

ONLINE VERSUS FACE-TO-FACE LEARNING: STUDENTS' PREFERENCES DURING CRISIS TIMES

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ABSTRACT

In March 2020, the world faced an abrupt global health crisis as the pandemic rapidly spread, leading to widespread school closures. Our research explored students' online learning preferences during this crisis, considering a range of variables including age, gender, and personal characteristics. We used a quantitative approach to gather data through six online questionnaires covering demographic details, personality traits, self-efficacy, attitude toward technology, parental support, and learning preferences. Findings reveal that students who held a more favorable attitude towards technology, perceived higher levels of academic achievements and parental support, were inclined to favor online platforms to a greater extent.

KEYWORDS

Online learning, personality traits, self-efficacy, attitude toward technology, age and gender differences.

1. INTRODUCTION

Previous studies conducted during Covid-19 have investigated various aspects of students' perceptions of online learning including their personality traits [8], [25], self-efficacy [2], [11], satisfaction [48], attitude towards online learning [32], and online learning preferences [31]. However, it is worth noting that most studies have primarily focused on higher education settings. In our study, we recognize the significance of extending this research to junior and high-school students. By including this specific group, we aim to introduce a new perspective that can provide valuable insight into the online learning preferences of younger students. Moreover, existing research has shown varying and sometimes conflicting correlations between gender, age, and online learning preferences [20], [45], [48]. Hence, our research seeks to contribute to the knowledge of online learning during the pandemic, exploring how gender and age are related to online learning preferences during crisis times.

The current study will focus on how students' demographic details, such as gender and age, as well as personality traits, self-efficacy, attitude toward technology and perceived parental support, are associated with students' online learning preferences during crisis times.

2. LITERATURE REVIEW

In March 2020, the world was hit by a global health crisis as the pandemic started spreading, further highlighting the importance and necessity of online learning. Consequently, many educational systems worldwide moved to online classes. Online learning involves physical distance between students and instructors [55], and their interaction is mediated by technology [15]. Amid the transition to online learning and the physical separation it entailed, it is important

to understand how personality traits can be associated with students' adaptation to the new learning environment.

2.1. Personality traits

The Big Five Personality Traits model developed by McCrae and Costa [41] is one of the central models used in research for analyzing behavior. According to this model, people can be characterized by their position on "scales" that describe each of five key traits. The five traits are: Extraversion that reflects a person's inclination to exhibit ongoing and talkative behavior, display friendliness, and engage actively in social interactions. Agreeableness that indicates an individual's ability to maintain positive social relationships, typically marked by friendliness, compassion, and cooperative behavior. Openness to experience that pertains to one's inclination for imagination, curiosity, originality, and open-mindedness. Conscientiousness that is associated with discipline, responsibility, organization, reliability and orderliness. Neuroticism, that is characterized by mood swings and the experience of negative emotions [41]. This model has already used in various studies exploring relationships between personality traits and online learning satisfaction, preference, and success [1], [30]. In a recent research conducted in the post-COVID-19 period, it was found a high and significant correlation between extraversion, conscientiousness, openness to experience, agreeableness, and students' satisfaction level of online courses. However, in contrast to these positive correlations, a negative correlation has been observed between neuroticism and online learning satisfaction with online learning [14].

Multiple studies conducted during routine times consistently found that females tended to achieve higher scores in each of the assessed personality traits compared to males [4], [5], [44]. However, during the pandemic period specific examinations of higher education students' satisfaction with online learning showed that females often scored higher in neuroticism and conscientiousness in comparison to their male counterparts [48], [28]. Additionally, Firat [23] observed that female students tend to score higher in most personality traits, with exception of agreeableness. Notably, age is not significantly associated with personality traits and online learning [8], [56].

The current study also considered students' self-efficacy as a factor that may be associated with students' adaptation to the novel digital learning platform.

2.2. Self-Efficacy

Bandura [10] defined self-efficacy as an individual's belief in their ability to behave in ways that will lead to a desired outcome. The sense of self-efficacy affects human functioning in all areas of life. Individuals with high self-efficacy see difficult tasks and roles as a challenge and strive to succeed in them. Conversely, those with low self-efficacy are often deterred and anxious, finding it difficult to cope with challenging tasks [13]. Bandura's research [9] demonstrated that individuals with low self-efficacy avoid challenging activities and develop their competences to a lesser degree than individuals with high self-efficacy.

