

## Article

# Academic Self-Perception and Course Satisfaction among University Students Taking Virtual Classes during the COVID-19 Pandemic in the Kingdom of Saudi-Arabia (KSA)

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**Abstract:** This research study examines academic self-perceptions and course satisfaction among university students and associated factors during virtual classes. A cross-sectional online survey of ( $n = 328$ ) undergraduate and postgraduate Saudi students who took virtual classes during the second semester of the academic year 2019–2020 and the first semester of the academic year 2020–2021 during the coronavirus disease 2019 (COVID-19) pandemic. The findings demonstrated students' scores on negative academic self-perceptions (mean ( $M$ ) = 9.84; standard deviation ( $S.D.$ ) = 3.09) are significantly higher in comparison to positive academic self-perceptions ( $M = 7.71$ ;  $S.D. = 2.46$ ) and the difference was statistically significant,  $t(327) = 3.69$ ,  $p < 0.001$ . The analysis demonstrated that mean differences were significant across 'year of study', 'field of study', 'CGPA' (cumulative grade points average), 'employment status', 'on-site work' and 'being a parent of young child' ( $p < 0.01$ ). Correlation analysis shows a linear positive association between perceptions of workload and low technical support with negative academic self-perceptions ( $p < 0.001$ ) and an inverse relationship with positive academic self-perceptions ( $p < 0.001$ ). The multiple regression analysis demonstrated that the predictor variables in the model (perceptions of workload and technical support) explain 62% variance in negative academic self-perceptions and 41% variance in positive academic self-perceptions. Furthermore, the analysis demonstrated that positive academic self-perceptions bring a 32% variance in course satisfaction. These findings underscore the importance of balancing workload during online studies in higher education and provision of adequate technical support to reduce the negative academic self-perceptions which are associated with lower levels of course satisfaction. Students' academic self-perceptions and course satisfaction during virtual studies are important factors to retain students' motivation in learning and academic performance.

**Keywords:** distance education; online learning; academic self-perceptions; workload; technical support; course satisfaction; higher education; COVID-19 pandemic

## 1. Introduction

At the beginning of 2020, the World Health Organization (WHO) declared the coronavirus disease 2019 (COVID-19) pandemic a public health emergency and urged governments to enforce complete and partial lockdowns to prevent the spread of infection. The COVID-19 pandemic is still an ongoing public health crisis in various regions of the world and has a significant influence on all aspects of life including the academic environment.

In the Kingdom of Saudi Arabia (KSA), to implement precautions against the spread of the virus and to allow for timely control of the disease, physical attendance at schools and universities was suspended on 10 March 2020. Digital distance learning was adopted simultaneously to protect the population from cross-infection [1]. Previous literature has discussed the wider context of distance/online studies such as economic drifts, political atmosphere and advancements in information and communication technology as some of the significant factors associated with the growth and implementation of digital distance education before the COVID-19 pandemic [2]. However, the implementation of online education/distance education became the only choice for educational institutions to continue their academic activities during the COVID-19 pandemic.

“Distance education” refers to an approach to education in which learners and lecturers are somewhat isolated in time and space with no in-person contact whereas online learning refers to the use of information and communication technology to deliver lectures and share instructional materials [3]. The rapid advancements in internet-based information technology and the development of more sophisticated learning management systems in the developed countries played a pivotal role in the immediate execution of digital distance education during the COVID-19 pandemic [4,5]. However, this sudden implementation of distance education was associated with hiccups and required lots of quick adaptations in academic regulations, less familiar modes, and methods of assessment in addition to frequent shifts in the study and exam schedules. All these issues contributed to the academic workload and were sources of stress for students. Preliminary studies regarding online learning during the COVID-19 pandemic show that students developed mixed feelings about virtual classes and reported low to moderate levels of satisfaction with remote/online studies [6,7]. The studies conducted prior to the COVID-19 pandemic also demonstrated students usually are discontented and not happy with their online study experiences and virtual education was a less preferred option for education [8,9].

Online learning environments require the practice of academic self-regulation and problem-solving skills and students should be proficient in utilizing online learning resources to fulfill the demands of undergraduate and post-graduate degree programs [10]. Previous literature identifies how both academic and non-academic factors play a significant role in the self-regulation and academic self-perceptions of students [11,12]. A study from Romania [13] showed that students reported more disadvantages of online studies and considered it less beneficial in terms of achieving learning outcomes. When shifted to exclusive online studies during the COVID-19 pandemic, students reported a lack of focus and attention due to several factors such as lack of physical space in homes, and presence of family members while they are taking online classes. Furthermore, students reported being afraid of possible criticisms or humiliation during the online presentations of their assignments and projects. Furthermore, the lack of technical skills of both teachers and students was a relevant factor in determining their satisfaction with virtual studies [11,12].

