

Article

Impact of Parents' Stress on Engagement with Online Learning during COVID-19

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Abstract: To date, existing studies on the relationship between online learning and engagement during the COVID-19 pandemic have been limited to students. This paper therefore discusses the impact of children's online learning on parents' stress. In addition, this study also investigates parents' demographics in relation to their stress and engagement during the COVID-19 pandemic. To do so, the study adopts a quantitative research approach using a survey questionnaire on a sample of 422 parents residing in Gulf Cooperation Council countries (GCC). The hypothesized links between components were tested and evaluated using path analysis. The study found that parents' academic stress is a significant predictor of engagement with their children's online learning. Furthermore, technical stress was a significant predictor of parents' cognitive engagement but was not a significant predictor of behavioral and emotional engagement. Personal stress was only a significant predictor of behavioral engagement; financial stress was an insignificant predictor of all types of parental engagement. Finally, parents' gender and academic qualifications were found to have a significant impact on stress. This study has added new knowledge and understanding of online learning during the COVID-19 pandemic, being the first to investigate the impact of parents' stress on parents' engagement with online learning during COVID-19. In conclusion, the purpose of this study was to investigate: (a) the impact of the academic, technical, financial, and personal stress parents experience in the context of children's online learning on parents' behavioral, emotional, and cognitive engagement with their children's online learning; (b) whether parents' demographic characteristics as well as the number of enrolled students in school and type of school are related to parents' stress (four types of stress) and engagement (three types of engagement).

Keywords: parents' stress; parents' engagement; online learning; COVID-19 pandemic



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1. Introduction

In early 2020, COVID-19 forced the closure of many businesses and schools, which led to an urgent need for e-learning during this period. It has been estimated that more than 1.6 billion students in more than 190 countries were forced to study at home [1]. The lack of professional training for teachers and inadequate preparation of students for online learning resulted in great psychological pressure on the students, which in turn resulted in stress for the parents. Face-to-face classes ended and were replaced by online learning [2,3]. Importantly, online learning is less efficient for students than face-to-face learning because of internet problems, heavy workload, and lack of support [4].

The parents and caregivers of school-age children were under greater stress during the COVID-19 pandemic [5–8]. Without much support, caregivers took on a range of new roles such as assisting children with classwork and understanding and organizing the academic materials to support their children as their routines dramatically changed [9–11]. Although mothers were expected to be at higher risk for stress, mothers and fathers both showed

high levels of stress and depression during this transition stage [12,13]. Another study has also shown that school closures resulted in increased levels of stress for parents [14]. Along these lines, consumer behavior research is of interest here, as it relates to student and parent engagement with a service (here, it is online learning). Consumer engagement is consumers' interaction with services [15]. Stress has a negative impact on customer engagement [16,17]. Ref. [18] found that stress is caused by the external environment and affects a person's physical and mental health. Consumers usually engage with a service when they feel psychological safety or have positive and trusted interpersonal interactions with the service providers [19]. Consumers who are under stress will reduce their engagement to avoid losing their cognitive resources [20]. In the online learning environment, parents' engagement with their children's online learning may be affected by stress.

Although numerous studies have been conducted on the impact of online learning on student behavior and engagement during the COVID-19 pandemic [21–23] none of these studies, to the best of our knowledge, have investigated the impact of parents' stress on their engagement with children's online learning during COVID-19. More specifically, no studies have examined the impact of different types of stress from online learning on parents' engagement with their children's online learning during COVID-19.

2. Literature Review

2.1. Engagement and Stress from Online Learning during COVID-19

With the spread of COVID-19, people were physically separated but digitally close [23]. With education, the digital world created new opportunities for interaction between classmates and instructors from all over the world. Although this transformation made education more accessible, customized, and enabled parents to supervise children's education, this unexpected shift from regular traditional classes to online classes posed significant challenges for students [24]. Many problems were raised such as poor internet connectivity, heavy workload, a lack of prior experience with online learning and extra expenses [23]. As a result, parents took on new and unfamiliar responsibilities in their children's online education while facing increased academic, technical, financial, and personal responsibilities for their children's learning [21].