Self-efficacy was found to be positively related to course satisfaction and performance in online courses, in routine times [54], as well as during the pandemic [34]. Gender disparities in self-efficacy have been evident in prior research, with males consistently achieving higher scores [11], [36]. When focusing on self-efficacy among higher education students amidst the pandemic (Cadapan et al. (2022) reported that the level of self-efficacy in online learning varies according to students' age. Specifically, graduate school students aged 21-30 exhibited a high level of self-efficacy in online learning, while those aged 31-50 displayed a moderate level of self-efficacy.

In addition to investigating students' self-efficacy, this study also examined how students' attitudes toward technology may play a role in their adjustment to the new digital learning platform.

2.3. Attitude toward technology

Attitude toward technology plays a pivotal role in shaping students' responses to the online learning transition. Attitude can be described as a psychological tendency manifested through the evaluation of a particular entity with some degree of preference or aversion (Eagly & Chaiken, 1993). Gal and Ginsburg [24] summarized that in the context of education, attitude is the sum of all the emotions and feelings experienced during the learning process of the studied subject.

Over the years, there has been a stereotypical view regarding technology use and gender. However, research conducted by Cai et al. [16] and Blasco [58] indicate that males hold more favorable attitudes towards technology use than females. Research on age and attitude toward technology shows inconsistent findings. On one hand, there is no difference between age groups [16]. On the other hand, some studies have indicated a steady decline in attitude scores as age increases beyond 25-34 [29].

The outbreak of the pandemic has underscored gender-based differences in attitudes towards online learning. Üstün & Ataç [52] found that males were more in favor of online learning than females. They were more inclined to adopt the technological opportunities used in education and were more ready for online education compared to females. Several studies have explored age-related distinctions in students' attitudes toward online learning. A recent study by Drašler et al. [21] found no statistically significant differences in attitudes toward online education among university students of different age groups. However, according to Long-Yuan [38], age was found to be significantly correlated with people's attitudes towards technology, with older individuals exhibiting a more positive attitude. Furthermore, Malkawi et al. [40], revealed a strong association between students' attitudes towards e-learning and their overall satisfaction levels with the online learning experience, indicating that satisfaction can play a crucial role in shaping students' preferences for online learning.

Due to the lockdown imposed during the pandemic, parents were often at home and had the opportunity to assist their children in navigating the new online learning platform, therefore we will also delve into the role of parental support in this context.

2.4. Parental support

Parental support is a broad term that includes both academic and emotional support. According to Choe [18], parental academic support is defined as providing study strategies and learning resources, while parental emotional support involves providing praise or encouragement and recognizing and understanding children's feelings.

According to past research, there is a positive and significant correlation between parental support and involvement and children's academic performance [6], [33]. Ming-Te and Sheikh-Khali [43] emphasized that parental involvement is a key factor in the academic achievement of adolescents and, as a result, their learning preferences. Consequently, with adolescents spending an increased amount of time at home, parental support emerged as a critical factor not only in their psychological well-being but also in shaping their learning preferences [53].

Studies that examined gender differences in students' parental involvement during routine, found that males achieved better outcomes when they perceived higher levels of parental support [43].

Numerous research have been conducted studies focusing on the impact of parental support during the pandemic, with attention to both age and gender distinctions. Ribeiro et al. [47] revealed that parental support tends to be more evident when children are younger and less autonomous, with gender exerting a notable influence, particularly among boys.

2.5. Research hypotheses

Based on the literature, we hypothesize the following hypotheses:

H1 There will be gender differences regarding students' personality traits. Females' average scores for each of the personality traits would be higher than those of males.

H2 There will be correlations between students' personal traits and their online learning preferences. Those with greater extraversion, agreeableness, conscientiousness, openness, and less neuroticism will display a higher level of online learning preference.

H3 There will be gender and age differences regarding students' self-efficacy. Males would score higher than females, while junior students would report higher levels of self-efficacy.