Students’ satisfaction with online studies is linked with student perceptions about online studies as well as students’ actual experiences of online studies [14]. Additionally, online course satisfaction was associated with factors such as computer competency, technology orientation and smooth delivery of course contents through online platforms [15]. Previous research in the context of institutional education demonstrates that students’ academic self-perceptions play a critical role in student’s academic performance [16]. Whereas academic self-efficacy and computer self-efficacy of students in online education programs have positive influences on student academic motivation and satisfaction [15]. The recent studies from some regions of the world assessed students’ online study experiences, stress levels and course satisfaction [6,7,13]. However, to date there is no study from Saudi Arabia which assessed factors that associate with positive and negative academic self-perceptions and course satisfaction keeping in view the scenario of the complete and immediate shift to distance education during COVID-19 pandemic.

Consistent with prior arguments, the current study aims to assess the relationship of students’ perceptions of workload and availability of technical support with academic

self-perceptions and course satisfaction during distance education. Some of the research questions set for this analysis were:

- (i) Is there a significant difference between positive and negative academic self-perceptions of students taking virtual classes during the COVID-19 pandemic?
- (ii) What is the nature of the relationship between students' perceptions of workload and availability of technical support with positive and negative academic self-perceptions?
- (iii) Do positive and negative self-perceptions during online studies impact student's course satisfaction?

### *Theoretical Framework*

The literature demonstrates that students who hold positive perceptions regarding their academic competence are more likely to retain focus and interests in their academic tasks such as assignments, projects, presentations and perform better on achievement tests [14]. Students' academic self-perceptions relate to their intrinsic academic motivation and academic self-confidence, which ultimately enhance students' engagement and focus on studies needed to excel in competitive academic environments of modern times [17]. The self-enhancement model proposed by Flook et al. (2020) also suggests that positive academic self-perceptions have a significant role in student's academic achievement [18]. The psychological processes involved in the development of academic self-perceptions may include self-esteem and self-confidence [19]. Nonetheless, learning context and environmental factors also have a role in determining student's academic self-perceptions [20].

Previous studies reported student-related factors such as high levels of academic motivation and self-regulation as key skills to excel in online courses [21]. This is partly due to the increasingly autonomous nature of online learning environments as opposed to conventional classroom contexts. The skill development model proposes that educational achievements primarily influence academic self-concepts in several ways [22]. For instance, the experiences of academic achievements and failures let students go through cycles of shaping and reshaping their academic self-perceptions. Additionally, the appraisal of teachers and parents also has significant influences on the development of academic self-perceptions [23]. Although students in higher education are relatively immune to such influences, however, the sudden and complete shift to digital distance education during the COVID-19 pandemic generated feelings of confusion and fear in students [24,25] because, for many students, it was a new way of studying in an unfamiliar academic climate. Additionally, teachers are also still experimenting with different teaching strategies to achieve learning outcomes for courses across various disciplines/fields of study in higher education [13,26]. Consequently, several factors are playing a role in determining student experiences and satisfaction with online studies during the COVID-19 pandemic. A recent study assessed the mental well-being of university students during the COVID-19 pandemic in Italy [27] and demonstrated that positive beliefs about academic self-efficacy and satisfaction with study-related experiences have a protective role in students' psychological and emotional health. Research demonstrates that students' self-confidence associate with the usefulness of virtual classes [15].

It is hypothesized that other than background factors such as gender, age, year of study, the field of study, cumulative grade points average (CGPA), the factors such as perceptions of workload during virtual classes and practical factors such as availability of technical support may be associated with student's academic self-perceptions which ultimately influence students' satisfaction with virtual classes held during the COVID-19 pandemic. Figure 1 presents the schematic diagram to demonstrate the proposed nature of the relationship between study variables.

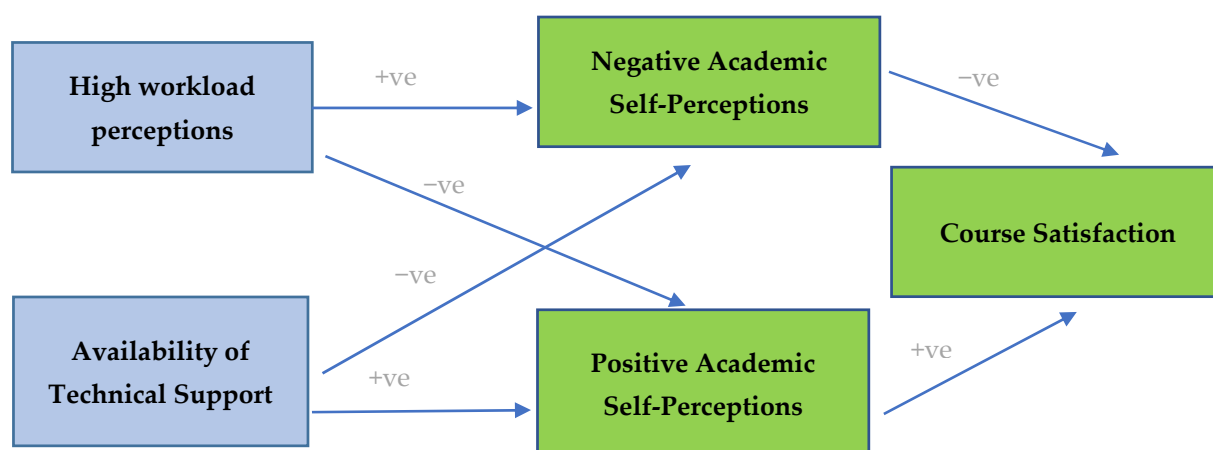


Figure 1. Schematic diagram for study model.