According to [25], schools succeed when there is a strong and positive relationship between students, parents, teachers, and school management staff. Academic success is more likely for all students if their home environment is supportive and engaging. Parental engagement with the learning process is most effective when there is a partnership between the school and parents [26]. There are three subtypes of parent engagement with online learning: behavioral, emotional, and cognitive [27,28]. The behavioral aspects of engagement refer to actions taken by parents regarding some online learning services [27]. The emotional aspects of engagement are how parents "feel" and "believe" about these services [27]. Finally, the cognitive aspects of engagement are thought processes related to engaging in certain activities related to online learning services [27,29,30].

Unfortunately, stress negatively affects consumer engagement with a brand or service [31]. According to [32], stress not only negatively affects a consumer's engagement with a brand or service, but also the consumer's overall well-being. This negative engagement may not be limited to a relationship with a single service but may have a broader impact on how customers interact with other services. Ref. [33] confirmed that parents who are operating under greater stress have trouble optimally engaging with their children's online learning. Parents may face different forms of stress including the following: academic stress (i.e., their responsibility for their children's education), technical stress (i.e., proficiency with computer technology), financial stress (i.e., the ability to afford tuition, computers, and internet access), and personal stress associated with major life changes.

2.2. The Impact of Different Types of Stress on Parents' Engagement during COVID-19

Academic responsibilities associated with children's online learning are considered one of the most stressful situations in parents' lives. As the majority of parents lack academic content knowledge or pedagogy [21], parents felt stressed trying to compensate for their children's physical attendance with teachers while not having the teaching skills needed. For example, ref. [6] found that parents' stress spiked at certain times throughout the day, specifically during work and distance learning hours. Employed parents faced higher stress due to the conflict between their roles as parents and employees [34]. They attempted to work remotely while assisting their children with online classes without any indication of when this would end. Stressed parents may not have enough time to meet their children's commitments or find the time to engage with children's online learning [21].

In addition, although several studies have shown that there is a relationship between financial stress and parenting stress [35], there is a shortage of studies that investigated the relationship between financial stress and parents' engagement with children's online learning during the COVID-19 pandemic [36–40]. One recent study investigated factors underlying parental stress, such as financial security stress and family stability/stress [41] in parents of young children (ages 2–7). Ref. [41] found that financial security stress was more related to parental stress during the COVID-19 pandemic. Financial stress includes several stressors such as extra expenditures, higher utility costs, and rewarding children for their dedication to the online learning environment. These stressors are expected to have a negative relationship with parents' engagement with children's online learning.

As for technical stress (also known as technostress or digital stress), several studies found that technostress has increased significantly during COVID-19 [42]. Studies found that teachers and educators suffer from technostress [42,43]. Technostress during online learning was related to poor WiFi at home, hardware shortages, and a lack of online resource organization [21,44]. Parents, specifically those who had not used computer systems before the COVID-19 pandemic, suffered from technostress as they did not adapt easily to helping their children study from home. However, no study has investigated the impact of technostress on the parents' ability to engage with children's online learning during the COVID-19 pandemic.

As for personal (adjustment) stress, there is a multitude of studies showing that major life changes lead to stress in general [45]. Many recent studies have shown that parents suffer from stress due to changes brought about by the COVID-19 pandemic [12,46,47]. Most prior studies on the impact of the COVID-19 pandemic on parents focus on children's characteristics [48–52]. For example, one study found that parents preferred online learning at home for their middle and high school students but not primary school students. This is because primary school students require more effort and assistance at home to enable them to learn effectively online [53]. Personal stress not only has a damaging effect on parents' participation with their children's online learning but also their overall online learning engagement [32].

Based on the previous discussion, the current study hypothesizes the following:

H1. *Academic stress is a significant predictor of parents' (behavioral-emotional-cognitive) engagement with children's online learning.*

H2. *Financial stress is a significant predictor of parents' (behavioral-emotional-cognitive) engagement with children's online learning.*

H3. *Technical stress is a significant predictor of parents' (behavioral-emotional-cognitive) engagement with children's online learning.*

H4. *Personal stress is a significant predictor of parents' (behavioral-emotional-cognitive) engagement with children's online learning.*

2.3. Parents' Demographics

Parents' demographics such as age, gender, academic qualifications, and other factors, are expected to have an impact on parents' stress and engagement with children's online learning. However, there is a scarcity of studies that investigate the relationship between parents' demographics, stress, and engagement. For example, the gender of the parent was found to be related to the amount and severity of stress they experienced during online learning throughout the COVID-19 pandemic. Studies found that mothers are more negatively impacted by online schooling of children than fathers as they often spend more time than fathers with children [54–56]. In addition, previous research found that the age of parents is related to their satisfaction with children's online learning, as younger and older parents were more stressed than middle-aged parents [11,47,55–57].

