"It wasn't necessarily terrible, but it also wasn't ideal": Students' Experiences with the Transition to Online Learning during the COVID-19 Pandemic

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ABSTRACT. Undergraduate students (N = 165) completed an online survey about their experiences with the sudden transition to online learning, prompted by the COVID-19 pandemic. Results of multiple regression analyses suggested that satisfaction with the transition online, concerns about COVID-19, and computer time were associated with signs of distress (changes in grades, stress level, and depressive symptoms), after accounting for preference for online instruction, housing satisfaction, and other covariates. Students' responses to open-ended questions identified approaches employed by instructors that were perceived as helpful or unhelpful. Students advocated for fewer assignments, better communication, and greater empathy and understanding from their instructors.

Keywords: *online learning, pandemic, higher education*

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In the United States and around the globe, the COVID-19 pandemic has created a tidal wave of changes in higher education. During the spring 2020 semester, many colleges and universities shifted face-to-face (FTF) classes online within a matter of days in response to stay-at-home orders. Students and teachers alike scrambled to meet their academic obligations, while concerns about health and safety were front and center in the media. The rapid rise of this national health crisis is unprecedented and accompanied by numerous uncertainties, creating a particularly challenging context for the transition to online instruction. At the time we prepared this manuscript, reporters and researchers continued to document the negative impact of stay-at-home orders and looming health concerns associated with the pandemic. A health poll conducted in early April 2020 by the Kaiser Family Foundation found a significant increase in the number of Americans who reported life disruptions due to the coronavirus outbreak, which included greater economic and personal health concerns (Kirzinger, Kearney, Hamel, & Brodie, 2020). The World Health Organization noted an increased demand for mental health services associated with COVID-related stressors (WHO, 2020). It is likely that we will continue to observe effects of the pandemic on higher education for months or years to come. Having timely information about students' experiences with the sudden shift to online learning, along with other life changes, may help educators plan for the future and better align teaching strategies with students' needs. The present study examined undergraduate students' subjective experiences with the transition to online learning and potential correlates of changes in grades, stress levels, and depressive symptoms during that period.

Theoretical Underpinnings: The Challenge-Hindrance Theoretical Framework

Based on the work of Lazarus (2006) and Lazarus & Folkman (1984), the challenge-hindrance framework challenges the assumption that stressors are always bad and result in negative outcomes. Instead, this framework proposes that the stressor-performance relationship is contingent on how the stressor is perceived (Travis et al., 2020). When a stressor is perceived as relevant and manageable, effects on performance will be positive (i.e., a "challenging" effect). On the contrary, when a stressor is perceived as relevant but unmanageable or overwhelming, the effects on performance will be negative (i.e., a "hindering" effect), particularly when coping is poor. Travis and colleagues (2020) used the challenge-hindrance framework to examine associations between challenge and hindrance stressors and academic outcomes with a sample of 853 college students. They found theory-supportive evidence of a positive association between challenge stress and GPA, and a negative association between hindrance stress and GPA.

Applied to the present investigation, the challenge-hindrance framework reminds us that students' perceptions of the transition online during a global pandemic will likely result in different outcomes, depending on whether it was experienced as a challenge or hindrance stressor. In this study, we explicitly asked students, "Was there anything that your instructors did that made the transition more manageable or more difficult?" with the word "manageable" reflecting challenges and "difficult" reflecting hindrances. We also asked students to rate their satisfaction levels with the transition online and assessed other factors that might have contributed to their experiences, such as satisfaction with housing, financial stress, technology use, and COVID-19-specific stressors. In doing so, we were able to assess students' perceptions

of their life circumstances during a critical time in their educational journey to examine how those factors contributed to their educational and mental health outcomes.

The Well-Being of College Students during a Global Pandemic

Public health data suggest that college students are not a particularly high-risk group when it comes to life-compromising symptoms associated with COVID-19 infection (Davies et al., 2020). In fact, the Centers for Disease Control has documented significantly higher rates of hospitalization and death for individuals 30 years of age and older compared to college-age students (i.e., those 18-29 years of age; CDC, 2021). However, adolescents and young adults are at elevated risk for mental health issues, such as depression and anxiety, associated with pandemic-related stressors such as adjusting to online instruction, social isolation, living with parents, food insecurity, loss of employment, and other changes in their daily routines (Owens et al., 2020; Son et al., 2020; Wang et al., 2020). A survey conducted in June 2020 by the CDC revealed that 18-24 year olds reported higher rates of anxiety disorders, depressive disorders, and suicidal ideation compared to adults in older age categories (Czeisler et al., 2020). Young adults were also more likely than older adults to report using controlled substances to cope with COVID-related stressors. Approximately 75% of 18-24 year olds reported at least one or more adverse mental or behavioral health symptoms in the last 30 days (Czeisler et al., 2020). A recent cross-sectional study of undergraduate and graduate students at Texas A&M University revealed similarly concerning findings, with over 70% of the sample reporting an increase in stress and anxiety during the pandemic (Wang et al., 2020). The compiled evidence thus far clearly indicates mental health risks for college students.

How are College Students Adjusting to the Transition to Online Learning?