## 2. Materials and Methods

### 2.1. Data Collection Procedure

The data for this study was collected via an anonymous online survey. The study invitation and study questionnaire including informed consent were shared with prospective participants through the researcher's professional contacts and students' groups in higher education institutions in the Kingdom of Saudi Arabia (KSA). The data collection was completed between the first week of October 2020 till the end of November 2020. In KSA, to prevent the spread of COVID-19 infection, all educational institutions completely shifted to digital distance education from March 2020 (to date, February 2021).

### 2.2. Sample Size

The minimum sample size estimated to be ( $n = 305$ ) when calculated by  $\frac{z^2 P(1-P)}{d^2}$ , with the assumption that the proportion of perceived academic stress lies between 14.4% to 33.2%, with a 95% confidence interval (CI) and 0.05 precision [7]. The sample was recruited by employing a convenience sampling method. The online link of the study questionnaire was shared with the target population through professional colleagues working in universities located in four regions (Ha'il, Madina, Dammam and Riyadh) of KSA. A total of ( $n = 359$ ) students accessed the study link out of which ( $n = 328$ ) voluntarily completed the study questionnaire thus achieving the response rate of 90% approximately.

### 2.3. Study Questionnaire

#### 2.3.1. Background Characteristics

The first section of the survey questionnaire collected data about demographic and academic variables. These included gender, age, field of study, academic degree, year of study, CGPA, work status, working condition (online vs. onsite) and being a parent of the young child (0–5) years.

#### 2.3.2. Academic Self-Perceptions

Academic self-perceptions refer to academic self-confidence. This was measured by employing a sub-scale on the Perception of Academic Stress Scale (PAS) [28]. It is comprised of six items and measures both positive and negative dimensions of academic self-perceptions. The negative dimension focuses on the fear of failing in courses, perceiving teachers as more demanding pertaining to academic performance, and seeing oneself being unable to catch up with academic tasks. The positive dimension focuses on confidence for success as a student, confidence in making the right academic decisions, and confidence in the future career. The items on these scales were assessed for relevance and appropriateness by 12 experts from the Faculties of Psychology and Educational Psychology who gave

feedback about each item. To generate evidence, about-face validity and content validity experts rated each item for its appropriateness and relevance, on a five-point Likert scale (1 = extremely irrelevant, 2 = irrelevant, 3 = slightly relevant, 4 = relevant, and 5 = strongly relevant). These items were selected as the mean score of expert's ratings on these items were 3.5 or above [28]. The items were also reviewed for clarity and grammatical corrections and simplicity to ensure that students could easily understand and interpret. Each item is rated on a 5-point Likert scale rating (highly disagree = 1 to highly agree = 5). A higher score on each dimension means higher negative or positive academic self-perceptions. The authors of this scale assessed internal reliability and convergent validity through administration in a sample of 100 university students [28]. The analysis demonstrated acceptable internal consistency reliability, and there is evidence for convergent validity supported by a significant positive association with the academic expectations' subscale and workload subscale ( $p < 0.01$ ). The Cronbach Alpha reliability estimates in our sample on the dimension of negative academic self-perceptions was ( $\alpha = 0.78$ ) and on the dimension of positive academic self-perceptions was ( $\alpha = 0.91$ ).

### 2.3.3. Course Satisfaction

Course satisfaction in the context of higher education has been described as '*short-term attitude resulting from an evaluation of students' educational experience, services, and facilities*' [29]. It was assessed by using a set of five items used in previous research [30] to measure course satisfaction among students studying in an online learning environment. The sample items include "*I felt, I achieved the course objectives in this online course*"; "*If I had a choice, I would take an online course rather than a traditional face-t-face class*". Items are rated on 5-point Likert scale rating (highly disagree = 1 to highly agree = 5). Higher score means higher levels of course satisfaction. The internal consistency as assessed in a previous study [30] on a sample of 110 students in higher education was ( $\alpha = 0.93$ ) whereas in the current study it is ( $\alpha = 0.90$ ).

### 2.3.4. Perceptions of Workload during Distance Education

The perceptions of workload during distance education refer to stresses relating to excessive workload due to distance education, lengthy online assignments, and online examinations [30,31]. It was measured by three items on the sub-scale Perceptions of Workload; the authors of the original study demonstrated that the scale possesses adequate psychometric properties in addition to a qualitative assessment of items by field experts in terms of relevance and appropriateness [28]. Each item is rated on a 5-point Likert scale (highly disagree = 1 to highly agree = 5). A higher score means perceiving the workload during distance education as high. The Cronbach Alpha reliability estimate in the previous study [28] was ( $\alpha = 0.69$ ) and in the current study is ( $\alpha = 0.78$ ).