Furthermore, ref. [58] found that parents' educational level was related to stress during online learning for their children. Along these lines, refs. [59,60] found that higher education is related to less parental stress. However, many prior studies did not investigate the relationship between educational level and parents' engagement in the context of online educational services. In addition, there are prior studies that show the relationship between parents' income and stress. It was found that low income levels were associated with parental stress [61,62] especially for parents who care for children with special needs. Other studies found that low socioeconomic status (which was found previously to relate to low income) was associated with difficulty adjusting to new life conditions during the COVID-19 pandemic [63].

While there are no studies on the impact of COVID-19 on parents or their children in relation to school type, one study found that teachers in private schools received more social support and suffered less from stress (including technostress) than in governmental schools [64]. It is likely that teachers who received social support work better with students than teachers who do not receive any social support. In turn, it is possible that parents of children in private schools have less stress than parents of children in governmental schools [64]. Finally, ref. [55] showed that parents were more likely to be satisfied with online learning when they have fewer children in the family.

As previously stated, few studies have examined the relationship between parental demographics, stress, and engagement. To fill this gap, this study hypothesizes that:

H5. *Parents' demographics (age, gender, income, academic qualification, type of school, and the number of children enrolled in schools) can have a positive impact on parents' stress and engagement with children's online learning.*

3. Research Methods

The current study utilized a quantitative approach using a survey questionnaire. The survey was completed by 422 people from various Arab Gulf countries. The questionnaire included 42 statements that were graded on a 5-point Likert scale. For stress statements, 1 indicated not stressful at all and 5 indicated very stressful. For engagement statements, 1 indicated strong disagreement and 5 indicated strong agreement. The questionnaire was distributed using Google Forms via messages sent to all participants. The questionnaire was divided into 3 sections. The first section included demographic information such as gender, age, gender, country of residence, qualification, occupation, and income. The second section included information about children such as the number of children enrolled in school as well as the type of school. The last section included statements about each construct. As previously stated, no studies have taken into account the 4 types of stress that parents face when their children are learning online during the COVID-19 pandemic. As a result, the scales used to assess academic, technical, financial, and personal stress were influenced by some literature (e.g., [65]) but were primarily recently developed for the current study. The scale for parents' engagement in their children's online learning was guided by some previous research in the same area but was adjusted to be suitable for the current study [27,66].

3.1. Participants

As shown in Table 1, the number of females was 321 (76.1%) and the number of males was 101 (23.9%). Additionally, the largest group was those aged 30–44 years and 25–34, comprising 153 and 128 respondents, respectively. Of the respondents, 232 had a bachelor's degree, 111 attended secondary schools, and 79 had a postgraduate degree. The main occupation was classified as employed (full-time) (172). Furthermore, 21% of the sample had a monthly family income of more than \$5000, and 198 (46.9%) individuals received between \$2000 and \$4999. As to the number of children enrolled in school, 125 (29.6%) had 1 child enrolled in school, while 165 (39.1%) had 3 children and more. A total of 234 (55.5%) respondents had children in governmental schools, and 188 (44.5%) had children in international schools.

Table 1. Demographic information of participants according to their area of residence.