The transition from FTF to online learning was a necessary safety precaution to reduce person-to-person transmission of COVID-19 on college campuses. Pre-pandemic studies comparing student achievement in online and FTF modalities might have led some to predict that the transition online would result in a slight boost to student achievement. In a meta-analysis of over 200 studies, Bernard and colleagues (2004) found that student achievement was higher in the distance education group when compared to classroom-based learning, yet the effects sizes were small. When they divided distance learners into synchronous and asynchronous groups, asynchronous distance learning was associated with positive achievement outcomes, whereas synchronous distance learning was not.

Although there might be benefits to online learning for some students, not all students prefer or perform well with online modalities (Tichavsky et al., 2015). Yatrakis & Simon (2002) found that students who self-selected into an online format were more satisfied with the course and reported retaining more information than those who enrolled in online courses because there was not a FTF alternative. Therefore, the voluntary nature of being able to select the modality that works best for the learner is important to consider. When universities shifted completely online in response to the pandemic, students who would never have selected an online class to begin with were suddenly expected to continue their learning in an undesirable modality, which might have been detrimental to their learning and/or academic achievement. This may be particularly true for students with disabilities, who rely on classroom accommodations.

Some emerging evidence suggests that the transition to online learning is not going well for many students (Son et al., 2020). A recent *Chronicle of Higher Education* article highlighted how students were struggling with online courses:

> In interviews with students in precarious financial situations across the country, the discomfort with online education emerged as a key concern about this new era. It's harder to stay focused when the professor isn't standing in front of you. Asking questions can be more awkward and intimidating. It's easier to suffer in silence. (Patel, 2020, para 20)

For many students, work and family stressors exacerbated challenges associated with the transition to online learning. A CNN News article cautioned that some LGBTQ+ students might be forced to live with toxic and/or abusive families out of economic necessity. Temple University's Hope Center for College, Community, and Justice conducted an online survey of more than 38,000 students from 54 colleges and universities during the pandemic's early stages (Goldrick-Rab et al., 2020). Among students attending four-year universities, approximately one-third of the sample had experienced job insecurity, 38% experienced food insecurity, and 11% experienced homelessness due to the pandemic. There was also evidence of a racial gap in basic needs insecurity, favoring white students; about half of the sample reported signs of psychological strain in the form of anxiety and difficulty concentrating. Studies conducted before the pandemic suggested that help-seeking behaviors and social support from peers might help mitigate effects of stress exposure on student burnout, yet the unique circumstances of a global pandemic might restrict students' access to their support networks, including university-provided mental health services.

In sum, there is reason to believe that the transition to online learning within the context of a pandemic has not been easy for many students, and especially difficult for students with economic, social, and psychological vulnerabilities. Due to the scarcity of research on this topic, and particularly those centering on students' perspectives, the present study gives voice to students' concerns and experiences as colleges and universities do their very best to provide high-quality instruction and retain students during this pandemic.

Instructors' Strategies during the Transition to Online Teaching

Circumstances surrounding the pandemic necessitated a swift response from higher education to comply with stay-at-home mandates and to keep faculty, students, and staff safe, while minimizing disruptions to teaching and learning. Instructors of FTF courses had to reconfigure their classes for online learning, a process typically requiring months of preparation, planning, and systematic design. Hodges and colleagues referred to this as *emergency remote teaching* to reflect the stark contrast between courses that are intentionally designed to be offered online and courses that are temporarily converted to an online format during an emergency, such as a global pandemic (Hodges et al., 2020). The shift to emergency remote teaching was required of all instructors, some of whom lacked experience with online teaching and technology typically used to develop online courses. While some instructors adjusted the types of assignments they gave students, others lowered their expectations of students' work quality, provided flexible due dates, or cut readings and assignments (Lederman, 2020). Use of synchronous video technology was common, particularly among experienced online instructors (Lederman). In one recent study, chemistry instructors reported a marked increase in self-produced videos as a teaching tool after the switch to online instruction, which students rated more favorably than videos selected

from websites (Villanueva et al., 2020). Instructors' reflections indicated challenges with technology use and lack of training (Villanueva et al.). How students experienced strategies employed by instructors as courses moved online is important to understand because of the unique circumstances surrounding emergency remote teaching, which differ from how students might experience online classes under non-emergency circumstances.

The Present Study

This study's overarching goal was to investigate undergraduate students' experiences with the transition to online instruction within the context of the COVID-19 pandemic. We also sought to identify factors associated with signs of distress, characterized by changes in academic and mental health outcomes, during this transition. We included a series of open-ended questions aimed at understanding what students found helpful or unhelpful, prompting them to comment specifically on their instructors' strategies and make recommendations for improvements. Along with open-ended responses, students answered fixed-response questions about their living and work arrangements, financial strain, personal characteristics, and changes to their grades, stress levels, and depressive symptoms during the transition online. We also asked several COVID-19-specific questions to assess students' participation in social distancing, general concerns, essential worker status, and whether or not they or a family member had tested positive for COVID-19.

Although much of this study was exploratory in nature, we expected that having greater life stressors (e.g., financial stress, feeling dissatisfied with their current living arrangement, preferring FTF instruction) would be associated with more distress in the form of lower grades, higher stress levels, and an increase in depressive symptoms.