H4 There will be a correlation between students' self-efficacy and their online learning preference. The higher the students' self-efficacy level, the higher their online learning preference.

H5 There will be gender and age differences in students' attitudes toward online learning. Males would score higher than females, while high-school students would hold a more positive attitude toward online learning.

H6 There will be a correlation between students' attitude toward technology and their online learning preferences. Students with a more positive attitude will display a higher level of online learning preference.

H7 There will be gender and age differences in students' perceptions of parental support. Male students and junior students, perceiving higher levels of parental support, will show a greater preference for online learning.

H8 There will be a correlation between students' perceived parental support and their online learning preferences. The higher parental support students receive, the higher their online learning preference.

3. METHOD

This study used a quantitative method. 251 participants answered an online survey that included six sections relating to the six variables (see Appendix 1).

3.1. Procedure

The study was conducted between February 2021 and May 2021, and obtained informed consent from the participating students as required by the Israeli Ministry of Education.

Three schools were selected based on their similar socioeconomic status, as determined by the following indexes:

a. The ranking of municipal authorities conducted by the Central Bureau of Statistics [17]. According to this index, the three schools that participated in the current study were assigned a cluster 7 grade.

b. Madlan index for schools and education [39]. This index is based on matriculation exam scores from 2016-2017. The average score of the three participating schools in the current research is .76.

The research goal was explained to the students via WhatsApp message written by one of the researchers. The participants expressed their willingness and consent to complete the online questionnaires, which took about 30 minutes. The questionnaires were anonymous to ensure that none of the participants could be identified.

3.2. Research Population

More than 300 questionnaires were distributed, and out of them, 251 students successfully completed all six online questionnaires. Junior students correspond to grades 7-9 while high-school students correspond to grades 10-12. Table 1 presents the distribution of questionnaires by school and gender.

Table 1: Distribution of Questionnaires by School and Gender

	School A		School B		School C		Total	
	N	%	N	%	N	%	N	%
Males	80	100	41	50			121	48.2
Females			41	50	89	100	130	51.8
Total	80	31.9	82	32.7	89	35.4	251	100

Average age: M=14.62, SD=1.36

3.3. Measures

3.3.1. Research Tools

Researchers used six questionnaires:

1. The participants were asked to provide personal details, such as their gender, age, and perceived academic achievements. They were then asked to rate their perceived academic achievements on a scale of 1 to 3, with 1 indicating low achievements, 2 indicating moderate achievements, and 3 indicating high achievements.

2. Respondents assessed their personality traits using The Big Five Model Questionnaire, a validated and reliable questionnaire originally developed by McCrae and John [42]. This questionnaire included 44 statements describing various human behaviors and traits. The questionnaire was translated into Hebrew by Etzion and Laski [22]. The reliability of the tool was tested using internal consistency, and found to be:

(a) Extraversion: a subscale composed of eight items, $\alpha = 0.68$.

(b)Neuroticism: a subscale composed of eight items, $\alpha = 0.70$.

(c)Agreeableness: a subscale composed of nine items, $\alpha = 0.76$.

(d)Conscientiousness: a subscale composed of nine items, $\alpha = 0.75$.

(e)Openness to experience: a subscale composed of 10 items, $\alpha = 0.72$.

3. A self-efficacy questionnaire (GSE – General Perceived self-efficacy Scale) was used in this study. The scale was a shortened version developed by Schwarzer and Jerusalem [49], and translated into Hebrew by Zeidner et al. [57]. It contained ten statements. The reliability of the questionnaire in this study was 0.86.

4. An attitude towards technology questionnaire was used in the study. This questionnaire was developed by Knezek [35]. and was adjusted to the current research. The questionnaire consisted of 11 statements. The statements were modified for the current research to measure students' attitude towards online learning. The reliability of the questionnaire in this study was 0.85.

5. Online learning preference questionnaire that consists of 10 statements. The questionnaire was developed by Knezek [35], and was modified for the current research by measuring students' online learning (Online learning) preferences. The reliability of the questionnaire in this research was high, with a Cronbach's alpha value of 0.94.

6. The parental support questionnaire was developed in Hebrew by Seginer [50], and consists of 19 statements. The reliability of the questionnaire in this study was 0.90.