Variable Description	Category	N and Percent (%)
Age (y)	Less 25	85 (20.1)
	25–34	128 (30.3)
	35–44	153 (36.3)
	45–55	46 (10.9)
	More than 55	10 (2.4)
Gender	Male	101 (23.9)
	Female	321 (76.1)
Academic Qualification	Secondary	111 (26.3)
	Bachelor	232 (55)
	Postgraduate	79 (18.7)
Job	Student	92 (21.8)
	Full-time	172 (40.8)
	Part-time	12 (2.8)
	Freelance	24 (5.7)
	Non-employee	122 (28.9)
Income	Less than 1000	160 (37.9)
	1000–1999	66 (15.6)
	2000–2999	37 (8.8)
	3000–3999	40 (9.5)
	4000–4999	34 (8.1)
	More than 5000	85 (21.1)
Children enrolled in school	1	125 (29.6)
	2	132 (31.3)
	3	87 (20.6)
	More than 3	78 (18.5)
Type of school	Governmental	234 (55.5)
	International	188 (44.5)

N = 422.

3.2. Validity and Reliability

To calculate the validity and the reliability of the scale, we administered the scale to a sample of individuals (*N* = 422). As a result of the confirmatory factor analysis (CFA) (Figure 1) by LISREL (Version 8.8), the factor loading values were determined to range between 0.34 to 0.94. The fit indices of the scale were $\chi^2/df = 2.31$, the values of the root mean square error of approximation were (RMSEA = 0.09), goodness of fit indices were (GFI = 0.97), adjusted goodness of fit indices were (AGFI = 0.93), and normed fit indices were (NFI = 0.92) which indicated a good fit of the suggested model to the data. The Cronbach's α of the scale was (0.86) for academic stress, (0.79) for technical stress, (0.83) for financial stress, and (0.86) for personal stress, (0.79) for behavioral engagement, (0.79) for cognitive engagement, and (0.80) for the assessment.