Methods

Procedures

Email invitations to participate in a survey about the transition to online learning were sent to undergraduate students attending a large, predominantly White university in the Midwestern United States. Recruitment began at the end of April 2020, shortly after the university made a full transition to remote learning. Although less than 10% of university courses were online when the Spring 2020 semester began, all courses shifted online in April in response to state-issued stay-at-home mandates. The recruitment email contained a link to an online survey, designed using Qualtrics software. Students provided informed consent before beginning the survey. As an incentive, participants had the option to enter a random drawing for one of three care packages. There was an effort to recruit students from various academic majors across campus. Although the final sample included students from 29 different majors, social science and education majors were overrepresented.

Sample

Of the 165 students who completed the survey, 90% (147) self-identified as women, 9% (15) self-identified as men, and 1% (1) self-identified as non-binary. Eighty-two percent (134) identified as non-Hispanic White, 9% (15) identified as non-Hispanic Black, 6% (10) identified as multiracial or multiethnic, and 1% (2) identified as Hispanic only. Less than 1% identified as American Indian or Alaskan Native, Asian, or Hawaiian. Twenty-eight percent (46) were first

year students, 34% (55) were sophomores, 23% (37) were juniors, and 16% (26) were seniors. Students' current living arrangements varied somewhat with 73% (120) living with family, 12% (19) living with a significant other, 11% (18) living with roommates, and 3% (5) living alone. Two students described living in an arrangement different from the options provided. Most students fell within the typical age range for undergraduate students ($M = 20.40$, $SD = 3.20$, $Range = 18 – 44$). Seventy percent ($n = 115$) of students reported having at least some previous experience with online classes, but only 13% (n = 22) indicated a preference for online instruction over face-to-face instruction.

University-level data indicated that the average GPA for "online only" and "partially online" undergraduate students was 3.05 during the Fall 2019 semester (n = 5,131), 3.21 during the Spring 2020 semester (n = 5,628), and 2.96 during the Fall 2020 semester (n = 13,822). Thus, the average GPA across campus actually rose during the semester in which this study was conducted, but fell during the following semester. On average, students in the present study reported that their grades had stayed the same or became slightly worse through the transition online.

Measures

Participants responded to fixed-response and open-ended questions about the transition to online learning, their evaluations of instructors' approaches to the transition, and various facets of personal and psychological functioning.

Signs of distress

We assessed changes in students' grades, stress levels, and depressive symptoms across the transition to online instruction. Students rated average changes in their grades from 1 (*much improved*) to 5 (*much worse*), with 3 reflecting no changes (*about the same*). Similarly, students reported perceived changes in their stress levels across the transition to online instruction. Response options ranged from 1 (*lower than usual*) to 5 (*much higher than usual*), with 3 reflecting no changes (*about the same*). Students reported their depressive symptoms in two different ways; first, they completed the 10-item Center for Epidemiological Studies-Depression inventory (CES-D, Radloff, 1977; Alpha = .87) based on current symptoms. They responded to the same set of questions a second time based on how they thought they *would have* responded three months prior (i.e., pre-pandemic depressive symptoms, Alpha = .81). We computed total scores for pre-pandemic and current depressive symptoms. Pre-pandemic CES-D scores were subtracted from current CES-D scores to form a change in depressive symptoms score. Positive scores on the change variable reflected an increase in depressive symptoms and negative scores reflected a decrease in depressive symptoms across the transition to online learning.

COVID-related stressors

Students indicated their levels of concern about COVID-19 from 1 (*not concerned at all*) to 4 (*very concerned*). We also asked students to report if they or a family member had been diagnosed with COVID-19. At the time the survey was administered no participants had tested positive, but 24 participants had at least one family member test positive. A dummy variable was created for "family member has COVID-19" (0 = no, 1 = yes). We asked if they were currently practicing social distancing (1 = yes, 2 = no), with 96% of the sample indicating yes. Because there were so few students who were not practicing social distancing, we did not include this

variable in analyses. Among students who were employed outside the home ($n = 57$), 43 indicated they were considered an "essential worker." A dummy variable was created for essential worker status (1 = essential worker/ 0 = not essential worker).

Preference for online instruction

This was assessed with a single item, "Do you prefer online instruction to face-to-face instruction?" (1 = yes, 2 = no). Approximately 13% of the sample ($n = 22$) responded "yes."

Use of technology

In hours per day, students estimated the amount of time spent on their computer for classwork only (*computer time*), as well on their phone/computer/other technology for anything other than classwork (*technology time*). A sliding scale was provided for both questions, ranging from 0 to 20 hours. Average hours per day were 5.28 ($SD = 2.80$) and 6.03 ($SD = 3.57$) for computer time and technology time, respectively.

Personal background variables

We collected information about participants' race, Hispanic/Latinx heritage, age, gender, academic major, total credit hours in the current semester, and year of study. Due to small cell sizes, a new race variable was created for comparison purposes (0 = Non-Hispanic White, 1 = Other). A single item, "What is your current financial situation?," served as an indicator of financial strain. Response options were 1 ("Finances aren't really a problem"), 2 ("It's tight but I'm alright"), and 3 ("It's a financial struggle"). A single item, "What is your current living situation?," assessed with whom students were residing at the time of the survey. Response categories were "alone," "with roommates," "with family," "with significant other," and "other." We also asked, "How satisfied are you with your current living situation, including the people you are living with and where you are living?" Response options ranged from 1 (very satisfied) to 7 (very dissatisfied), with 4 reflecting a neutral opinion (neither satisfied nor dissatisfied). Based on distribution of scores, we computed a dichotomous variable where 0 = satisfied or neutral (i.e., scores ranging from 1 to 4) and 1 = dissatisfied or very dissatisfied (i.e., scores ranging from 5 to 7).