4. FINDINGS

This section will present the research findings in three stages: The first will present descriptive statistics of the research population and differences between male and female as well as junior (grades 7-9) and high-school (grades 10-12) students with respect to the independent variables. The second will present correlations between the research independent variables and the dependent variable – students' online learning preference. Finally, the third stage will present a hierarchical regression analysis that examines the contribution of all independent variables to the explained variance of Online learning preference.

4.1. Differences between male and female students and junior and high-school students.

Our hypotheses sought to examine the differences in personal characteristics (personality traits, self-efficacy, attitude towards technology, and parental support) among students based on their gender and age. To investigate this, the researchers conducted a multivariate analysis of variance (MANOVA) and a 2X2 ANOVA analysis (gender X age).

4.1.1. Personality traits

In order to examine the differences between males and females regarding personality traits (H1), a MANOVA was conducted. It was found that there was a significant difference between males and females regarding neuroticism and conscientiousness $F(5,243)=9.38$, $P<.001$, $\eta^2=.16$. Female students were more neurotic than males, and males were more conscientious than females. However, there was not a significant difference in age $F(5,243)=.24$, $P>.05$. In addition, there was no statistically significant interaction of gender X age $F(5,243)=.45$, $P>.05$. Table 2 presents means and standard deviations for personality traits according to gender.

Table 2: Means and SD for personality traits according to gender

Gender

	Males		Females		<i>F</i> (1,247)	<i>Eta</i> ²
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>		
Extraversion	3.28	.59	3.34	.62	.65	.00
Neuroticism	2.64	.53	3.09	.64	32.10***	.11
Agreeableness	3.73	.63	3.78	.58	.83	.00
Conscientiousness	3.57	.59	3.37	.63	5.40*	.02
Openness	3.51	.59	3.44	.58	.67	.00

* $p < .05$ ** $p < .01$ *** $p < .001$

4.1.2. Self-efficacy and Attitude towards Technology

The MANOVA presents a significant difference regarding self-efficacy (H3) and attitude towards technology (H5) $F(2,245)=15.81$, $P < .001$, $Eta^2=.11$, indicating that male students perceived their self-efficacy as higher and hold a more positive attitude towards technology in education than female students. However, there was no statistically significant age difference $F(2,245)=.46$, $P > .05$. In order to examine differences between males and females in regards to their self-efficacy and attitude towards technology, a MANOVA test was conducted, and a significant difference was found $F(2,245)=15.81$, $P < .001$, $Eta^2=.11$. However, there was no significant major effect of age $F(2,245)=.46$, $P > .05$ and no statistically significant interaction of gender X age $F(2,245)=1.2$, $P > .05$. Table 3 presents mean and standard deviations for self-efficacy and attitude towards technology according to gender.

Table 3: Means and SD for SE and Attitude towards technology according to gender

Gender

	Males		Females		<i>F</i> (1,247)	<i>Eta</i> ²
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>		
Self-efficacy	3.05	.56	2.89	.53	5.43*	.02
Attitude towards technology	3.63	.73	3.10	.64	30.17***	.11

* $p < .05$ ** $p < .01$ *** $p < .001$

4.1.3. Achievements and Online Learning Preference

In the demographic questionnaire, students were asked to rate their achievements during the pandemic in 2020. The findings revealed a significant difference between males and females, $F(1,247)=7.14$, $P < .001$, $Eta^2=.03$. Male students perceived their achievements as higher than female students. However, no significant difference was found between junior and high-school students, $F(1,247)=2.46$, $P > .05$. Table 4 presents means and standard deviations for students' perceived achievements and their Online learning preference.

Table 4: Means and SD for Online learning preference and Achievements according to gender

Gender

	Males		Females			
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>F</i> (1,247)	<i>Eta</i> ²
Achievements	2.27	.66	2.07	.64	7.14**	.03
Online learning Preference	2.54	1.05	2.32	1.01	2.64	.01

* $p < .05$ ** $p < .01$ *** $p < .001$

4.1.4 Online Learning Preference

In the analysis variance regarding online learning preference, findings present a significant interaction of gender X age, $F(1,246)=5.97$, $P<.05$, $Eta^2=.03$. Male students in junior school showed a greater preference for the Online learning digital platform compared to males in high-school. However, no significant difference in age difference was found, $F(1,246)=.75$, $P>.05$. On the other hand, females in high-school displayed a greater preference for the online learning platform than females in junior school, as shown by a significant age difference, $F(1,246)=5.94$, $P<.05$, $Eta^2=.03$.