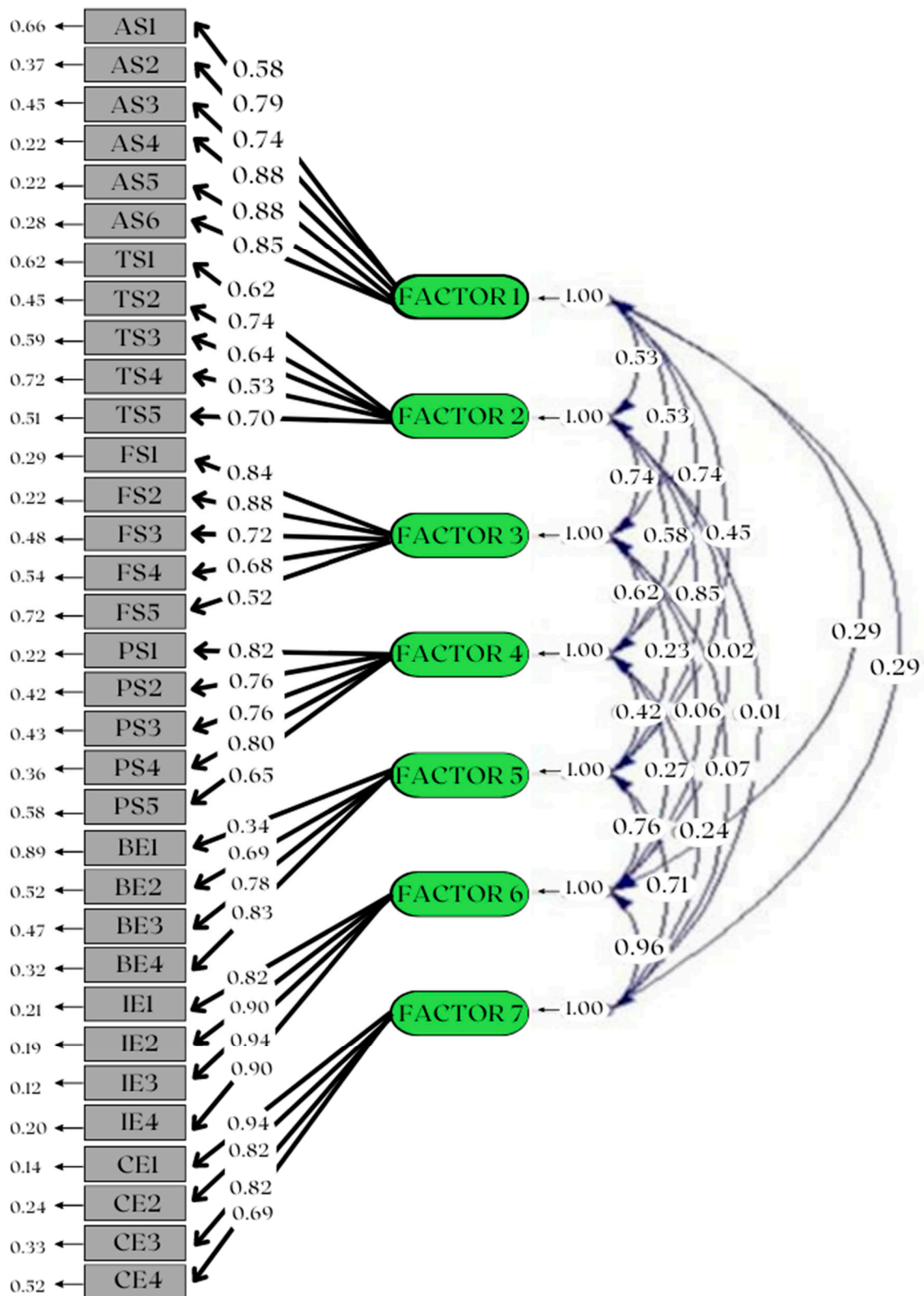


Figure 1. Confirmatory factor analysis (CFA).

3.3. Statistical Analysis and Results

An initial analysis was carried out to ascertain the extent to which academic, financial, technical, and personal stress accounted for variability in behavioral engagement of students. The results showed that all 4 stressors accounted for a significant 11% in variability of educational services during the COVID-19 pandemic ($R^2 = 0.11$), adjusted $R^2 = 0.101$,

$F(4,417) = 12.89, p < 0.001, f^2 = 0.12$). Table 2 indicates that academic and personal stressors were significant predictors of behavioral engagement. To test the hypothesis that academic and personal stress can account for a significant amount of variance in behavioral engagement above and beyond that already accounted for by technical and financial stress, a hierarchical multiple regression analysis (MRA) was employed (Table 3).

Table 2. Unstandardized (B) and standardized (β) regression coefficients and squared semi-partial correlations (sr^2) for each predictor in a regression model predicting behavioral engagement.

Variable	B [95%CI]	β	sr^2
Academic **	0.184 [0.103, 0.265]	0.273	0.045
Technical	−0.031 [−0.117, 0.054]	−0.043	0.001
Financial	−0.047 [−0.129, 0.035]	−0.072	0.003
Personal *	0.096 [0.011, 0.181]	0.146	0.012

* $p < 0.05$ ** $p < 0.01$.

Table 3. Unstandardized (B) and standardized (β) regression coefficients and squared semi-partial correlations (sr^2) for each predictor of a hierarchical multiple regression predicting behavioral engagement.

Variable	B [95%CI]	β	sr^2
Step 1			
Technical	0.040 [−0.047, 0.127]	0.055	0.002
Financial	0.053 [−0.026, 0.131]	0.081	0.004
Step 2			
Technical	0.001 [0.979, −0.085]	0.002	<0.0001
Financial	−0.035 [−0.119, 0.049]	−0.054	0.002
Personal	0.189 [0.112, 0.265] **	0.287	0.053
Step 3			
Technical	−0.031 [−0.117, 0.054]	−0.043	0.001
Financial	−0.047 [−0.129, 0.035]	−0.072	0.003
Personal	0.096 [0.011, 0.181] *	0.146	0.012
Academic	0.184 [0.103, 0.265] **	0.273	0.045

* $p < 0.05$ ** $p < 0.001$.

In step 1, technical and financial were included and accounted for a significant 1.5% of the variance found in behavioral engagement $R^2 = 0.015, F(2,419) = 3.18, p = 0.043$. In step 2, personal stress was added to the regression equation and accounted for a significant addition of 5.3% of the variance in behavioral engagement, $\Delta R^2 = 0.053, \Delta F(1,418) = 23.64, p < 0.001$. In step 3, academic stress was included in the regression equation and accounted for an additional 4.2% of the variance in behavioral engagement, $\Delta R^2 = 0.042, \Delta F(1,417) = 19.83, p < 0.001$. It was therefore found that personal and academic stress remained significant predictors, while technical and financial stress did not significantly affect behavioral engagement.