Open-ended questions

We asked several open-ended questions to learn more about how students experienced the transition to online learning, particularly their perspectives on instructors' strategies for managing the transition. Students' responses to the following open-ended questions were examined for the present study: "Was there anything your instructors did that made the transition more manageable or more difficult?" "What do you wish your instructors would have done differently during the transition?"

Quantitative Results

A series of preliminary analyses was conducted to understand the distribution of scores and pattern of associations among variables. Descriptive statistics and frequencies for variables included in correlation and regression analyses are summarized in Table 1. On average, students' grades had stayed the same or slightly declined across the transition online. Forty-nine percent indicated their grades had stayed the same through the transition online, 31% indicated their

grades were somewhat or much worse, and 20% indicated their grades were somewhat or much improved. Stress levels were slightly higher than usual. Change in depression scores reflected an average increase in depressive symptoms for the sample. Not presented in Table 1, only 10.5% of the sample had change scores that reflected their depressive symptoms stayed the same or decreased. Slightly less than half (a cumulative 47.3%) of the students reported some amount of dissatisfaction with the transition online. About one-quarter reported some amount of dissatisfaction with their current living arrangement.

Table 1
Descriptive Statistics and Frequencies for Key Variables of Interest

Variables	*M*	*SD*	Range	%	N
General satisfaction	3.55	1.39	1-6		165
Computer time	5.28	2.81	1-20		165
Technology time	6.03	3.57	1-20		164
COVID concerns	2.80	.76	1-4		165
Work hours	24.95	12.48	8-65		43
Credit hours	15.93	2.49	3-22		160
Satisfaction with housing	2.96	1.73	1-7		164
Change in Grades	3.13	.89	1-5		165
Change in Stress	4.05	1.07	1-5		165
Change in Depression	8.10	6.70	-15-28		162
Financial Strain	1.98	.66	1-3		
It's a financial struggle				22	37
It's tight, but I'm alright				57	93
Finances aren't really a problem				21	34

Bivariate correlations were computed for associations between our "signs of distress" variables (changes in grades, stress levels, and depressive symptoms) and satisfaction with the transition to online (i.e., transition satisfaction), computer time, technology time, concerns about COVID-19, work hours, credit hours, and satisfaction with housing. Results of bivariate correlation analyses are summarized in Table 2. Changes in grades, stress levels, and depressive symptoms were intercorrelated in the expected directions; a decline in grades was associated with increases in depressive symptoms and stress levels. Changes in grades was associated negatively with transition satisfaction and positively with financial strain and housing dissatisfaction. Changes in stress level was associated negatively with transition satisfaction and positively with financial strain, computer time, COVID-19 concern, credit hours, and housing dissatisfaction. Changes in depressive symptoms was associated negatively with transition satisfaction and positively with computer time, COVID-19 concern, and housing dissatisfaction. Results also suggested that higher levels of transition satisfaction were associated with less computer time and lower levels of housing dissatisfaction. More computer time was associated with more credit hours. Higher levels of housing dissatisfaction were associated with greater financial strain. We dropped work hours and technology time from subsequent analyses because they were not associated with any other variables of interest.

Table 2

Bivariate Correlations among Changes in Grades, Stress Level, Depressive Symptoms, and Key Variables of Interest (N = 165)

	Grades	Stress Level	Depression Change	Transition Satisfaction	Computer Time	Technology Time	COVID Concern	Work Hours	Credit Hours	Housing Disatisfied	Financial strain
Grades	—										
Stress Level	.426**	—									
Depression	.268**	.419**	—								
Transition Satisfaction	-.350**	-.547**	-.317**	—							
Computer Time	.148	.288**	.181*	-.232**	—						
Technology Time	.033	.120	.053	-.144	-.096	—					
COVID Concern	.055	.202**	.260**	-.074	-.005	.063	—				
Work Hours	.082	-.048	.116	.250	.136	-.105	.199	—			
Credit Hours	.114	.250**	.035	-.133	.217**	-.030	-.006	.103	—		
Housing Dissatisfied	.186*	.265**	.205**	-.226**	.015	.028	.030	-.275	.095	—	
Financial Strain	.172*	.221**	.129	-.151	.040	-.047	.130	.012	.118	.254**	—

$^{**}p < .01, ^{*}p < .05$

We compared mean differences in our "signs of distress" variables based on students' gender, race, year of study, preference for online instruction, family member testing positive for COVID-19, essential worker status, housing arrangement, and satisfaction with housing (dichotomized). Results of mean group comparisons are summarized in Tables 3, 4, and 5. We found significant differences in changes in grades, stress level, and depressive symptoms between students who preferred online instruction and those who did not. Students who did not prefer online instruction reported a greater decline in grades, increase in stress level, and increase in depressive symptoms compared to those who preferred online instruction. With regard to race, "Other" (i.e., non-White) students' stress levels increased more than non-Hispanic White students' stress levels, on average. Students who were dissatisfied with their housing arrangement reported a greater increase in stress levels, on average, compared to their satisfied/neutral counterparts. Although the main effect for housing arrangement was nonsignificant, Tukey post-hoc comparisons revealed significant mean group differences by housing arrangement. Students residing with roommates or family members reported significantly greater increases in depressive symptoms compared to those residing with a significant other.

