IMPACT OF SIMULATION TRAINING—COMPARISON BETWEEN FACE-TO-FACE AND ONLINE LEARNING

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ABSTRACT

In recent years, simulations in education and teaching were done within simulation centers. They are a powerful tool for having a particular professional experience in a controlled and safe environment. Since the COVID-19 pandemic began, simulations have been conducted fully online. Therefore, the current study examined the effect of simulation training that is only online regarding its experience and learning as compared to online simulation training after face-to-face training. For this study, 138 students participated in online simulation after face-to-face training, and 299 students participated in online simulation only. Participants were asked to fill out a questionnaire constructed according to the Kirkpatrick model. Findings indicated that about 40% of the participants preferred online simulations and that about 60% of the participants preferred face-to-face simulation. There was no significant difference in learning outcomes for either. The participants' preference for an online workshop was related to the emotional components in the workshop, especially safety and well-being. While there was no effect for having prior preparation for the workshop, participants who participated with an actor gave higher scores in all parameters. The findings attest to the effectiveness of using an online, familiar, simple-to-operate, and relatively inexpensive platform, and allow for informed decisions about its continued use for the benefit of physically remote populations.

Keywords: *simulations, training, online, face to face, COVID-19 pandemic.*

INTRODUCTION

A simulation in teaching and education is a training strategy based on the use of group simulations (McGarr, 2021), as a pedagogical tool for experiencing and practicing various educational real-life experiences using professional actors with pre- and in-service teachers. Simulations are defined by Dotger et al. (2010) as a teaching technique that enables learning from the experience of real-life situations with a live actor "playing" the standard

The management of simulated training (ST) is based on scenarios taken from events in the participants' daily life and is performed in a simulation center (SC). Before ST, the identification and characterization of the needs of the arriving training group are determined. Scenarios are designed according to these needs (e.g., A need to recruit a student for learning; A problem with a parent; Issues between an educator and a parent or between an educator and a colleague; etc.). Each scenario includes a description of the occurrence that is presented to the trainees at the beginning of the workshop. Also included is a possible development of the occurrence (i.e., if the trainee says something then the actor responds in a particular way). This is done for three different scenarios. Each time a different individual is selected to participate. To make various interactions as real as possible, the simulation includes professional actors with a bachelor's

degree in Theatre who have undergone training in coaching and providing feedback to trainees in the simulation. The actors represent the other side of an interaction with the participants during the simulation process. This type of work brings reality into the simulation room and connects it to the theoretical world (Davidovitch et al., 2008; Zhang et al., 2011). The actor who is selected to perform the training receives the scenario in advance, including the possible developments, and then practices it. When the team of trainees arrives, one trainee for each scenario is selected to meet the actor and deal with the planned scenario.

At the end of a simulation between the trainee and the actor, the two fill out a feedback form and discuss the experience with each other for five minutes. At the same time, the participants from the observing group also give feedback on the occurrences in the simulation they watched. At the end of this phase, the trainee returns and joins the meeting. All data are collected and displayed instantly online and, based on the data, the facilitator leads the initial processing of the experiences from the simulation training. This phase includes a dimension of debriefing, peer sharing, and theoretical conceptualization. At the end of the workshop, all participants are asked to fill out a feedback questionnaire about the entire process, and a report is written by the workshop facilitator summarizing the events with an emphasis on possible further work with the group. The report is sent to the leader of the group.

The use of simulations performed in an SC for teacher training has been little researched (Ferguson, 2017) and even less so in the online context forced upon many teacher training institutions around the globe. In the few studies available in the literature (Amador, 2017; Driver et al., 2018; Ely et al., 2018), there is evidence that the use of simulations and the accompanying technology contributes to increasing the self-efficacy of teachers experiencing simulations and improving the relevant interpersonal communication skills. However, during the current COVID-19 pandemic social distancing dictated a state where the regular face-to-face (F2F) simulations were conducted online via virtual meeting platforms. Although it was possible to perform the simulations online while maintaining the standard simulation protocol of F2F simulations, the effect of the online method of performing the simulations on learning from the experience has not been tested.