Secondly, we were interested in finding out whether different stressors influenced emotional engagement in students. It was found that in combination, academic, technical, financial, and personal stress accounted for 7.2% of the variance seen in emotional engagement in educational services during COVID-19 ($R^2 = 0.072, \text{adjusted } R^2 = 0.064, F(4,417) = 8.14, p < 0.001$, with a medium effect of $f^2 = 0.078$). Table 4 shows that in this case, academic stress was the only significant predictor for emotional engagement, accounting for 3.3% of its variance.

Thirdly, we wanted to ascertain the extent to which cognitive engagement was affected by academic, technical, financial, and personal stress. These 4 variables accounted for 11% of variance in cognitive engagement. In combination, academic, technical, financial, and personal stress accounted for 11% of the variance observed in cognitive engagement in educational services during COVID-19 ($R^2 = 0.110, \text{adjusted } R^2 = 0.101, F(4,417) = 12.87,$

$p < 0.001$, with an effect size of $f^2 = 0.12$). Table 5 shows that academic and technical stress were significant predictors of differences seen in cognitive engagement.

Table 4. Unstandardized (B) and standardized (β) regression coefficients and squared semi-partial correlations (sr^2) for each predictor in a regression model predicting emotional engagement.

Variable	B [95%CI]	β	sr^2
Academic **	0.183 [0.087, 0.278]	0.235	0.033
Technical	−0.094 [−0.195, 0.007]	−0.113	0.008
Financial	−0.021 [−0.118, 0.76]	−0.028	0.0004
Personal	0.084 [−0.016, 0.185]	0.111	0.007

** $p < 0.01$.

Table 5. Unstandardized (B) and standardized (β) regression coefficients and squared semi-partial correlations (sr^2) for each predictor in a regression model predicting cognitive engagement.

Variable	B [95%CI]	β	sr^2
Academic **	0.186 [0.107, 0.265]	0.283	0.05
Technical *	−0.095 [−0.179, −0.012]	−0.135	0.012
Financial	0.008 [−0.072, 0.089]	0.013	0.0001
Personal	0.078 [−0.005, 0.161]	0.122	0.008

* $p < 0.05$ ** $p < 0.01$.

To test the hypothesis that academic and technical stress can account for a significant amount of variance above and beyond financial and personal, a hierarchical multiple regression analysis (MRA) was carried out (Table 6). In step 1, financial and personal stress were included in the model and accounted for a significant 5.5% of variance in cognitive engagement, $R^2 = 0.06$, adjusted $R^2 = 0.055$, $F(2,419) = 13.31$, $p < 0.001$. In step 2, technical stress was added to the model but did not account for a significant increase in variability ($R^2 = 0.005$, $F(1,418) = 2.13$, $p = 0.145$). In step 3, academic stress was added to the model and accounted for an additional 4.5% of the variability in cognitive engagement $\Delta R^2 = 0.045$, $\Delta F(1,417) = 21.26$, $p < 0.001$. The results indicate that technical and academic stress remained significant factors in predicting differences in cognitive engagement in students.

Table 6. Unstandardized (B) and standardized (β) regression coefficients and squared semi-partial correlations (sr^2) for each predictor of a hierarchical multiple regression predicting cognitive engagement.

Variable	B [95%CI]	β	sr^2
Step 1			
Financial	−0.008 [−0.081, 0.064]	−0.013	0.0001
Personal	0.162 [0.088, 0.235] *	0.252	0.043
Step 2			
Financial	0.020 [−0.062, 0.102]	0.032	0.018
Personal	0.172 [0.097, 0.246] *	0.267	0.047
Technical	−0.063 [−0.147, 0.022]	−0.089	0.005
Step 3			
Financial	0.008 [−0.072, 0.089]	0.013	0.0001
Personal	0.078 [−0.005, 0.161]	0.122	0.008
Technical	−0.095 [−0.179, −0.012] *	−0.135	0.012
Academic	0.186 [0.107, 0.265] **	0.283	0.048

* $p < 0.05$ ** $p < 0.001$.