To determine which variables were the strongest predictors of "symptoms of distress" variables, we tested separate regression models for changes in grades, stress levels, and depressive symptoms, including only those variables with significant associations in preliminary analyses. Results of multiple linear regression analyses with bootstrapping are summarized in Table 6. The current sample size is relatively small; thus, using bootstrapping procedures (1,000

iterations) to estimate 95% confidence intervals and parameters can provide more accurate inferences (Fox, 2015). The bootstrapping procedures model parameters from the repeated samples drawn from the available data (Fox, 2015).

Table 3

Means Comparisons of Changes in Grades by Personal Characteristics and Categorical Variables of Interest (N = 165)

Variable	n	M	SD	t/F	p
Gender				-1.342	.18
Woman	147	3.08	.84		
Man	15	3.40	1.18		
Race				.91	.37
Non-Hispanic White	134	3.16	.90		
Other	30	3.00	.87		
Year of Study				.09	.97
First year	46	3.17	.90		
Sophomore	55	3.10	.94		
Junior	37	3.16	1.01		
Senior	26	3.07	.63		
Prefer Online				-2.27*	.02
Yes	22	2.72	.98		
No	143	3.19	.87		
Family COVID+				.23	.82
Yes	24	3.17	.96		
No	141	3.12	.89		
Essential Worker				-.30	.76
Yes	43	3.16	.97		
No	122	3.11	.87		
Housing				1.18	.32
Alone	5	2.80	1.30		
Roommates	18	3.00	.91		
Family	120	3.18	.85		
Significant other	19	3.21	1.03		
Other	2	2.00	1.41		
Housing Satisfaction				-1.68	.09
Satisfied/Neutral	122	3.07	.94		
Dissatisfied	42	3.33	.72		

Table 4

Means Comparisons of Changes in Stress Level by Personal Characteristics and Categorical Variables of Interest (N = 165)

Variable	*n*	*M*	*SD*	*t/F*	*p*
Gender				.24	.81
Woman	147	4.07	.99		
Man	15	4.00	1.46		
Race				-2.32*	.02
Non-Hispanic White	134	3.99	1.10		
Other	30	4.47	.57		
Year of Study				.46	.71
Freshman	46	4.11	1.06		
Sophomore	55	4.05	1.09		
Junior	37	4.19	1.02		
Senior	26	3.88	.95		
Prefer Online				-2.22*	.03
Yes	22	3.59	1.33		
No	143	4.13	1.00		
Family COVID+				1.18	.24
Yes	24	4.29	1.04		
No	141	4.10	1.07		
Essential Worker				1.05	.29
Yes	43	3.91	1.13		
No	122	4.11	1.04		
Housing				.79	.53
Alone	5	4.00	1.73		
Roommates	18	4.33	.49		
Family	120	4.09	1.03		
Significant other	19	3.79	1.22		
Other	2	3.50	2.12		
Housing Satisfaction				-2.25*	.03
Satisfied/Neutral	122	3.97	1.08		
Dissatisfied	42	4.38	.88		

* = $p < .05$.

Table 5

Means Comparisons of Changes in Depressive Symptoms by Personal Characteristics and Categorical Variables of Interest (N = 165)

Variable	*n*	*M*	*SD*	*t/F*	*p*
Gender				.99	.32
Woman	147	8.27	6.48		
Man	15	6.47	8.85		
Race				-.26	.79
Non-Hispanic White	131	8.08	6.92		
Other	30	8.43	5.70		
Year of Study				.43	.73
Freshman	46	7.20	5.59		
Sophomore	53	8.55	6.97		
Junior	36	8.64	7.65		
Senior	26	8.31	6.72		
Prefer Online				-2.27*	.03
Yes	21	5.05	8.18		
No	141	8.55	6.35		
Family COVID+				.59	.55
Yes	24	8.87	8.05		
No	141	7.97	6.47		
Essential Worker				1.12	.26
Yes	43	7.12	5.61		
No	119	8.45	7.04		
Housing				1.71	.15
Alone	5	8.80	5.49		
Roommates	18	9.89[a]	7.81		
Family	118	8.32[b]	6.47		
Significant other	18	4.67[ab]	6.80		
Other	2	11.50	4.95		
Housing Satisfaction				-1.69	.09
Satisfied/Neutral	120	7.63	6.59		
Dissatisfied	41	9.66	6.84		

a. Statistically significant post-hoc comparison at *p* = .02.
b. Statistically significant post-hoc comparison at *p* = .03.
* = *p* < .05.

