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# Who Needs Zoom? Female Arab Students' Perceptions of Face-to-Face Learning and Learning on Zoom

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**Abstract:** Zoom has been adopted by Al-Qasemi Academic College of Education as an alternative to face-to-face teaching/learning since the outset of COVID-19. The study explores female students' perceptions of social presence, social interaction, and satisfaction in Zoom learning compared to face-to-face learning, along with the overall factors shaping their perceptions. All 228 participants were female students who learned via Zoom during the pandemic for at least one semester before switching back to face-to-face learning. A mixed-method design was used in the study, which included a questionnaire to learn about students' perceptions and semi-structured interviews to gain in-depth understanding of the factors affecting their attitudes. The results indicate that students' perceptions of social presence, social interaction, and satisfaction tended to be higher for face-to-face learning than Zoom learning. They also suggest a significant relationship between the students' satisfaction and their perceptions of social presence and interaction. Furthermore, the students' degrees and majors seem to have had a significant bearing on their level of satisfaction with Zoom learning. Finally, the findings of the thematic analysis of the interviewees' responses show that there were other factors influencing the participants' perceptions. Thus, an informed combination of face-to-face and Zoom learning is encouraged as a sustainable solution to enhance student satisfaction.

**Keywords:** Zoom learning; face-to-face learning; social interaction; social presence; satisfaction



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## 1. Introduction

Over the last three years, COVID-19 has had a profound impact on all aspects of life, especially education [1], where online learning has become the "new normal" [2,3]. Already prior to the pandemic, the use of e-learning platforms was increasing rapidly in higher education, with many universities offering remotely taught courses [4–6]. However, in the throes of the pandemic, distance learning became, at least for a time, virtually the only option for teacher–student communication. Indeed, even after students returned to college campuses, hybrid learning persisted, and many remained dubious about the likelihood of teaching methods reverting entirely to their pre-pandemic formats [7].

It is within this environment that the popular videoconferencing platform Zoom has become virtually ubiquitous in academia as it has allowed the successful transition from face-to-face to online learning [8] with the highest acceptance rate among teachers and students [9]. Ahmad and Siddiqui [10] even indicated that Zoom is the best online learning platform. Its success has to do in part with its ease-of-use [11], integration of features such as annotation tools, polls, breakout rooms, and video and screen sharing [12], and above all, the fact that it provides students with an experience which simulates, or at least approximates in certain respects, that of a traditional face-to-face classroom.

Wiederhold [12] and Correia et al. [13] note how technologies such as Zoom give people the sense that their lives can proceed almost as usual even in the most unusual of circumstances. Gunawardena and Zittle [14] suggest that the visual medium "makes for greater intimacy, other things being equal, because of its ability to convey nonverbal cues

such as eye contact and smiling" (p. 9). This innovative tool, however, is not problem-free, especially when students and instructors are not adequately prepared for the sudden shift to online learning [2,12,13,15]. Furthermore, excessive use of this virtual communication platform causes computer fatigue [9].

A review of prior research on online education shows that no study hitherto has examined Israeli Arab students' perceptions toward Zoom learning. The current descriptive case study, therefore, aims to address this lacuna in the literature by comparatively investigating female Arab students' perceptions of social presence, social interaction, and satisfaction in face-to-face and Zoom learning. Additionally, it probes multiple factors related to student satisfaction with Zoom learning. Specifically, the study endeavors to answer the following questions:

1. How do female Arab students' perceptions of social presence, social interaction, and satisfaction in face-to-face learning compare with those in online learning via Zoom?
2. How are the demographic variables of academic degree, major, type of employment and degree of religiosity, on the one hand, and students' attitudes toward learning through Zoom, on the other, related?
3. What is the relation between students' perceptions of social presence and social interaction and their satisfaction towards learning on Zoom compared to learning face-to-face?
4. What are the most important factors shaping student perceptions toward Zoom learning?

## 2. Theoretical Framework

In recent years, numerous studies have been conducted on the efficacy of online learning and how it complements regular classroom learning. For example, Bozkurt [16] argued that online learning aims to provide "working solutions for learners who are separated in time and space from facilitators, learners, and learning resources" (p. 497), while Wut and Xu [3] added that online learning aims to find "ways to fulfil learning objectives and outcomes and ensure good teaching quality" (p. 371). Other studies examined factors influencing student satisfaction with face-to-face versus online learning [2,4,5,14,17–20]; among them are social presence and social interaction.

