-has-thrust-universities-into-online-learning%E2%81%A0-how-should-they-adapt/

Lei, H., Cui, Y., & Zhou, W. (2018). Relationships between Student Engagement and Academic Achievement: A Meta-Aanalysis. *Social Behavior and Personality: An International Journal*, 46(3), 517-528.

Lightner, C. A. & Lightner-Laws, C. A. (2013). A Blended Model: Simultaneously Teaching a Quantitative Course Traditionally, Online, and Remotely. *Interactive Learning Environments, 24*(1), 224-238.

Martin, K. D., Borah, A., & Palmatier, R. W. (2017). Data privacy: Effects on Customer and Firm Performance. *Journal of Marketing*, 81(1), 36-58.

Mehrabian, A., & Russell, J. A. (1974). *An Approach to Environmental Psychology.* MIT Press.

Overall, J. U. & Marsh, H. U. (1980). Student's Evaluations of Instruction: A Longitudinal Study of Their Stability. *Journal of Educational Psychology, 72*(3), 321-325.

Richins, M. L. (1997). Measuring Emotions in the Consumption Experience. *Journal of Consumer Research*, 24(2), 127-146.

Siddiqui, R. & Pandey, J. (2003). Coping with Environmental Stressors by Urban Slum Dwellers. *Environment and Behavior*, 35(5), 589-595.

Smalley, A. (2020, July 27). Higher Education Responses to Coronavirus (COVID-19). Retrieved January 25, 2021 from https://www.ncsl.org/research/education/higher-education-responses-to-coronavirus- COVID-19.aspx.

Su, L., Hsu, M. K., & Boostrom Jr, R. E. (2020). From Recreation to Responsibility: Increasing Environmentally Responsible Behavior in Tourism. *Journal of Business Research*, *109*, 557-573.

Trowler, V. (2010). Student Engagement Literature Review. *The Higher Education Academy*, 11(1), 1-15.

Turley, L. W., & Milliman, R. E. (2000). Atmospheric Effects on Shopping Behavior: A Review of the

Experimental Evidence. *Journal of Business Research*, *49*(2), 193-211.

Whiting, A., & Donthu, N. (2009). Closing the Gap between Perceived and Actual Waiting

Times in a Call Center: Results from a Field Study. *Journal of Services Marketing,* 23(5),

279-288.

Xu, J., Benbasat, I., & Cenfetelli, R. T. (2014). The Nature and Consequences of Trade-off

Transparency in the Context of Recommendation Agents. *MIS quarterly*, *38*(2), 379-406.

Xu, D., & Jaggars, S. S. (2013, February 12). *Adaptability to Online Learning: Differences Across Types of Students and Academic Subject Areas.* Community College Research Center*.*

Retrieved February 2, 2021 from https://ccrc.tc.columbia.edu/publications/adaptabilit y-to-online-learning.html.

Zhang H., Lu Y., Gupta S., & Zhao L. (2014). What Motivates Customers to Participate in Social Commerce? The Impact of Technological Environments and Virtual Customer Experiences. *Information & Management*, *51*(8), 1017–1030.

Zhai, X., Wang, M., & Ghani, U. (2020). The SOR (stimulus-organism-response) Paradigm in Online Learning: An Empirical Study of Students' Knowledge Hiding Perceptions. *Interactive Learning Environments*, *28*(5), 586-601.