We were also interested in whether demographics information influenced stress and engagement. An independent sample t -test was conducted to determine whether there is a difference in all types of stress between males and females. The results indicate a significant

difference between males ($M = 63.84$, $SD = 16.50$) and females ($M = 67.31$, $SD = 14.98$), [$t(420) = -1.984$, $p < 0.05$]. The 95% confidence interval of the difference between means ranged from $[-6.92$ to $-0.031]$ and indicates a difference between the means of the sample. The results show that age, income, academic qualification, type of school, and number of children enrolled in school did not have an impact on parents' stress.

An independent sample t -test was conducted to determine whether there is a difference in all types of engagement between males and females. The results indicate a significant difference between males ($M = 35.92$, $SD = 11.36$) and females ($M = 40.21$, $SD = 10.85$), [$t(420) = -3.590$, $p < 0.05$]. The 95% confidence interval of the difference between means ranged from $[-6.64$ to $-1.94]$ and indicates a difference between the means of the sample. The results show that age, income, academic qualification, type of school, and number of children enrolled in school did not have an impact on parents' engagement.

4. Discussion

4.1. Stress and Parents' Engagement during COVID-19

In this section, we discuss how different types of stress impact parents' engagement with their children's online learning.

Results confirm that parents' academic stress is a significant predictor of parents' behavioral, emotional, and cognitive engagement with online learning [31–33]. Online learning during the COVID-19 pandemic required parents to keep their children paying attention during online classes, assist them with classwork, organize academic materials, and follow up on the child's school commitments. Parents struggle to balance their own demands along with their children's needs [21]. The current study replicates findings of previous research showing that parents struggled to find sufficient time to satisfy their children's academic commitments while also engaging with their online learning [6,21].

Although freedom and flexibility are important characteristics of online learning [67], the current study's findings concur with those of previous research showing that academic constraints common in online learning, such as the lack of suitable study spaces and the difficulty in maintaining appropriate discipline during online learning at home [68], significantly affect parents' engagement with online learning. In other words, academic stress is a significant predictor of parents' behavioral engagement with their children's online learning, whether parents feel that the school provides children with the appropriate support, care, and education (emotional engagement), and how they feel about processes related to engaging in certain activities related to school services, such as sharing information with other parents (cognitive engagement).

In addition, the current study confirms that technical stress is an insignificant predictor of both behavioral and emotional engagement. Furthermore, financial stress was not a significant predictor of parents' behavioral, emotional, or cognitive engagement with their children's online learning. The nature of the study sample could be one explanation for this, as most of our participants resided in the Gulf area. Despite the unique circumstances of online learning during COVID-19, countries in the Gulf area are among the richest countries in the world. The majority of households have stable and high-speed internet access. The United Arab Emirates, for example, is one of the world's wealthiest countries, with over 98% of households having stable internet access [69]. Furthermore, more than half of the sample earned more than \$2000 per month. The GCC countries have some of the world's highest standards of living [42]. For parents living in the Arab Gulf area, technical (e.g., internet problems, enough help from school, or privacy concerns) and financial (e.g., additional expenditures or utility costs) issues are not typically a significant source of stress during online learning. However, this can possibly be a factor underlying parental stress in developing countries, which should be investigated in future studies.

Furthermore, technical stress was a significant predictor of parents' cognitive engagement. Each person has a certain number of cognitive resources [70]. Long-term use of technology decreases individuals' cognitive engagement [71]. Ref. [72] asserted that the large quantity of information that an individual must process while using technology can

lead to poor task performance, reduced problem-solving abilities, and an unusual amount of time spent processing information, resulting in confusion and stress [73]. As a result, it is possible that technical stress was a significant predictor of parents' cognitive engagement with online learning.

Another important finding was that personal stress is a significant predictor of parents' behavioral engagement with online learning. These results align with the findings of [32], who also found that stress has a damaging effect on not just a consumer's engagement with a specific service but also on the consumer's entire well-being. Parents who are under a lot of personal stress, such as if they have to adjust their schedules to match those of their children's online classes or sleeping hours, have a hard time developing a good relationship with their children's online learning.

4.2. The Relationship between Parents' Demographics and Stress

In this section, we discuss the relationship between parents' demographic characteristics on their stress and engagement with their children's online learning.