### *2.1. Social Presence*

Social presence has to do with students' sense of belonging [21], of engaging with other "real" persons [22], and being "seen" by fellow students as well as instructors [23]. By Short, Williams, and Christie's [24] definition, it is "the degree of salience of the other person in the interaction and the consequent salience of the interpersonal relationships" (p. 65). Some studies have shown that a strong sense of social presence among students in web-based frameworks can have a positive impact on their attitudes, participation, and overall satisfaction [19,22,25], while others have suggested that it has no meaningful effect [20,26]. Others still have pointed out that students may feel embarrassed about asserting their "social presence", and thus may be reluctant to raise questions or provide feedback to instructors, all of which predictably can have a negative effect on their performance and satisfaction [3,14,27].

### *2.2. Social Interaction*

Social interaction has been defined by Jung et al. [28] as "interaction between learners and instructors that occurs when instructors adopt strategies to promote interpersonal encouragement and integration" (p. 153). Student–instructor communication, moreover, has been found to be fundamentally linked to students' psychosocial health, and as such has long been a focus of scholarly interest [18,29]. So and Brush [30], for example, found that establishing a proper distance encouraged those who did not usually participate in classroom discussions to engage better with their colleagues.

On the other hand, Yanghee and Thayne [31] underscored the connection between learning efficacy, student satisfaction, and enhanced rapport between students and instructors. Sutterlin [32] found that students value meeting and interacting with other students,

and appreciate the experience of interesting class content. Similarly, Swan [29] pointed out that interaction with peers has a significant effect on students' perceived learning and satisfaction.

### *2.3. Student Satisfaction*

So and Brush [30] characterized student satisfaction as "an affective learning outcome indicating the degree of learner reaction to values, quality of learning, and motivation for learning" (p. 323). As such, it relates fundamentally to how students view and evaluate their learning experience, and has been found to be inextricably linked to motivation, quality of learning, determination, and commitment [17]. Alqurashi [17], Baber [33] and Spears [19] maintain that student satisfaction is an essential element for both face-to-face and online course design, program development, and dropout prevention.

Several studies have examined factors related to student satisfaction with face-to-face and online learning [2,19,22,25]. Their findings suggest that social presence and social interaction are primary components influencing student satisfaction [5,14,34,35] as well as the online learning experience [36], alongside course structure, instructors' techno-pedagogical skills [37], and the learning environment [33,34].

Undoubtedly, Zoom, through its features, has not only provided a platform for students to interact online, but might even be as effective as school-based learning [35,38]. Nevertheless, some students remain anxious and reluctant to chat, or speak even, in break-out rooms [39]. Instructors, accordingly, are obliged to adopt innovative ways to encourage social interaction, enhance students' sense of social presence, and reduce distance, not only between themselves and their students, but between students and their peers as well [2,29,36,39].

In view of the above, the study aims to explore undergraduate and graduate female Arab students' perceptions of social presence, social interaction, and satisfaction in face-to-face versus Zoom learning, and the factors influencing their level of satisfaction.

## 3. Materials and Methods

### *3.1. Study Context*

Al-Qasemi Academic College of Education was established in 1989 primarily as an institution for Islamic studies. In 2002, the Council of Higher Education in Israel accredited the college to award the Bachelor of Education degree in different fields, primarily humanities and science. In 2010, Al-Qasemi was granted the right to award the Master of Education degree. All students at the college are Muslim Arabs; about 90% of them female between the ages 18–48. The majority of the graduate students are already employed teachers.

As at other higher education institutions, the use of e-learning platforms was increasing rapidly at Al-Qasemi College well before the pandemic. Indeed, many lecturers had already integrated online lectures, mostly asynchronous ones, into their syllabi. The COVID-19 pandemic, however, forced those involved in the education system to find ways to maximize the effectiveness of the learning experience and adapt to the constantly changing times. In this context, the umbrella term "online-learning" was expanded to encompass models of learning including synchronous tools, such as Zoom.

Zoom became the "new normal", as El-Shami et al. [2] and Wut and Xu [3] have put it. However, while it facilitates mobile distance learning and allows flexible student–teacher communication, the quality of this communication and the inherent limitations of learning remotely from home may render it less effective than in-class, face-to-face communication. Students' perceptions of social presence and social interaction could, as a result, be influenced, and thus affect their satisfaction with Zoom learning.