In the first model, we examined transition satisfaction, financial strain, housing dissatisfaction, and preference for online as predictors of changes in grades. Transition satisfaction emerged as a significant predictor of changes in grades. In the second model, we examined race, transition satisfaction, computer time, COVID-19 concerns, credit hours, preference for online, housing dissatisfaction, and financial strain as predictors of changes in stress levels. Several variables emerged as significant predictors: race, transition satisfaction,

computer time, and COVID-19 concerns. In the third model, we examined transition satisfaction, computer time, COVID-19 concerns, preference for online, housing arrangement, and housing dissatisfaction as predictors of changes in depressive symptoms. Transition satisfaction, computer time, and COVID-19 concerns emerged as significant predictors of changes in depressive symptoms.

Table 6

*Summary of regression analyses for variables predicting changes in grades, stress, and depressive symptoms in undergraduate students (*N = 165)

Variable	Grades			Stress			Depressive Symptoms		
	B	SE B	β	B	SE B	β	B	SE B	β
Race				.146	.181	.053			
Credit Hours				.044	.023	.129 [a]			
General Satisfaction	-.179	.051	-.278**	-.332	.053	-.443**	-1.068	.384	-.218**
Computer Time				.052	.052	.140*	.278	.177	.118
COVID Concerns				.211	.089	.152*	2.062	.644	.235**
Prefer Online	.305	.208	.116	.116	.210	.038	2.174	1.503	.110
Housing Arrangement							-.774	.781	-.073
Satisfaction with Housing	.127	.153	.062	.245	.159	.100	1.541	1.131	.101
Financial Stress	-.190	.105	-.140	-.140	.108	-.089			
R2		.149			.400			.192	
F		6.944**			12.569**			6.082**	

Qualitative Results

The process of analyzing students' typed responses to open-ended questions took place in a series of steps. Three individuals contributed to the analysis, the Principal Investigator (first author), a graduate research assistant (second author), and a volunteer undergraduate student. Because our personal standpoints shape the lens through which we interpret data, it is important to note that our research team varied with respect to age, race, gender, and education level. First, we independently coded and analyzed responses to each question. After our independent analyses were complete, we shared our notes and discussed themes and patterns we observed in the data. In most cases, data were straightforward and easily classified into one of several themes. In a few cases, we discussed variations in our interpretations and reached consensus. Summaries are provided for each question. We integrated direct quotes from students' responses into each summary.

Was there anything that your instructors did that made the transition more manageable or more difficult?

Flexibility

The words "flexible" or "flexibility" appeared 23 times in students' responses, along with similar terms such as "lenient" to indicate how students' described some instructors' approaches to managing the transition online. In most cases, students described flexibility in terms of

"changing some due dates" and "allowing late work," the most common examples, and "altering assignments." One student explained, "What helped me the most was having a 'mock schedule,' meaning I could turn assignments in whenever I wanted, but I needed to get all of them done by finals. The schedule gave me pace so I did not fall behind." Some students also referred to how instructors used technology to offer greater flexibility to students.

> One professor recorded themselves giving lectures so we could still get the information as we would have before but in a way that also allowed us our flexibility to watch the videos whenever we were able to as opposed to scheduled Zoom lectures. I picked up a new job so not having to work around Zoom meetings/lectures was really helpful for me. Another professor cancelled two assignments to ease some of our stress and even restructured an assignment so it gave us more of a chance to freely write about our feelings (similar to a journal) instead of sticking to the rubric of an essay about a topic.

Reduction or modification of assignments made the transition to online learning "more manageable" for many students. According to several students, when instructors canceled assignments or "removed course requirements that would be hard to carry out online," such moves made the transition easier for them. In contrast, students disliked the inflexibility of some instructors who required virtual meetings at times other than the designated class time, which made it difficult for students to manage their schedules. Other students mentioned "shortened test times" and rigid due dates as making their transition more difficult. One student explained, "Most of my instructors reduced the time allowed for exams in order to reduce the risk of cheating, but this has increased my stress levels dramatically." Another student failed to complete one exam because their professor set "30 minute time limits on 50-question tests."

Communication

Another prominent theme was related to how well and how often instructors communicated with their students, which included general messaging and instructions about assignments/course content. Communication did not necessarily have to involve a back-and-forth between instructors and students; for some students, unidirectional communication from their instructor in the form of "frequent email updates" was beneficial. The words "consistency" and "availability" were often paired with students' comments about their communication with instructors during the transition. Students appreciated instructors who held "consistent meetings" and "checked in" often, some with "weekly newsletters." For some students, the perception of availability for communication was seen as helpful. For example, some students remarked how their instructors "were readily available almost all the time" and "made themselves available for virtual office hours." In contrast, students were dissatisfied when instructors did not communicate with their students, took too long to provide feedback on assignments, or did not provide advanced notice of changes within the course. "Numerous email updates" without other forms of communication and direct instruction was perceived as insufficient. In fact, a few students described their instructors as "hard to reach" or reported that they "stopped instruction or poorly instructed with little communication." Some students felt as though they were left to teach themselves. "A lot of my instructors didn't post lectures or anything. They just gave us assignments over new content." Speculating about their instructors' communication challenges, one student wrote, "I think professors found it more difficult to express themselves and their expectations online, rather than face to face."