Our results show that only gender had a significant impact on parents' stress and engagement with their children's online learning. Specifically, consistent with previous studies, the current study found that mothers appeared to be more stressed by children's online learning and more engaged with children's online learning than fathers [54–56]. This is possibly due to the fact that mothers, particularly mothers in the Arab world, including the Arab Gulf, often spend more time caring for children than fathers, and as a result, they may experience more stress during their engagement with children's online learning. However, contrary to previous studies on parents' characteristics and stress [55,56,58] the current study found that parents' age, income, academic qualification, type of school, and number of children enrolled in school did not have a significant impact on parents' stress and engagement with their children's online learning. However, it is difficult to explain this result, as it could be related to the participants' place of residence. Unlike many other European or African countries, educational institutions in the GCC have successfully integrated online learning during COVID-19 due to the rapid distance education and digital transformation [22,74]. By collaborating with their governments, GCC educational institutions showed an excellent management of online learning during the pandemic and ensured safety and well-being for all parties involved, including students, parents, and staff [74]. This might help explain the relatively insignificant impact of parents' demographics on parents' stress and engagement.

As for theoretical model, our results can be explained using the stress vulnerability model [75,76]. The model argues that external stressors can exacerbate the well-being of individuals and that managing external stressors may help to achieve better outcomes. This model may explain why parents' academic stress, personal stress, and technical stress impact engagement with children's online learning. It is possible that these stressors cause massive disruptions unlike other kinds of stressors. According to the stress vulnerability model, schools and agencies should aim to reduce factors related to external stressors that impact parents' engagement with online education.

5. Conclusions, Research Implications, and Limitations

On a theoretical level, this study has advanced our knowledge and understanding of the field of online learning during the COVID-19 pandemic. Specifically, this is the first study to investigate the impact of parents' academic, technical, financial, and personal stress resulting from children's online learning on parents' behavioral, emotional, and cognitive engagement with their children's online learning. Our findings have implications for the COVID-19 pandemic and possibly any future pandemics and crises that necessitate stay-at-home learning. Our findings suggest that stress perceived by parents depends on the magnitude of crisis experienced by the parents and children alike. Our findings also have implications for crises such as hurricanes and earthquakes, among others. These natural disasters may cause relocation of families and thus force students to study at

home. It is predicted that these crises may lead to stress in a similar fashion to that caused by COVID-19. Accordingly, our findings have implications for other crises and natural disasters.

Our results contribute both to academic research and managerial practice, extending the current concepts of stress and engagement in online learning. The results suggest a number of areas for future research. This study also suggests the need to rethink how to implement successful online learning, as it identifies a number of stressors that must be addressed if schools are to keep parents involved during their children's online schooling.

In fact, educational institutions and schools should consider that understanding the impact of parents' stress on their engagement is critical, as parental engagement with their children's online learning is crucial for their academic success, particularly during the COVID-19 pandemic. The results revealed that parents' academic stress is a significant predictor of all types of parental engagement with online learning, whether behavioral, emotional, or cognitive. An interactive, flexible, and supportive online learning environment is important for building an online learning community. Special attention must be devoted to different family conditions, especially families that are struggling to support and help their children during online learning. Teachers should assist families by providing clear online content and solving any problems that arise. Teachers should provide extensive support in order to establish a positive environment for online teaching that reduces parents' stress. In addition, it is important to create support groups to assist parents in coping with the psychological, educational, and personal stressors associated with online learning. Focusing on students' and parents' well-being by avoiding overloading them with assessments, assignments, and coursework and addressing their stressors during difficult times is vitally important.

While the findings of this research have theoretical and practical implications, they must be weighed in light of some limitations. The research topic of parents' stress and engagement during COVID-19 is a relatively new area of study in the Middle East, with theories and concepts still being developed. Future research should conduct further investigations of each relevant variable to uncover more implications for parents' stress and engagement from different perspectives. In addition, the design of the current research is cross-sectional, conducted to investigate parents' stress at a specific time. However, ref. [77] concluded that obtaining data at a single time point about stress in education is insufficient, as psychological well-being changes across the academic year. Therefore, future research should examine the issue in a longitudinal way. Finally, future research might also investigate the impact of other mediating factors, such as parents' demographics and children's characteristics.

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