### *3.2. Study Design*

A mixed-method research design was employed to better explore the problem. In this case, the quantitative component was the Student Perception Questionnaire, administered to learn about perceptions of social presence, social interaction, and satisfaction

among female Arab students at Al-Qasemi Academic College of Education in face-to-face versus Zoom learning, while the qualitative element included open-ended questions used to gain a more in-depth and comprehensive understanding of the factors shaping students' perceptions.

### *3.3. Participants*

The target population was female graduate and undergraduate students at Al-Qasemi Academic College of Education in Baqa al-Gharbiyye, Israel, (n ≈ 400), who had studied for at least one semester on Zoom during the COVID-19 global pandemic before the shift back to a traditional face-to-face format.

### *3.4. Instruments*

#### 3.4.1. Questionnaire

The questionnaire utilized in the study was derived from one previously used by Spears [19] to measure students' perceived levels of social presence, social interaction, collaborative learning, and satisfaction in face-to-face and online courses. The subscales of social presence, social interaction, and satisfaction in Spears' questionnaire were developed by Gunawardena and Zittle [14], Picciano [40] and So and Brush [30], respectively.

The questionnaire was modified by omitting or substituting some words or items to suit the context of the study. The questionnaire was organized into four parts. The first part contained seven questions meant to glean some basic socio-demographic information from the participants. The three other parts, consisting of twenty-three (23) items, were categorized into the following: social presence (9 items), social interaction (6 items), and satisfaction (9 items). The questionnaire used a five-point Likert scale with response options ranging from strongly disagree (1) to strongly agree (5) to answer the twenty-three questions intended to measure the students' perceptions regarding face-to-face and Zoom learning. The questionnaire was then translated into Arabic.

A panel of three experts in the field of psychology from Al-Qasemi College examined the instrument for construct validity. Cronbach's alpha, on the other hand, was calculated on the basis of data obtained from the pilot study (n = 32) to establish reliability. The coefficients were 0.88 for social presence, 0.88 for social interaction, and 0.92 for satisfaction, for both types of learning.

#### 3.4.2. Semi-Structured Interviews

The semi-structured interview is a technique of collecting qualitative data by setting up an interview consisting of open-ended questions that allow the respondents to talk freely about their opinions on a particular subject [41] and to allow the researcher to explore issues raised by the participants. The researchers used semi-structured interviews with the aim of drawing out in-depth information from the participants about the factors and challenges affecting their perceptions.

A structured interview guide was developed based on the questionnaire employed in the study, which mainly revolved around the factors influencing student satisfaction with social presence and social interaction in face-to-face and Zoom learning. Some of the questions included the following: How comfortable did you feel in expressing your opinions while learning on Zoom compared to face-to-face? How do you feel about the quality of interaction you had with the instructor as well as your colleagues while learning on Zoom? How useful was your learning experience on Zoom? What were the main challenges you faced while learning on Zoom?

### *3.5. Data Collection*

An online questionnaire, along with a study information sheet and a consent form, was sent electronically to the expectant students through each department's secretariat. Participants were informed that participation in the study was voluntary and anonymous. Data were collected using a Microsoft Excel spreadsheet. A group of graduate and under-

graduate participants were then contacted, and those who consented were sent a consent form and were then contacted to arrange a time for an interview. Each interview took no longer than fifteen minutes. Permission was sought from each participant to record the interview. Special attention was paid to ensuring the consistency of the interviews and to recording each word clearly and effectively [42].

### *3.6. Data Analysis*

The Microsoft Excel spreadsheet was manually checked, male respondents were excluded and only responses from female students were considered for analysis. To answer the first three questions, SPSS was used. The responses were filtered. Accordingly, an analysis of quantitative statistics, such as frequencies, percentages, means, and standard deviations, and to generate inferential statistics such as through a *t*-test, was conducted. Pearson's correlation coefficient test was subsequently employed to assess the degree to which the variables of social interaction, social presence, and satisfaction might be related. A t-test and Pearson's correlation coefficient were then applied to assess the strength of the association between the variables of academic degree, major, type of employment, religiosity, and student satisfaction. Finally, a multiple regression analysis was used to examine the main variables influencing student satisfaction.