Figure 1. presents differences between junior and high-school students in online learning preference among males and females.

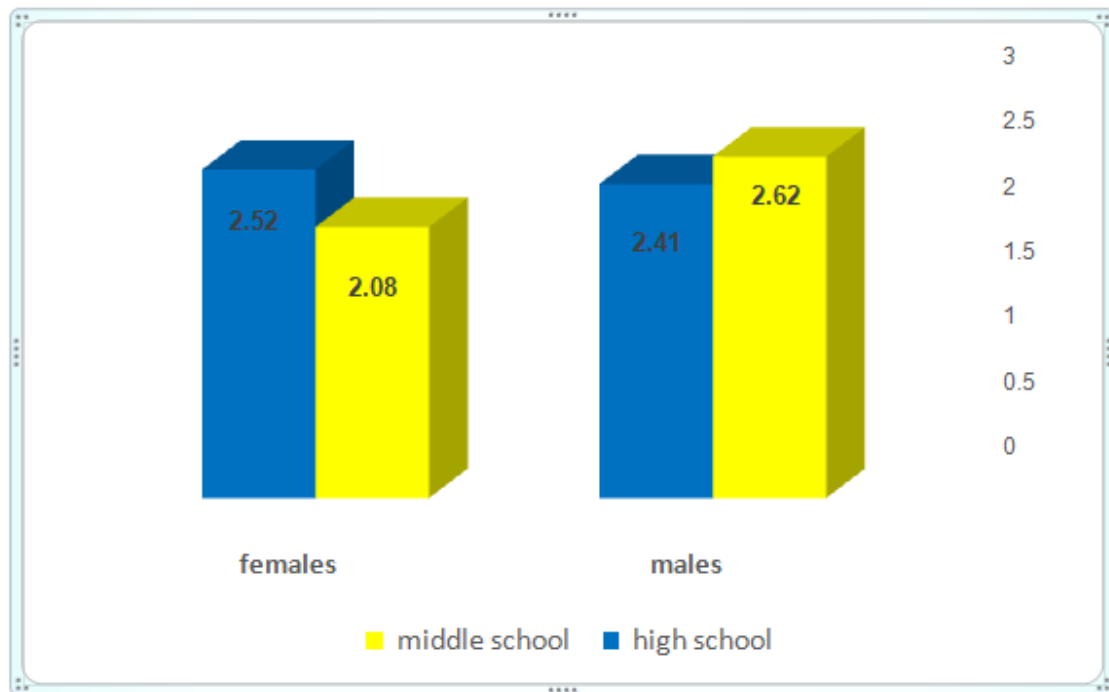


Figure 1: Differences between junior and high-school students in Online learning preference among males and females

4.1.4. Parental Support

To examine differences between males and females and junior and high-school students regarding parental support (H7), a MANOVA 2X2 (gender X age) was conducted. No significant difference was found between males and females, $F(2,245)=.23$, $P>.05$, nor between junior and high-school students, $F(2,245)=1.01$, $P>.05$. Additionally, no significant interaction of gender X age, $F(2,245)=.98$, $P>.05$, was found.

4.2. Correlations between the Research Variables

We assume correlations between the research variables – parental support, personality traits, self-efficacy, attitude towards technology, achievements, and the dependent variable – online learning preference. In order to examine these correlations Pearson's coefficients were calculated as presented in Table 5.