### 2.3.5. Availability of Technical Support

The availability of technical support during distance education refers to students' judgment about access to adequate help in resolving technical issues during online education. It was measured by a scale comprising of a set of four questions. The items on the scale were assessed for their relevance and appropriateness by field experts and the scale has been used in a previous study to assess students' perceptions of technical support during distance education [30]. The internal reliability of the scale estimated after administration on a sample of 110 students in higher education was ( $\alpha = 0.76$ ) [30]. The items are rated on a 5-point Likert scale (highly disagree = 1 to highly agree = 5). The Cronbach Alpha reliability in our study it is ( $\alpha = 0.77$ ).

## 2.4. Data Analysis Procedure

The data were analyzed by using IBM Statistical Package for Social Sciences (SPSS) software (25.0 version) IBM Corp, New York (NY), United States of America (USA). The descriptive characteristics of variables under study were described using mean scores and

percentages. Prior to the application of parametric tests, the data were assessed for the fulfillment of assumptions (linearity; normality of the distribution; independence of the observations; and non-multicollinearity of the independent variables) which were found to be in an acceptable range. The significance of mean differences between negative and positive academic self-perceptions was determined by a paired sample *t*-test. The mean differences in academic self-perceptions across background variables were assessed by using an independent sample *t*-test and analysis of variance (ANOVA). Pearson correlation assessed the bivariate association between perceptions of workload and technical support with academic self-perceptions and course satisfaction. Multiple regression analysis was applied to determine the predictive role of perceptions of workload and availability of technical support during distance education with academic self-perceptions and course satisfaction. The *p*-value significance was chosen at  $p < 0.05$  for all inferential statistics.

### 2.5. Ethical Approval Statement

The study was conducted according to the guidelines of the Declaration of Helsinki, and approved by the Research Ethics Committee (REC) at the University of Ha'il (protocol code H-2020-091) dated 10/05/2020.

## 3. Results

The sample included ( $n = 328$ ) university students. In terms of sociodemographic characteristics, the participants were mostly female ( $n = 233$ ; 71%), majority aged between 21–25 years ( $n = 236$ ; 72%). Nearly half of the participants were working students ( $n = 172$ ; 52%) among whom ( $n = 147$ ; 45%) worked from a worksite. Nearly one quarter ( $n = 77$ ; 23%) were parents of a young child (0–5 years old). Most were in a Bachelor program ( $n = 151$ ; 87.3%), and the majority in the fourth year ( $n = 139$ ; 42%) followed by the third year ( $n = 111$ ; 34%). The majority were students of Medical/Health Sciences ( $n = 43$ ; 24.9%); followed by Business and Management Sciences ( $n = 60$ ; 18%), Basic Sciences ( $n = 46$ ; 14%) and Engineering ( $n = 38$ ; 12%). In terms of academic performance, ( $n = 163$ ; 50%) had CGPA above than 3.0 followed by ( $n = 96$ ; 29%) with CGPA between 2.5–3.0, and 1% reported CGPA less than 1.5.

### 3.1. Academic Self-Perceptions, Technical Support, Perceptions of Workload and Course Satisfaction among University Students Taking Online Classes during Coronavirus Disease 2019 (COVID-19) Pandemic

Table 1 illustrates the mean scores obtained by students on measures of academic self-perceptions, technical support, perceptions of workload and course satisfaction. The ratings were obtained by participants on a set of statements on a five-point Likert scale where 1 represents “I strongly disagree” and 5 represents “I strongly agree”. The means' analysis demonstrates that students' scores are above the scale's midpoint on items tapping negative academic self-perceptions (mean ( $M$ ) = 9.84; standard deviation (S.D.) = 3.09).

**Table 1.** Mean scores on items and scales measuring academic self-perceptions, technical support, perceptions of workload and course satisfaction ( $n = 328$ ).

Dimensions and Sub-Dimensions of Measures	M (S.D.)
Negative Academic Self-Perceptions ( $t(327) = 3.69, p < 0.001$ )	9.84 (3.09)
Positive Academic Self-perceptions	7.71 (2.46)
Low Technical Support	6.68 (2.04)
High Technical Support	5.29 (2.11)
Perceptions of workload	11.1 (2.78)
Course satisfaction	12.1 (3.21)

M = Mean; S.D. = Standard Deviation.

These findings verify that university students were afraid of failing the course during virtual studies ( $M = 3.31$ ; S.D. = 1.26), struggling to catch up with academic tasks ( $M = 3.33$ ; S.D. = 1.17) and perceive their teachers are hard about academic performance ( $M = 3.21$ ;

S.D. = 1.17). Furthermore, the results from paired samples *t*-test demonstrate that students' scores on negative academic self-perceptions ( $M = 9.84$ ; S.D. = 3.09) are significantly higher in comparison to positive academic self-perceptions ( $M = 7.71$ ; S.D. = 2.46) and the difference was statistically significant,  $t(327) = 3.69$ ,  $p < 0.001$ . Students also reported low levels of technical support ( $M = 6.68$ ; S.D. = 2.04) with statistical significance  $t(327) = 7.48$ ,  $p < 0.001$ . Furthermore, analysis of the means demonstrates that students' scores are above the scale's midpoint on perceptions of workload ( $M = 11.1$ ; S.D. = 2.7) and below the scale's midpoint on course satisfaction ( $M = 12.1$ ; 3.2).