To answer the fourth question, the interviews were transcribed. The responses were read, and a combination of inductive and deductive approaches toward data coding and thematic analysis was applied. The codes and the themes were derived from the content of the collected data. The interrelated codes were then grouped together into themes [43]. Finally, the themes were classified and divided into subthemes.

## 4. Results

### *4.1. The Demographic Characteristics of the Participants*

Table 1 presents the demographic characteristics of the 228 respondents. A total of 155 (68%) of the respondents were undergraduate students and 73 (32%) were graduate students. Of these, 184 (80.7%) were humanities majors and 44 (19.3%) were science majors. In total, 133 (58.3%) of the survey respondents were unemployed and about half of them, 126 (55.3%), were religious.

**Table 1.** Demographic characteristics of participants.

| | | N | % |
|---|---|---|---|
| Academic degree | Undergraduate | 155 | 68 |
| | Graduate | 73 | 32 |
| Major | Humanities | 184 | 80.7 |
| | Science | 44 | 19.3 |
| Employment | Employed (full-time or part-time job) | 95 | 41.7 |
| | Unemployed | 133 | 58.3 |
| Degree of religiosity | Religious | 126 | 55.3 |
| | Not religious | 102 | 44.7 |

### *4.2. Students' Perceptions of Social Presence, Social Interaction, and Satisfaction toward Face-to-Face and Zoom Learning*

Table 2 illustrates that students' perceived levels of social presence (M = 3.75, SD = 0.84), social interaction (M = 3.99, SD = 0.96), and satisfaction (M = 3.99, SD = 0.98) in face-to-face learning were relatively higher than those in Zoom learning (respectively, M = 3.38, SD = 0.82; M = 3.04, SD = 1.04; M = 3.31, SD = 1.02).

### *4.3. The Relationship between the Demographic Variables of Students' Education Level, Major, and Employment Status, and Their Perceptions toward Zoom Learning*

In Table 3, it can be seen that level of education had a significant bearing on students' perceptions of social interaction (t (226) = 2.22, $p < 0.05$) as well as their overall

satisfaction (t (226) = 2.61, $p < 0.05$) with Zoom learning. Indeed, the graduate students' perceptions of social interaction (M = 3.24, SD = 0.95), and satisfaction (M = 3.54, SD = 0.91) were significantly higher than undergraduate students' perceptions of social interaction (M = 2.29, SD = 1.09) and satisfaction (M = 3.18, SD = 1.07).

**Table 2.** Means and standard deviations of students' perceptions of social presence, social interaction, and satisfaction toward face-to-face and Zoom learning.

| | | M | SD |
|---|---|---|---|
| Face-to-face learning | Social presence | 3.75 | 0.84 |
| | Social interaction | 3.99 | 0.96 |
| | Satisfaction | 3.99 | 0.98 |
| Zoom learning | Social presence | 3.38 | 0.82 |
| | Social interaction | 3.04 | 1.04 |
| | Satisfaction | 3.31 | 1.02 |

**Table 3.** The relationship between the demographic variables of students' education level, major, and employment status, and their perceptions toward Zoom learning.

| | | Graduate | Undergraduate | |
|---|---|---|---|---|
| Education | Social presence | 3.33 (0.88) | 3.47 (0.71) | t (226) = 1.20, $p > 0.05$ |
| | Social interaction | 2.92 (1.09) | 3.24 (0.95) | t (226) = 2.22, $p < 0.05$ |
| | Satisfaction | 3.18 (1.07) | 3.54 (0.91) | t (226) = 2.61, $p < 0.05$ |
| | | Humanities | Science | |
| Major | Social presence | 3.46 (0.80) | 3.09 (0.85) | t (226) = 2.73, $p < 0.01$ |
| | Social interaction | 3.15 (1.01) | 2.60 (1.06) | t (226) = 3.26, $p < 0.01$ |
| | Satisfaction | 3.42 (0.98) | 2.89 (1.10) | t (226) = 3.17, $p < 0.01$ |
| | | Unemployed | Employed | |
| Employment | Social presence | 3.27 (0.91) | 3.52 (0.68) | t (226) = 2.25, $p < 0.05$ |
| | Social interaction | 2.92 (1.10) | 3.19 (0.96) | t (226) = 1.96, $p > 0.05$ |
| | Satisfaction | 3.16 (1.07) | 3.49 (0.94) | t (226) = 2.47, $p < 0.05$ |
| | | Not religious | Religious | |
| Degree of religiosity | Social Presence | 3.32 (0.84) | 3.44 (1.06) | t (226) = 1.04, $p > 0.05$ |
| | Social Interaction | 3.00 (1.06) | 3.08 (1.03) | t (226) = 0.61, $p > 0.05$ |
| | Satisfaction | 3.20 (1.05) | 3.41 (1.05) | t (226) = 1.53, $p > 0.05$ |