Table 5: Correlations between the Research Variables

	1	2	3	4	5	6	7	8	9	10
1. Parental Support										
2. Extraversion	.26***									
3. Neuroticism	.24***	*** -.26								
4. Agreeableness	.34***	*** .24	.26** -							
5. Conscientiousness	.41***	*** .27	.42** -	*** .32						
6. Openness	.26***	.18* *	-.10	*** .36	*** .34					
7. Self-efficacy	.42***	*** .37	*** -.40	*** .24	*** .54	*** .41				
8. Attitude towards technology	.31***	-.07	-.05	.06	*** .22	.19** .	*** .24			
9. Achievements	.33***	.11	.19* -	.08	*** .37	.09	*** .24	.21** .		
10. Online learning preference	.17**	.03	-.02	-.11	.13*	-.05	.04	*** .41	*** .33	

* $p < .05$, ** $p < .01$, *** $p < .001$

H2 examined the correlation between students' personality traits and their online learning preferences. The findings indicated no correlations between extraversion, neuroticism, agreeableness, and openness with online learning preference. However, there was a significant, positive but weak correlation between conscientiousness and online learning preference. This suggests that the higher the students' level of conscientiousness, the higher their online learning preference. Therefore, we reject H2 regarding extraversion, neuroticism, agreeableness, and openness, and accept H2 in regards to conscientiousness.

H4 assumed a correlation between students' self-efficacy and online learning preference. According to Table 5, no correlation was found and thus we reject H4.

H6 was accepted, showing that students who reported high attitudes towards technology preferred the online learning platform.

H8 assumed a correlation between students' parental support and online learning preference. Table 5 presents a significant and positive correlation between students' parental support and online learning preference. Therefore, the higher the students received parental support, the higher their online learning preference, and as a result, H8 was accepted.

Additionally, we examined correlations between students' perceived achievements and their online learning preferences. Findings suggest a significant, positive correlation between students' perceived achievements and their online learning preferences. The higher the students' achievements, the higher their online learning preference.

4.3. Hierarchical Regression Coefficients for Explaining the Variance of Online Learning Preference

The researchers conducted a hierarchical regression analysis to determine the cumulative percentage of explained variance of the dependent variable, students' online learning preference. The explanatory variables were introduced into the analysis in five steps, as presented in Table 6. In the first step, gender and age were introduced, but they did not contribute significantly to the explained variance of online learning preference.

In the second step, the parental support variable was entered and significantly contributed by adding 4% to the explained variance of online learning preference. The β coefficient of parental support was significant and positive ($\beta=.17$, $p<.01$), indicating that higher parental support was associated with higher students' online learning preference.

In the third step, the Big Five personality traits were entered and significantly contributed by adding 5% to the explained variance of online learning preference. Among the five traits, a significant contribution was found only for agreeableness and conscientiousness. The β coefficient of agreeableness was significant and negative ($\beta=-.18$, $p<.01$), indicating that higher agreeableness was associated with lower online learning preference. However, the β coefficient of conscientiousness was significant and positive ($\beta=.15$, $p<.05$), indicating that higher conscientiousness was associated with higher students' online learning preference.

In the fourth step, the self-efficacy and attitude towards technology variables were entered, which added 14% to the explained variance of online learning preference. Of these two variables, only attitude towards technology significantly contributed to the explained variance of online learning preference. The β coefficient of attitude towards technology was positive and significant ($\beta=.45$, $p<.01$), indicating that students with a higher attitude towards technology also had a higher preference for online learning.

In the final step, students' perceptions of their achievements were examined and contributed an additional 5% to the explained variance of online learning preference. The β coefficient of perceived achievements was positive and significant ($\beta=.03$, $p<.001$).

Overall, the regression analysis revealed that 29% of the variance concerning students' online learning preferences could be explained by the predicting factors.

Table 6. Hierarchical Regression Coefficients for Explaining the Variance of Online learning Preference

Step	Variable	<i>B</i>	β	<i>R</i> ²	ΔR^2
1	Gender	-.26	-.12	.01	.01
	Age	.14	.07		
2	Parental support	.22	.17**	.05**	.04**
3	Extraversion	.03	.02	.10* **	.05**
	Neuroticism	.12	.08		
	Agreeableness	-.30	-.18**		
	Conscientiousness	.24	.15*		
	Openness	-.17	-.09		
4	Self-efficacy	-.26	-.14	.24 ***	.14**
	Attitude towards technology	.63	.45**		
5	Achievements	.39	.03 ***	.29 ***	.05 ***

* $p < .05$ ** $p < .01$ *** $p < .001$

5. DISCUSSION

This study aimed to discover the factors associated with students' preferences regarding online learning via Zoom versus face-to-face learning during the pandemic crisis, especially in regard to their demographic details (gender and age).