### 3.2. Mean Differences in Academic Self-Perceptions of University Students across Demographic and Educational Background Variables

Table 2 illustrates the mean differences in academic self-perceptions across background variables. The analysis demonstrated that mean differences were significant across 'year of study', 'field of study', 'CGPA', 'employment', 'on-site work' and 'being a parent of young child' ( $p < 0.001$ ).

**Table 2.** Mean differences on academic self-perceptions across background variables ( $n = 328$ ).

Variable	Categories	f (%)	Negative Academic Self-Perceptions M (S.D.)	Positive Academic Self-Perceptions M (S.D.)
Gender 1. $t(326) = 1.44$ , $p = 0.54$ 2. $t(326) = 0.05$ , $p = 0.21$	Male	95 (29%)	9.46 (3.05)	7.73 (3.36)
	Female	233 (71%)	10.0 (3.01)	7.71 (3.46)
Age Categories $F(2) = 0.26$ , $p = 0.77$ $F(2) = 0.44$ , $p = 0.64$	<20 years	72 (22%)	9.62 (3.11)	7.74 (3.56)
	21–25 years	236 (72%)	9.89 (3.04)	7.64 (3.43)
	26–30 years	20 (6.1%)	10.0 (2.62)	7.40 (3.56)
Academic Degree $t(326) = 0.39$ , $p = 0.69$ $t(326) = 1.04$ , $p = 0.29$	Bachelor	292 (89%)	9.82 (3.06)	7.64 (3.42)
	Masters	36 (11%)	10.03 (2.78)	7.28 (3.74)
Year of Study $F(3) = 4.26$ , $p < 0.01$ $F(3) = 10.02$ , $p < 0.001$	First Year	33 (10%)	9.09 (3.11)	9.36 (3.37)
	Second Year	45 (14%)	10.47 (3.05)	7.02 (2.86)
	Third Year	111 (34%)	10.45 (2.91)	7.05 (3.35)
	Fourth Year	139 (42%)	9.33 (2.99)	9.40 (3.42)
Field of Study $F(3) = 6.85$ , $p < 0.001$ $F(3) = 4.91$ , $p < 0.01$	Medical/Health Sciences	184 (56%)	9.23 (3.01)	9.29 (3.48)
	Engineering	38 (12%)	10.18 (2.31)	7.71 (2.91)
	Business & Management Sciences	60 (18%)	10.45 (3.08)	7.83 (3.51)
	Basic Sciences (Biochemistry, Biology, Zoology, Physics)	46 (14%)	11.2 (2.97)	7.54 (3.29)
CGPA $F(3) = 4.77$ , $p < 0.01$ $F(3) = 5.01$ , $p < 0.01$	<1.5	4 (1%)	12.75 (1.51)	4.75 (2.06)
	1.5–2.4	65 (20%)	9.77 (3.05)	7.02 (2.91)
	2.5–3.0	96 (29%)	10.59 (2.82)	7.29 (3.31)
	>3.0	163 (50%)	9.36 (3.05)	7.33 (3.64)
Employed $t(326) = 0.99$ , $p = 0.32$ $t(326) = 3.21$ , $p < 0.05$	Yes	172 (52%)	10.2 (3.08)	7.03 (3.42)
	No	156 (48%)	9.51 (2.94)	7.24 (3.41)
Working from worksite $t(326) = 2.91$ , $p < 0.01$ $t(326) = 3.94$ , $p < 0.001$	Yes	147 (45%)	10.3 (2.96)	7.29 (3.26)
	No	181 (55%)	9.41 (3.02)	8.38 (3.48)
Being a Parent of young child (0–5 years) $t(326) = 3.21$ , $p < 0.01$ $t(326) = 4.09$ , $p < 0.001$	Yes	75 (23%)	10.81 (3.07)	7.31 (3.32)
	No	253 (77%)	9.55 (2.95)	8.13 (3.39)

Note: 1 = Negative Academic Self-perceptions; 2 = Positive Academic Self-perceptions; M = Mean; S.D. = Standard Deviation.

### 3.3. Relationship of Perceptions of Workload and Technical Support with Academic Self-Perceptions

The Pearson correlation analysis presented in (Table 3), shows a statistically significant and positive correlation between the availability of technical support and negative academic self-perceptions and an inverse relationship with positive academic self-perceptions ( $p < 0.001$ ). Furthermore, there was a statistically significant positive correlation between

perceptions of workload during online studies and negative academic self-perceptions and there was a statistically significant negative association between perceptions of workload and positive academic self-perceptions ( $p < 0.001$ ). Positive academic self-perceptions have a statistically significant positive correlation with course satisfaction ( $p < 0.001$ ) and negative academic self-perceptions have a negative relationship with course satisfaction ( $p < 0.001$ ).

**Table 3.** Relationship of perceptions of workload and technical support with negative and positive academic self-perceptions of university students during online studies ( $n = 328$ ).