Likewise, the results suggest that the students' majors had statistically significant effects on the students' perceptions of social presence (t (226) = 2.73, $p < 0.01$), social interaction (t (226) = 3.26, $p < 0.01$), and satisfaction (t (226) = 3.17, $p < 0.01$) in Zoom learning. In this regard, humanities majors were found to have higher perceived levels of social presence (M = 3.46, SD = 0.8), social interaction (M = 3.15, SD = 1.01), and satisfaction (M = 3.42, SD = 0.98) than science majors did.

Similarly, it was found that employed students had statistically higher perceived levels of social presence (t (226) = 2.25, $p < 0.05$) and satisfaction (t (226) = 2.47, $p < 0.05$) in Zoom learning than unemployed students did. No significant statistical differences, however, were apparent between employed and unemployed students regarding their perception of social interaction. Employed students were found to have higher perceived levels of social presence (M = 3.52, SD = 0.68) and satisfaction (M = 3.49, SD = 0.94) than unemployed students did. Finally, the students' level of religiosity, according to the results, seemed to have no impact on their perceived level of social presence, social interaction, or satisfaction in Zoom learning.

### *4.4. The Relation between Female Arab Students' Perceptions of Social Presence and Social Interaction on the Level of Their Satisfaction with Face-to-Face Learning and Learning on Zoom*

Table 4 shows a significant correlation not only between social presence and social interaction, but also between the two former variables and satisfaction in face-to-face learning. Table 4 also indicates that a significant correlation exists between social presence and social interaction, on the one hand, and satisfaction on the other, in Zoom learning. However, the correlation is stronger in face-to-face learning.

**Table 4.** Pearson correlation analysis for study variables in face-to-face learning and learning on Zoom.

| | | 1 | 2 | 3 |
|---|---|---|---|---|
| Face-to-face learning | Social presence | | | |
| | Social interaction | 0.879 ** | | |
| | Satisfaction | 0.789 ** | 0.883 ** | |
| Zoom learning | Social presence | | | |
| | Social interaction | 0.771 ** | | |
| | Satisfaction | 0.783 ** | 0.808 ** | |

** $p < 0.01$.

### *4.5. The Main Factors That Shape Student Perceptions toward Zoom Learning*

To understand the main factors influencing student satisfaction with Zoom learning, a multiple regression analysis of the study variables was applied.

Table 5 shows that 71% of the students' satisfaction level is accounted for by their experience of social presence and social interaction during Zoom learning.

**Table 5.** Multiple regression analysis of the main variables.

| | Satisfaction | |
|---|---|---|
| | **β** | **$\Delta R^2$** |
| Social interaction | 0.71 ** | 0.395 ** |
| Social presence | | 0.503 ** |

** $p < 0.01$.

### *4.6. Thematic Analysis of the Semi-Structured Interviews*

Analysis of the interview answers revealed three main themes: students' perceptions of social presence, students' perceptions of social interaction, and external factors. The first two themes support the quantitative results.

#### 4.6.1. Students' Perceptions of Social Presence

Communication with Lecturers

Though both undergraduate and graduate students preferred face-to-face communication, undergraduate students focused more on its advantages. For example, one undergraduate observed that "While learning via Zoom, many students don't open their cameras, consequently, the instructors can't see their faces to know who understands the material or not". Another opined, "In face-to-face, I can talk to the instructors more easily after class and they can read my body language better". Graduate students, on the other hand, tended toward the opinion that the amount of communication they had with lecturers via Zoom was sufficient. "To me", one noted, "Zoom was like a gift since I was able to easily communicate with instructors and we were given the opportunity to express our opinions". Another graduate student added that "I felt seen—that I had a voice and an existence. I didn't feel that using Zoom negatively affected my abilities or presence".