Understanding and Compassion

Woven into the themes of Communication and Flexibility were comments about instructors' displays of understanding and compassion during an otherwise difficult transition. One student wrote, "I did like that teachers who really cared checked in on their students." Another student echoed that sentiment by explaining how their instructor "asked how we were doing and cared about how we were doing with the transition." Some students described their instructors as "generous" or "very understanding" when they extended due dates for assignments. Positive messages from instructors contributed to students' resilience during the transition to online learning. When instructors "made it clear that they were there" for their students, "willing to work with" them, or encouraged them to "stick it out," this helped students feel more supported and less stressed. However, one student explained how messages of compassion had less of a positive impact when not paired with flexible classroom policies.

> When I wanted to be taught, I was sent links to Ted Talks – none of the due dates were changed. I'm getting all of these messages about hanging in there and how people know this is difficult and yet most of the due dates stayed the same as if nothing was happening. The grading – if anything – has gotten more strict.

Although not explicitly described in terms of lacking compassion, numerous students reported an increase in workload when classes moved online, which was perceived as unfair and unhelpful for them. An increase in assignments/homework was the most frequently stated negative influence on their experience with the transition to online learning. Students described additional assignments as "excessive" and "unreasonable," creating a sense of "pile up" that made it difficult for them to catch up. One student "spent 12 hours a day for a week just to catch up" during the early stages of the transition. Some students speculated that additional work was assigned to compensate for attendance points that would have been earned in the physical classroom; however, this made it difficult for students whose personal lives became increasingly complex during the pandemic. For example, several students commented on changes to their living arrangement or work schedule, which impacted their learning in significant ways. Adjusting to feeling "uprooted" in the middle of a semester, moving home, and attending classes from their apartment or bedroom seemed to amplify the negative effects of a heavier workload.

What do you wish your instructors would have done differently during the transition?

Although 22 students wrote that they had no suggestions for improvement or expressed satisfaction with the transition online, an additional 125 students provided specific suggestions that we summarized into three pieces of advice for instructors.

1. Do not add more assignments; if anything, reduce assignments/expectations.

Numerous students specifically requested that their instructors "stop giving extra assignments," "not increase the workload," and "not add on busy work" during the transition. One student explained the need for "adjustment time" because it was "overwhelming and extremely difficult to suddenly become online students." The extra workload brought about by additional assignments seemed counterintuitive to students who were already struggling with technology, moving out of their dorms, and book rentals for those who could no longer share with classmates. One student emphasized the false assumption of students having more time when classes moved online. "Many assigned more work than previously assigned during in-person classes because it was assumed that we have 'more time' to work on schoolwork. When

in reality, that is significantly false." Another student echoed this sentiment, "I wish my instructors would have considered that during a crisis some of us may have less time to complete work than previously." This student went on to explain feeling "overwhelmed with unnecessary work." Although few students commented specifically about employment, one student wrote about an increase in work hours during the transition online because they were an "essential worker in healthcare."

Instead of adding additional assignments, it was suggested that instructors "allow time for adjustment" and "be more accommodating." One student went further to suggest one week would have been adequate. A few students suggested to cancel or modify group assignments because of the challenges collaborating with classmates online. For example, one student explained how their group members were nonresponsive to texts or emails, which resulted in that student completing the group project independently.

2. Communicate often and with clear expectations.

A common suggestion pertained to how much, how often, and the clarity with which instructors communicated with their students. In general, students wanted their instructors to "communicate more" with them through frequent emails. While some responses indicated that "weekly reminder emails" would have been sufficient, other responses urged instructors to communicate "more often than once a week." One student wrote, "I wish my instructors would have asked us…and taken our opinions into consideration," which is a strategy instructors could consider if they wish to tailor the frequency of communication to students' needs.

Several students asked instructors to "make directions on assignments more clear." Without face-to-face contact and opportunities to ask for clarification, some students were left with inadequate instructions and guidance to complete assignments. Several students suggested using pre-recorded videos (from the instructor) or "live lectures" delivered through videoconferencing platforms (e.g., Zoom) instead of written instructions to explain assignments. "I was very disappointed that suddenly school was gone, replaced with discussion post after discussion post," which was "not learning" according to one student. It was apparent in students' comments that they saw few, if any, substitutes for the expertise of their instructors. Therefore, they viewed regular contact with instructors and "honesty and openness about expectations" as important.

3. Show empathy and understanding.

A handful of comments reflected students' desires for their instructors to show greater sensitivity during this transition period, as some students were truly struggling to stay engaged with coursework. They suggested that instructors should "realize how difficult the transition was" and "take the lack of motivation into account." One student requested that instructors "put themselves in our shoes," and another asked for kindness and understanding.

Suggestions about empathy and understanding were nested within comments about communication and flexibility. It is possible that students interpreted frequent emails, lenient due dates, and "working with students" as an expression of kindness and understanding. In contrast, students did not appreciate when instructors failed to communicate with them. One student explained, "I felt like a few professors gave up and stopped trying to help us."

Discussion

The sudden shift to remote learning last spring created a unique set of circumstances for instructors and students. Hodges and colleagues (2020) coined the term *emergency remote teaching* to reflect the temporary and quickly assembled nature of courses forced online during the pandemic. From a challenge-hindrance theoretical perspective, it is important to consider how students' perceived this transition and contextual factors contributing to their experiences. Reflected in the comments we received from students, instructors did not use a uniform approach or set of strategies to deliver course content remotely. As a result, some students' needs were met and others were not. This was evident in our quantitative findings, which showed variability in students' satisfaction levels and academic and mental health outcomes. This was further evident in students' written remarks, with some who experienced flexible and compassionate instruction and others who experienced poor/insufficient communication and a heavier workload. Students identified factors that supported or undermined their learning and adjustment during the transition online and articulated clear suggestions for their instructors: reduce the number of assignments, communicate often and clearly, and show empathy and understanding.