	Low Technical Support	High Technical Support	Perceptions of Workload	Negative Academic Self-Perceptions	Positive Academic Self-Perceptions	Course Satisfaction
Low Technical Support	-	−0.34 ***	0.26 ***	0.29 ***	−0.36 ***	−0.38 ***
High Technical Support		-	−0.38 ***	−0.36 ***	0.61 ***	0.49 ***
Perceptions of workload			-	0.78 ***	−0.31 ***	−0.41 ***
Negative Academic Self-Perceptions				-	0.45 ***	−0.42 ***
Positive Academic Self-perceptions					-	0.55 ***
Course Satisfaction						-

Note: \*\*\*  $p < 0.001$ ; \*\*  $p < 0.01$ ; \*  $p < 0.05$ .

### 3.4. Predictive Role of Perceptions of Workload and Technical Support in Academic Self-Perceptions

Table 4 presents findings from multiple regression analysis to demonstrate the predictive role of independent variables. Findings demonstrate that low technical support and perceptions of workload were significant predictors of negative academic self-perceptions. The multiple regression equation with the ANOVA test was found to be significant at ( $F(3, 324) = 178.835$ ,  $p < 0.001$ ) with an  $R^2$  of 0.62. The predictor variables in the model explain a 62% variance in negative academic self-perceptions. The negative academic self-perceptions increased 7% for each unit in lack of availability of technical support. The negative academic self-perceptions increased up to 74% for each unit increase in perceptions of workload. Thus, perceptions of workload appeared to be the most significant predictors of negative academic self-perception among university students taking virtual classes during the COVID-19 pandemic.

**Table 4.** Multiple regression analysis to demonstrate the independent role of perceptions of workload and technical support in academic self-perceptions of students taking online classes ( $n = 328$ ).

Negative Academic Self-Perceptions as Criterion Variable					
Predictor Variables	B	SE	$\beta$	$t$	95% CI
Low Technical Support	0.117	0.055	0.079	2.15 *	0.010–0.225
High Technical Support	−0.074	0.055	−0.052	−1.348 ns	−0.183–0.034
Perceptions of workload	0.809	0.041	0.743	19.92 ***	0.729–0.888
R			0.79		
R <sup>2</sup>			0.62		
F-change			178.83 ***		
Positive Academic Self-Perceptions as criterion variable					
Predictor Variables	B	SE	$\beta$	$t$	95% CI
Low Technical Support	−0.298	0.078	−0.176	−3.82 ***	−0.451–−0.145
High Technical Support	0.863	0.079	0.526	10.96 ***	0.708–1.01
Perceptions of workload	−0.091	0.058	−0.073	−1.57 ns	−0.207–0.023
R			0.64		
R <sup>2</sup>			0.41		
F-change			75.92 ***		

Note: \*\*\*  $p < 0.001$ ; \*\*  $p < 0.01$ , \*  $p < 0.05$ ; ns = non-significant. B = Unstandardized Coefficients; SE = Standard Error;  $\beta$  = Standardized Coefficients;  $t$  =  $t$ -test; 95% CI = 95% Confidence Interval.

Regarding positive academic self-perceptions, both low and high technical support appeared to be significant predictors in the model whereas perceptions of workload did not appear as a significant predictor for positive academic self-perceptions. The multiple regression equation with ANOVA test was found to be significant ( $F(3, 324) = 75.92$ ,  $p < 0.001$ ) with an  $R^2$  of 0.41. The predictor variables in the model explain a 41% variance in positive academic self-perceptions. Access to adequate technical support appeared to be the most significant predictor of positive academic self-perception among university students taking virtual classes during the COVID-19 pandemic.

### 3.5. Predictors of Course Satisfaction during Virtual Classes

Table 5 presents findings from multiple regression analysis to demonstrate the predictive role of technical support, perceptions of workload and academic self-perceptions in course satisfaction during virtual studies.

**Table 5.** Multiple regression analysis to demonstrate role of technical support, perceptions of workload and academic self-perceptions in course satisfaction ( $n = 328$ ).

Course Satisfaction as Criterion Variable					
Predictor Variables	B	SE	$\beta$	$t$	95% CI
Constant	13.25	1.68		7.86 ***	9.93–16.57
Low Technical Support	−0.382	0.121	−0.150	−3.16 **	−0.619–−0.144
High Technical Support	0.408	0.140	0.165	2.91 **	0.132–0.684
Perceptions of workload	−0.318	0.133	−0.170	−2.38 *	−0.580–−0.055
Negative Academic Self-perceptions	−0.072	0.127	−0.042	−0.565 ns	−0.322–0.179
Positive Academic Self-perceptions	0.491	0.089	0.327	5.51 ***	0.316–0.667
R			0.64		
R <sup>2</sup>			0.41		
F-change			44.63 ***		

Note: \*\*\*  $p < 0.001$ ; \*\*  $p < 0.01$ , \*  $p < 0.05$ ; ns = non-significant. B = Unstandardized Coefficients; SE = Standard Error;  $\beta$  = Standardized Coefficients;  $t$  =  $t$ -test; 95% CI = 95% Confidence Interval.