Four hypotheses (H1, H3, H5, H7) proposed differences between male and female students concerning their personality traits, self-efficacy, attitude towards technology, online learning preference, and parental support.

H1 assumed that female students' average scores across various personality traits would surpass those of male students. Our findings indicate that female students scored higher in neuroticism, while males scored higher in conscientiousness. These findings are consistent with those of McClean-Trotman et al., [48], who examined high-school students' online learning satisfaction during the pandemic highlighting that females consistently scored higher in neuroticism when compared to their male peers. An explanation for these results may be found in the unique circumstances caused by the pandemic crisis and its differing impact on male and female students. While male students demonstrated greater conscientiousness, indicating a stronger focus on the learning process, female students scored higher in neuroticism, which is characterized by a tendency to experience anxiety, tension, depression, emotionality, anger, and lack of confidence [26].

In Hypotheses H3 and H5, we posited that males would exhibit higher levels of self-efficacy and a more favorable attitude towards technology, respectively, compared to females. Our findings align with previous studies suggesting that, regardless of whether it is during regular times or times of crises, males tend to report higher self-efficacy levels compared to females [11]. Similarly, previous studies have found that males generally hold more positive attitudes toward technology than females do [16]. Our results confirm that these gender-related differences in self-efficacy and attitudes toward technology persist and that these differences are not limited to specific circumstances but are consistent across both regular and crisis periods.

We hypothesized (H7) that male students would report higher levels of perceived parental support compared to female students. However, our findings yielded no significant difference between males and females in terms of perceived parental support. This result is consistent with Raza et al. [46], who suggested that parental support can mitigate the negative impact of technostress, and when parents provide support, the negative effects of technostress are less harmful to all students, regardless of gender. During the pandemic, the sudden transition to online learning and increased reliance on technology introduced new challenges and stressors for students. Yet, the presence of strong parental support can act as a protective factor, buffering the negative effects of technostress. This finding suggests that the level of perceived parental support was not related to gender and highlights the importance of parental involvement and support in mitigating the potential negative consequences of technostress during times of crisis like the pandemic.

In addition, findings present an interaction between gender and age. Male students in junior high-school demonstrated a stronger preference for the digital platform compared to male students in high-school. Conversely, female students in high-school showed a greater preference for the digital platform compared to female students in junior high-school. One possible explanation for this interaction is that high-school students face the challenge of taking matriculation exams, which junior high-school students do not. Consequently, male high-school students may struggle to learn effectively via online learning while preparing for these exams, while female high-school students may be more accustomed to online learning and better equipped to manage matriculation exam preparation online. Moreover, the pandemic crisis likely exacerbated these dynamics by necessitating the widespread adoption of online learning. The challenges posed by matriculation exams, combined with the sudden shift to online education, may have influenced the differing preferences observed between male and female students in junior school and high-school. This interesting finding echoes Choi-Meng et al. [19] who emphasized the influence of gender on the willingness to adopt digital learning platforms and satisfaction with online courses.

While hypotheses H3, H5, and H7 assumed differences in self-efficacy, attitude toward technology, and parental support between junior and high-school students, our study results indicate that there were no significant differences between students' age and these variables. An explanation may be found in the fact that previous studies primarily focused on university students [12], [27], whereas our study, specifically targeted junior and high-school students. This distinction in the study population suggests that age-related differences may become more apparent as students progress through various stages of their academic journey rather than during the initial phases of their learning.

Furthermore, the sudden transition to online learning brought about by the pandemic might have mitigated potential age-related differences. The challenges posed by remote learning and the reliance on technology affected students of all ages, regardless of whether they were in junior or high-school. This common experience and the need to adapt to online learning might have overshadowed potential age-related variations in self-efficacy, attitude toward technology, and parental support.

In addition to gender and age differences, the current research examined correlations between students' personality traits, self-efficacy, attitude toward technology, parental support and their online learning preferences.