Forming Impressions about Students

Both undergraduate and graduate students found it difficult to identify or form impressions about other students via Zoom. "Honestly", one student admitted, "it's

difficult to form distinct impressions of students, whether they are introverts or just don't like to communicate. We only see their faces". This, however, tended to leave more of a negative impression on undergraduate students than it did on graduate students. One of the latter even suggested that making friends is not of much importance at this stage.

Instructors' Pedagogical Approach

A number of undergraduate students maintained that instructors tended to use 'lectures' as the main teaching method, which in turn made the classes boring. In this regard, one asserted that "Few instructors gave us the opportunity to express opinions, and divided us into groups to work collaboratively". Another stated that "They rarely ask questions that help facilitate discussions. They also allow little time for questions". Graduate students, on the other hand, were generally less discontented with the instructors' approaches, or even impressed as the following comment reveals: "I felt that the instructors provided an answer to every question as if they wanted to give their maximum in covering all the material. Honestly, instructors surprised me with how active and prepared they were for the Zoom lectures".

#### 4.6.2. Students' Perceptions of Social Interaction

Amount of Social Interaction

A considerable difference was found between undergraduate and graduate students in terms of the perceived amount of student–student and lecturer–student interaction. While undergraduate students lamented the fact that they did not have sufficient opportunities to meet each other or talk with the instructor when they needed them, graduate students were more likely to be satisfied with the existing level of interaction. With regard to this score, one of the undergraduate students complained that "In face-to-face we have the chance to meet before and after class and talk to each other. On Zoom, the class begins when Zoom starts and when Zoom ends, the class ends as well, so we can't talk with each other". In contrast, a graduate student remarked "I've already experienced college life with its social interactions as an undergraduate student and I am not looking for that experience as a graduate student anymore".

Quality of Social Interaction

Undergraduate students were often critical of what they perceived as Zoom's detrimental impact on quality of interaction during class. For example, one commented "The situation is unhelpful and sometimes students talk over each other. Thus, the instructor doesn't hear me. There are technological mishaps all the time too. The internet keeps breaking off, which interrupts the discussions, of course". Graduate students, on the other hand, preferred Zoom to face-to-face classes from this standpoint as well. "In contrast to Zoom", one noted, "in face-to-face classes, there is too much talking and interjecting from some students, which sometimes gets out of the instructors' hands, and affects the progress of the class and our concentration".

These results offered in-depth insights into students' perceptions and supported the findings of the quantitative data which reveal that social presence and social interaction had a significant effect on the students' satisfaction with face-to-face learning and learning on Zoom. Furthermore, they provided additional factors which explained the remaining 29% unaccounted for in Table 5 and had an effect on students' satisfaction.

#### 4.6.3. Other Factors Influencing Students' Perceptions

Instructors' Technological Skills

While undergraduate students expressed dissatisfaction with instructors' technological skills, graduate students were more inclined to the view that their proficiency level was sufficient. In this regard, one undergraduate remarked, "Maybe one or two instructors used breakout rooms, but the rest didn't, which made the lectures very dull". Another added "I remember once that an instructor couldn't solve a technological problem, which clearly

upset him and affected the remainder of the lecture". Conversely, one graduate student noted "So far, I haven't noticed any technological issues that instructors couldn't resolve".

Academic Majors and Course Topics

Only science majors were dissatisfied with Zoom as a learning platform. They complained about the complexity of the materials and the need for lab work and practical application, which is not easily carried out via Zoom. With regard to this issue, one undergraduate science student opined "In courses like psychology and English, it is easy to go back and check the recordings, but in subjects like mathematics and biology, face-to-face learning is much better. Learning via Zoom in such subjects is useless".

Zoom as a Learning Tool

Undergraduate and graduate students alike expressed satisfaction with Zoom features as a learning platform. Using the mute button, for example, helped instructors keep classes quiet and organized. On this subject, one graduate student stated "Unlike face-to-face, on Zoom I felt the instructors had more control over the class and students did not have leeway to go off topic". Students also praised the recording feature. Indeed, a common refrain was "The recordings were the best thing about learning via Zoom". Breakout rooms are an additional feature that enhanced students' satisfaction with Zoom. They unanimously concurred that when an instructor employs breakout rooms, they are able to work together and know each other better.