Findings demonstrate that positive academic self-perceptions and access to technical support significantly contribute to course satisfaction. The multiple regression equation with ANOVA test was found to be significant ( $F(3, 322) = 44.618$ ,  $p < 0.001$ ) with an  $R^2$  of 0.41. The predictor variables in the model together explain 64% variance in course satisfaction. Positive academic self-perceptions, perceptions of workload and access to technical support appeared to be the most significant predictors of course satisfaction among university students taking virtual classes during the COVID-19 pandemic.

## 4. Discussion

The current study sought to examine academic self-perceptions of university students in KSA who shifted to virtual classes during the last two academic semesters to control the exponential growth of COVID-19 infections in the communities. Furthermore, it assessed the predictive role of perceptions of workload in virtual classes and the availability of technical support in determining academic self-perceptions and their relationship with course satisfaction. Findings demonstrate that overall students have higher negative academic self-perceptions in comparison to positive academic self-perceptions. This shows that students are more likely to have a fear of failing courses this year, difficulty in catching up with academic tasks, and perceiving teachers being harder on them with regard to their academic performance. The difference in academic self-perceptions was non-significant across gender, age and academic degree whereas those students who had CGPA  $< 1.5$  and those who had CGPA between 2.5–3.0 had more negative academic self-perceptions in comparison to those who had CGPA  $> 3.0$ . Additionally, students who were employed and working from worksites and those who were parents of young children (0–5 years old) had more negative academic self-perceptions. Findings demonstrate that low technical support significantly contributes to negative academic self-perceptions and high technical

support significantly contributes to positive academic self-perceptions. Findings revealed an inverse relationship of low technical support and perceptions of the workload with course satisfaction during online studies. The positive academic self-perceptions appeared as the most significant predictor of course satisfaction.

Students' having mixed feelings about online studies during the COVID-19 pandemic and perceptions of increased workload is demonstrated by other researchers' findings [4,21]. A Portuguese study also showed that students have serious concerns regarding the impact of the COVID-19 pandemic on their academic journey and reported excessive academic activities, more assignments and lack of concentration [6]. However, there are interspersed indications about the impacts of the COVID-19 pandemic on the mental health and well-being of students. For instance, a study from Sweden documented a substantially higher prevalence of depressive symptoms in students during the COVID-19 pandemic when matched with the pre-pandemic national population [32]; whereas a study from Italy reported that psychological health and levels of academic stress among university students were not significantly higher than those before the COVID-19 outbreak [27]. A study from China reported that students in higher education were more likely to experience Post-traumatic Stress Disorder (PTSD) symptoms and supported the negative influence of challenges during online studies such as (restricted or no social contact with research supervisors/instructors and less privacy of personal information) on students' mental health [33]. This presentation of findings from literature validates our study findings which demonstrate increased perceptions of workload and low technical support during online education and its negative impact on students' course satisfaction. Whereas our study showed that positive academic self-perceptions predicted higher course satisfaction which aligns with findings from a recent study that indicated a positive association of students' self-efficacy and course satisfaction with emotional well-being [27]. Empirical research from before the COVID-19 pandemic has demonstrated that several factors may influence students experiences of digital distance learning, for instance, computer self-efficacy associate with academic self-efficacy of students in virtual studies [16]. A recent qualitative study from the USA [34] reported that some of the challenges in remote education were miscommunication, a less conducive online learning environment, and increased workload. In our study, we also found that low levels of technical support positively associate with students' negative academic self-perceptions and inversely associate with online course satisfaction. Previous literature reported [35] students' self-efficacy regarding a learning management system (LMS), self-regulation, and time management skills are important factors in perceived satisfaction and usefulness of online courses.

Our study findings demonstrated that students with low CGPA had higher negative academic self-perceptions which align with previous literature about the reciprocal relationship of academic achievement with academic self-perceptions [15]. It is likely that students with a prior low academic performance developed an intensified fear of failing and a struggle in catching up with studies due to emergency shifts and extended duration of online studies. In KSA, students complete their initial school education in their native language and are generally less well-versed in English when they join the university. During online education in higher education, many instructors focus on reading and writing assignments to meet the learning objectives in English because it is the primary medium of instruction at the university level. Limited English language competency may also be a barrier for Saudi students causing heightened perceptions of workload and negative academic self-perceptions.

Current study findings show that students who are working from their worksite and students who are parents are more likely to have negative academic self-perceptions during this challenging time. Students who are employed and parents have additional responsibilities. In the current study, we had a larger proportion of female participants which explains this relationship. In Saudi culture, women get married relatively at younger age and thus many female students in undergraduate and post-graduate programs are usually mothers of young children. During the COVID-19 pandemic, not much social

support was available to young mothers and their children due to the lockdown and implementation of social distancing measures. The cumulative impact of these instances are likely to cause higher perceptions of academic workload during virtual classes, negative academic self-perceptions and low levels of online course satisfaction. Other researchers have also highlighted the importance of care and compassion to be shown to students in higher education during online studies which were being held in the midst of the COVID-19 pandemic [34]. Mothers of young children seeking higher education not only need to catch up with their academic workload but also take care of the requirements of their children's online studies during the pandemic. This implies provision of support through more flexibility in assignment deadlines and the more emphatic response of teachers while handling their queries and concerns. A recent study [36] assessed the protective role of social connectedness against academic stress and found that a sense of belonging with the academic community has positive influences on student's self-efficacy which equips them to cope with the challenges of distance education.