H2 assumed correlations between students' personality traits and their online learning preferences. It is interesting to note that our study did not find significant correlations between personality traits and online learning preferences. This finding differs from previous research, which suggests that personality traits, such as extraversion and neuroticism, play a significant role in students' online learning preferences [8]. We assume that the sudden shift to online learning as a result of school closures may have created a unique learning environment where students' online learning preferences were shaped more by external factors, such as social distance, rather than their individual personality traits. The disruption caused by the pandemic and the urgent need for remote learning may have overshadowed the typical influence of personality traits on learning preferences.

In contrast to previous studies [3], [7], which underscored the crucial role of self-efficacy in the successful adoption and acceptance of online learning during the pandemic, we found no correlation between students' self-efficacy and online learning preference (H4). However, we found a significant positive and strong correlation between attitude toward technology and online learning preference (H6). This finding is supported by Malkawi et al. [40], suggesting that students tend to have a more positive online experience, attitude, and satisfaction if they were familiar with online practices before the pandemic. We hypothesized that the abrupt shift to online learning at the beginning of the pandemic may have initially raised concerns about the new technology. However, students who had prior experience with online practices displayed a more favorable attitude toward technology, which in turn, led to a preference for online learning. The current study reveals a significant contribution of attitude towards technology to their online learning preference, accounting for 14% of the explained variance of online learning preference. Furthermore, the significant correlation between online learning preference and parental support (H8) is not surprising considering the unique circumstances presented by the pandemic. This result is in line with Lawrence and Fakuade's [37] study, which also investigated the impact of parental support on adolescents' online learning commitment and satisfaction during school suspension, revealing that students with parental support had a greater level of commitment and satisfaction than those without.

Learning outcomes are the most popular measure for evaluating learning effectiveness. Similar to Soffer and Nachmias [51], our findings indicate that students who perceived their achievements as high also preferred online learning. Therefore, it can be concluded that online learning has the potential to be an effective method of instruction for students who are capable of meeting their learning objectives through this mode.

In the realm of online instruction, it becomes imperative to empower students by helping them recognize their prior abilities and knowledge and building their confidence in their capabilities. Hence, educators in online learning settings should prioritize creating a personalized online environment, tailor learning materials accordingly, and offer support and encouragement. Furthermore, offering options, delivering constructive feedback, and enhancing students' online experience within an educational context can also prove advantageous.

6. CONCLUSION AND IMPLICATIONS

Our research explored students' online learning preferences during this crisis, considering a range of variables including age, gender, and personal characteristics. Within our findings, gender emerged as the primary factor regarding personality traits, self-efficacy, attitude toward technology, and perceived achievements. Importantly, age did not yield any significant differences regarding these variables. Consequently, when educators design online learning curricula, it is recommended to consider gender differences, especially in times of crisis. Furthermore, both gender and age failed to contribute significantly to the explained variance of students' online learning preferences. Instead, it was students' positive attitude toward technology that played a pivotal role. To enhance online learning preferences, a tailored approach to address students' individual learning needs is crucial. To optimize students' online learning preferences, educators should prioritize cultivating positive attitudes toward technology, which can significantly impact students' learning experiences and outcomes.

7. LIMITATIONS AND RECOMMENDATIONS

The findings of this study should be considered in light of several limitations. The study was conducted only in Israel, and therefore, the generalizability of the findings to other countries may be limited. Secondly, this study was conducted during a real-time crisis, in 2020-2021, and the results may not be generalizable to online learning outside of crisis situations.

The current research was performed during an exceptional period that cannot be replicated. However, it would be valuable to investigate the impact of different modes of instruction (online, hybrid, or face-to-face) on learners' academic achievements and preferences in a post-pandemic world. Such research may help to inform the development of effective teaching strategies and policies to meet the diverse needs of students in different learning environments. We believe that this study offers valuable insights into the factors that are linked with online learning. Consequently, our findings illuminate the importance of considering personal differences when designing personalized online learning experiences, thereby enabling more effective and tailored educational approaches. By recognizing the diverse needs and preferences of students, educators can proactively address challenges and provide targeted support, ultimately enhancing the quality of online education in times of crisis and beyond.

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