Employment Status

It was observed that graduate students tended to be more content with using Zoom as a learning platform due to their employment status. "As a full-time teacher", one graduate student shared, "it is much easier for me to learn at home". Another added that she had many responsibilities working five days a week. It was more convenient for her to learn at home while taking care of household chores.

Learning Setting

Time and place also had both positive and negative effects on students' perceptions towards Zoom learning. On the one hand, all of them enjoyed Zoom's benefits from a convenience and time-saving standpoint, stating that they did not have to worry about traffic, arriving on time, or dressing properly as is the case when learning on campus. On the other hand, each had certain reservations about Zoom learning. One undergraduate student, for example, talked about how distracted she felt on Zoom: "Since the lectures were from home, without meaning to, one feels bored and less focused. Besides, the atmosphere at home is not always suitable for learning". Another student, however, held precisely the opposite view: "In our face-to-face meetings, I am completely dissatisfied as the students disturb the class repeatedly".

## 5. Discussion

Zoom is a video telephony platform that facilitates communication with a relatively high level of intimacy, while effectively conveying cues of body language [14]. As such, it has been considered a suitable alternative to face-to-face learning. However, as Weiderhold [12] has observed, it is not without its shortcomings, with all the negative ramifications this holds for student satisfaction. The current study sought to examine female Arab students' perceptions of social presence, social interaction, and satisfaction in face-to-face learning compared to Zoom learning. In congruence with previous studies [2,14,19], the results revealed that participants' perceptions of social presence, social interaction, and satisfaction in face-to-face learning were relatively higher than those in Zoom learning. The present study's findings also indicate that there is a significant correlation between students' perceptions of social presence, social interaction, and satisfaction in both face-to-face and Zoom learning, with the correlation, not unexpectedly, being somewhat stronger in

face-to-face learning. This conforms with the authors of [2,5,19,20], who reveal that the main factors influencing students' satisfaction are their perceptions of social presence and social interaction.

Moreover, corroborating Khalid and Nasir's [25] finding that age is a major contributor to student satisfaction in online courses, the results of the present study demonstrated that students' level of education, a direct correlate of age, affected their perceptions of social interaction, social presence, and overall satisfaction with Zoom learning. Indeed, graduate students' perceptions of social presence, social interaction, and satisfaction were found to be significantly higher than those of undergraduate students.

Undergraduate students consistently expressed a desire to be seen and heard by their instructors and peers, and felt that they were best able to express their opinions and be understood in face-to-face lectures. These findings are in tune with Sutterlin's [32] observation that students tend to appreciate the in-class experience. Wut and Xu [3] have suggested that Zoom lowers students' awareness as well as instructors' attention to them, which in turn limits their social presence. Some participants in the present study also openly expressed dissatisfaction with the amount and quality of social interaction in Zoom learning, thereby confirming [3] findings on this score as well. In reference to in-person learning, one of the undergraduate students reflected "We come to class 4–5 min early, see each other, interact together and say a few words. I like to talk to others in person". Although brief, clearly, this type of experience and interaction is important for students.

The aforementioned findings might be explained by the fact that undergraduate students wish to experience college life in all of its aspects, including the social side. They have a need to form friendships/connections with peers and instructors alike, and to interact with them socially as well as academically. Undoubtedly, face-to-face settings are more conducive to this than virtual ones are. Hence, it comes as no surprise that undergraduates tended to be less satisfied with Zoom as a learning tool.

Interestingly, the same aspects of Zoom learning with which undergraduate students were most disenchanted were viewed precisely in a positive light by graduate students. In congruence with Lowenthal and Snelson [26], graduate participants tended to feel that the amount of social presence and social interaction in Zoom learning was sufficient, and that they were comfortable participating in course discussions, introducing themselves, and conversing with others when needed. Graduate students also expressed relative satisfaction not only with the extent of their social interaction with colleagues and instructors but also with the quality of their instructors' online teaching.

Such findings may be accounted for by the fact that for graduate students, professionalism tends to be a more important aspect of the learning experience than interpersonal communication is. Graduate students, generally speaking, are more mature, confident, and goal-oriented. As such, they are more inclined to feel that the quantity and quality of social interaction and social presence afforded by Zoom are adequate.