The current study reveals the role of appropriate technical support during online classes in positive academic self-perceptions and course satisfaction, and thus the findings imply that higher education institutions must invest more in the provision of timely and adequate technical support during virtual classes. Other studies conducted in the early phase of the pandemic in KSA [7,25] reported that university students in rural regions had serious concerns about weak internet connectivity, server breakdown, difficulties in log in to the network and taking courses, not meeting the timely submission of homework assignments due to failures in connecting with the LMS. Students reported that frequent interruption in the internet connection was very upsetting during the lectures and they were less satisfied with the built-in support features of the LMS system to address the technical issues during online sessions [7,25]. The Government of Saudi Arabia responded to these issues through the development of a digital distance education framework under which several initiatives were taken by the Ministry of Education and educational institutions to facilitate remote studies during the COVID-19 pandemic [37]. To date, all the educational institutions in KSA are abiding by the government instruction of virtual studies, however, there is a need to optimize the digital services and develop effective technical support mechanisms for students to enhance their course satisfaction. Moreover, virtual education is not only about improving internet connections, but the focus should be on the development of effective online pedagogical approaches keeping in mind the social and cultural factors across various communities that influence students' academic motivation, perceptions of workload, self-regulation, and academic self-perceptions [38]. Keeping this in mind, the perspective of the collectivist culture of Middle Eastern society, where the focus is more on the collective self rather than the individual self, the negative academic self-perceptions could be due to high expectations of significant others such as parents and other family members.

Overall study findings signify a need to enhance academic self-perceptions of students in higher education taking virtual classes during the COVID-19 pandemic because academic self-confidence equips them to feel more capable and confident in their abilities to be successful as academics and pursue future career goals [39,40]. The non-significant association of perceptions of the workload with positive academic self-perceptions warrants further investigation because it raises more questions regarding factors that need to be addressed to enhance student academic self-confidence during virtual studies. Some of the study limitations relate to cross-sectional research design, convenience sample and online data collection on the Likert rating scale. The data were collected during the running semesters and students are already bearing with a lot of online activities; thus saturation or lack of attention might have caused some bias in student's responses. We tapped on a limited number of factors that may associate with students' academic self-perceptions and course satisfaction. Keeping in mind the wide range of course designs in higher education and varying experiences with distance studies during the COVID-19 pandemic, there is a need to identify the role of various other academic and non-academic factors. Future

research should explore multiple dimensions of online studies during and post-crisis times which might have influenced student's academic self-perceptions and course satisfaction. In particular, there is a need to expand our understanding about the underlying reasons for students' perceptions of 'failing courses this year' and 'teachers are hard about my academic performance'. Future research should focus on examining students' perceptions of specific factors that students were more pleased with during virtual classes to improve distance learning approaches and pedagogical techniques. Additionally, there is a need to examine how personal factors (such as poor self-regulation skills and low computer self-efficacy), social factors (such as low social support), and environmental factors (poor IT infrastructure) may be associated with students' perceptions of workload during digital distance learning across various regions and communities.

## 5. Conclusions and Implications

The results of this study provided insights into the nature of concerns held by university students attending virtual classes during the COVID-19 pandemic in KSA. The negative academic self-perceptions held by students need attention and influenced their satisfaction with online studies. This study also has practical implications. For example, the results demonstrate the significance of adequate and timely technical support during digital education that can enhance students' academic self-perceptions and online course satisfaction. The results suggest that governments should devise policies and programs to improve digital services and educational institutions should focus more on academic and technical support to students. The instructors in higher education institutions should be oriented to student's concerns and emphasis be made on creating more conducive online learning environments without compromising much on the learning objectives set for professional courses and degree programs. In higher educational institutions, the educators are also academic advisors and usually provide counseling to students. Given the context of the COVID-19 pandemic, additional counseling and support services should be initiated by educational institutions to neutralize fears among students related to distance education as well as helping them to improve their self-regulation skills and time management. In KSA, mostly, students are relatively less proficient in English due to minimal exposure to the English language in early education. However, English is the primary medium of instruction for most undergraduate and post-graduate degree programs. During virtual classes in higher education, many instructors focus on reading and writing assignments to meet the learning objectives. Limited proficiency in the English language could be a potential barrier in understanding the course materials and online learning resources, and thus may contribute to the heightened perceptions of academic workload and negative academic self-perceptions. Lastly, the pattern of findings urges further investigation to rule out other factors and the phenomenon behind the perceptions of increased academic workload during virtual studies. Current study findings point to the importance of attending to both psychological factors (such as perceptions of workload) and online course factors (such as technical support) to enhance students' academic self-confidence and course satisfaction during the COVID-19 pandemic.

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