The transition online precipitated by the COVID-19 pandemic thrust all students into remote learning, like it or not. Students could not opt out of online courses based on preference or learning style. Our preliminary analyses indicated that a preference for FTF instruction was associated with a decrease in grades and an increase in stress and depressive symptoms. However, those associations disappeared once other variables were included in a regression model. Students' satisfaction with the transition online was a particularly robust predictor of changes in grades, stress, and depressive symptoms. This suggests that students' subjective experiences were important and consequential for their adjustment. Yet, this finding alone does not explain *why* some students were dissatisfied with the transition online or why their general dissatisfaction was consequential in terms of the academic and mental health outcomes. Our qualitative data shed light on this finding. Students' responses to open-ended questions revealed a number of issues and ineffective teaching strategies that made the transition online more difficult for them. A decline in the quality of instruction, poor or ineffective communication, inflexibility with assignments and due dates, an increase in the number of assignments, and lack of compassion were examples provided by the students in our study. Metaphorically speaking, some students felt swept out to sea without life vests or any clear routes to shore. It is unclear why instructors felt the need to add assignments or restrict test times, although students speculated about this. Our findings clearly indicated that instructors' approaches to online instruction during the pandemic either provided students the support they needed to be resilient or created a set of rigid circumstances that made the transition to online even more difficult. Future studies could examine instructors' rationales for how they approached the transition online and identify what supports or training might help foster resilience in students, while continuing to meet course objectives.

About one-third of our sample reported a decline in their grades, 75% indicated their stress levels were higher than usual, and 90% reported increases in depressive symptoms across the transition to online learning. Our results suggested that students' dissatisfaction with the transition, along with concerns about COVID-19 and greater time spent on computers, contributed to these changes. These findings complement other studies of undergraduate students conducted around the same time. For example, Son et al. (2020) documented numerous challenges to students learning remotely during the pandemic, including difficulty concentrating

on schoolwork, disruptions to sleep and eating patterns, social isolation, and an increase in class workload. Other studies have noted links between internet use and depressive symptoms in teens (Morgan & Cotten, 2003; Sanders et al., 2000). Most in our sample reported spending between three to seven hours per day on their computers for schoolwork and an additional three to nine hours of technology use for activities other than schoolwork (e.g., social media). It is possible that students increased their technology use as a coping mechanism or simply out of necessity due to an increase in assignments. Nearly all the students in our sample indicated social distancing, thus technology might have been their only means of contact with friends and family. Future research could investigate how and why students' technology use has changed during the pandemic and how technology use is associated with their mental health. Instructors should also be aware of virtual and in-person mental health resources offered by their institution to refer students, if needed.

As researchers continue to examine implications of the pandemic for higher education, it will be important for colleges and universities to consider how well their faculty are able to address students' needs in a virtual environment. Our findings point to several strategies that instructors can adopt to create supportive virtual learning environments that are sensitive to students' needs. However, there may be barriers to instructors actually making these adaptations. Limited experience with online technology, course objectives that do not easily translate to online assignments, university policies that might challenge flexible instruction or grading, and personal stressors are just a few issues that could make emergency remote teaching more difficult for instructors. In particular, numerous articles have noted challenges faced by academic mothers, many of whom are caregiving for children alongside their teaching responsibilities (e.g., Hermann & Neale-McFall, 2020). Women's research productivity has taken a harder hit from the pandemic compared to their male counterparts; this is most likely due to differences in parenting responsibilities (Fazackerley, 2020). Thus, instructors might require greater flexibility and support from their institutions in order to address recommendations students made in this study.

Our findings should be interpreted within the context of emergency remote teaching; students' perspectives and advice to instructors might differ under different circumstances. The study's methodological limitations should also when interpreting our results. We assessed changes in depression by using students' retrospective and current reports of depressive symptoms and computing a change score based on those data. Retrospective reports are subject to distortion based on one's current mental state or memory bias. It was not possible to go back in time to assess depressive symptoms before the pandemic, which would have provided us with a more accurate account of changes in depressive symptoms. Also related to the timing of data collection, it is possible that data were collected too soon after the transition online for students to notice changes in their grades. Students might also have reported an increase or decrease in grades that was inaccurate or distorted by their overall perceptions and functioning at the time of this study.

Our sample also had limited diversity with respect to race/ethnicity and gender identity. The sexual orientation of students in our sample was unknown. It will be important for future studies to examine the experiences of LGBTQ+ and racially minoritized students, as they might experience additional or different stressors not reflected in our findings (Goldrick-Rab et al., 2020). Non-white students in our sample reported a greater increase in their stress levels compared to white students, but it is unclear why. Other data sources suggest that LGBTQ+

students might experience greater housing issues and communities of color have been disproportionately impacted by the COVID-19 pandemic (Kirzinger et al., 2020). To best serve all students, we need to identify and understand influences from inside and outside the (virtual) classroom that help or hinder students' success and well-being.

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