In addition to social presence and social interaction, the study revealed that about 29% of the students' satisfaction level could be attributed to other factors such as the instructors' techno-pedagogical skills, academic major, the concept of Zoom as a learning tool, employment status, and the learning setting.

In line with earlier studies [2,3,33,37,39], the present findings show that instructors' technological proficiency is an important determinant in Zoom teaching, and greatly affects students' satisfaction with a given course. Lecturers' lack of training and experience with videoconferencing technologies, laid bare by the rapid shift to online classrooms at the outset of the pandemic, had a negative impact on undergraduate students' satisfaction with Zoom as a learning platform. One undergraduate student even maintained that "issues which arose from technological complications irritated lecturers and it became nearly impossible to learn". On the other hand, graduate students, who are generally more interested in the delivery of material, claimed by and large that their instructors were sufficiently technologically competent.

Likewise, the findings showed that there were significant differences between students according to major. Intriguingly, science students in the present study appeared less satisfied with Zoom learning than their humanities counterparts did, claiming that though they managed to understand biology or chemistry when explained via Zoom, algebra, trigonometry and labs required physical presence. This coincides with the finding of Popovich and Neel [15], who stated that online learning was "more appropriate for some courses than others" (p. 233).

As previous studies show [8–11,38], participants in the current research praised Zoom as a learning platform. The technology's various features, including breakout rooms, polls, screen sharing, chats, recording, mute button and camera, were all found to exert an influence on the students' quality of communication, learning, and consequently their perceptions. One student, for example, opined that the use of breakout rooms during lectures allowed them "to interact with each other when divided into groups and helped alleviate the monotony of boring lectures". Recording was also cited as one of Zoom's most useful functions.

In line with Li and Irby [44], the present findings point to employment status as another factor impacting student perceptions toward Zoom. Whereas unemployed students tended to prefer face-to-face learning, employed students were more inclined to hold a positive view of Zoom as a learning platform. Moreover, the findings support those of So and Brush [30] showing that female employed students enjoy the flexibility of e-learning more than full-time students do. This, of course, ties in with the aforementioned differences between undergraduate and graduate students' needs.

Finally, it was shown here that the learning setting is another factor shaping student perceptions. Although some students expressed a preference for a traditional classroom setting because it better enabled them to focus, interact, and learn, and, as Ramos-Galarza [9] mentioned, complained about computer fatigue, all admitted to enjoying the flexibility of being able to learn at any pace and in any place [44]. Graduate students especially preferred the virtual setting because, as they noted, with all the responsibilities they had, as working mothers, it was easier for them to learn at home. It helped them to stay organized and focused without external disruption.

Overall, the results reveal the differences between undergraduate and graduate female students in terms of their level of satisfaction with Zoom versus face-to-face learning. Furthermore, the in-depth analysis of the interviews provided information about the factors shaping their perspectives.

This study, however, has some limitations. First, it focused exclusively on female Arab students from a single academic institution in Israel. Second, the number of participants was not representative and accordingly does not allow generalization. Further post-pandemic exploration of the topic is needed, along with the inclusion of male students from an array of academic institutions, to gain a broader view of students' perceptions regarding Zoom as a learning platform.

## 6. Conclusions

Zoom is a useful teaching/learning tool. It is, however, neither infallible nor suitable for every type of student. The results of the study suggest that female students' perceptions of social presence, social interaction, and satisfaction in Zoom learning vary to a large extent based on their stage of education. They show further that perceived social presence and social interaction are key factors influencing student satisfaction with face-to-face learning versus Zoom learning. Finally, though the level of religiosity did not appear to have a significant impact on students' perceptions, as the researchers predicted, the findings revealed a significant correlation between several other socio-demographic variables and student satisfaction.

## 7. Practical Implications

The state of emergency around the world reshaped the education system in more ways than one. It highlighted the significance of converting traditional learning methods into blended instruction. To ensure a sustainable and high-quality educational process, the social aspects of and students' satisfaction with the learning experience should be among the main priorities of any educational system. Accordingly, it is recommended that establishments find a healthy balance between online and traditional face-to-face learning, taking into due consideration students' education level as well as content and subject matter, when deciding which courses ought to be offered face-to-face or on Zoom. Likewise, institutions should provide instructors with suitable technological support in order to achieve a higher-quality education process and refurbish their pedagogical toolkit.

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