Many studies (Alashwal, 2020; Mather & Sarkans, 2018; Milz, 2020; Mullen, 2020; Nennig et al., 2020; Ozfidan et al., 2021) explored the standard F2F and the online modes of teaching and learning and found different factors that influence the educational outcomes. Nevertheless, this was not previously investigated enough in the context of teaching simulations. Thus, the current research tried to assess the impact of Online Simulation Training Only (OSO) on experience and learning from it, compared to that of Online Simulation Training after Face-to-face (OSF). The participants in the study were those who took part in online teaching simulations in the college's SC, either OSO or OSF. All participants filled out a questionnaire concerning the effectiveness of the simulation they took part in. The data created in this study help identify factors that contribute to the effectiveness of an online simulation.

LITERATURE REVIEW

In recent years, simulation training has been increasingly used as part of the training and professional development processes in the field of education. Three main types of simulations are in use (Ran & Yosefsberg ben-Yehoshua, 2021): (1) Clinical simulations that combine human inter-personal interactions, (2) Computer-based simulations, and (3) Immersive simulations that include human and digital interactions. Simulation training is aimed at developing the individual's interpersonal communication skills while also affecting the professional level of the team (Dotger, 2013; Ran & Nahri, 2018; Salminen-Tuomaala & Koskela, 2020), enhancing managerial abilities, coping with emergencies, and developing self and professional efficacy. Early studies in the field found that over time ST contributes to the improvement of reflective skills and the development of interpersonal communication skills, as well as the enhancement, in a personal sense, of competence (Kasperski & Crispel, 2022; Levin & Flavian, 2022; Weissblueth & Linder, 2020). ST consists of practice and experience in "laboratory conditions" (Levin & Frey-Landau, 2019) and is an attempt to mimic a complex reality using a model of dynamic experiments. ST is based on working with professional role-playing actors who simulate the "reasonable

other." This approach has been more effective than computer-assisted simulation experiences (such as pilot simulations or decision-making exercises), or using avatars in areas involving people because it reduces accidents and human errors (Kincaid & Westerlund, 2009).

ST is conducted in workshops that address a wide range of educators at different stages of their professional development (Levin & Frey-Landau, 2019). The ST workshop includes several scenarios in which some of the participants practice in front of professional actors, while the rest of the group observes what takes place. After each scenario, the trainee receives emotional feedback regarding the experience from the actor with whom they practiced. In the feedback, the actor shares how they experienced the simulation and what emotions were observed and arose at the time of the interaction and as a result of it. Immediately after meeting with the actor, a reconstruction of the scenario is provided (a re-viewing of the scenario) and a group discussion takes place, allowing the participant to receive reflection and feedback from colleagues and professionals (Eizenhammer et al., 2010). In addition, at the end of each simulation workshop, participants complete written feedback that is used for improvement and learning (Ran & Nahri, 2018).

The COVID-19 pandemic has accelerated changes in learning and teaching and is affecting the methods of teacher training, including how an SC operates. It has been found that the skills the simulation teaches are of great importance, especially nowadays, and it became necessary to adapt the model of operation of the ST to the reality of remote learning. As part of this adjustment, the SC moved to operate on a synchronous digital platform, usually using the ZOOM video conferencing platform. The online ST (OST) process includes the same components as in an F2F ST: There is an orderly opening, then setting the meeting goals, presenting the scenario, training in front of a professional actor, experience analysis, peer dialogue and feedback, and finally conceptualization. The essential difference is performing the entire operation while people are sitting at home in front of a computer and not in a physically shared space next to each other. In an OST there is a reference to the environment in which the group meets and there is a preliminary organization that emphasizes an attempt to avoid unexpected situations, especially technological ones. In addition, there is an assessment that includes a dialogue with the head of the training group to locate and pinpoint the goals of the training, write the scenario, choose a facilitator and actor, make early preparations in front of the participants, and arrange the presentation of the meeting.

At the beginning of the OST workshop, the group meets through the online platform. The workshop facilitator and technician are the first to step in to make sure that the virtual and technical environment works properly. The workshop opens when the facilitator presents the goals of the meeting, the rules of participation, and the scenarios in which participants practice. It is important to note that although there are similar principles between F2F and OST workshops, the main difference is that in F2F one can watch the whole encounter and not just the face of participants in an OST. An online workshop makes it difficult to read body language and identify nonverbal gestures. The participant performing the training in front of the actor remains on the screen, while the other participants switch to darkened screens. After 5–8 minutes when the simulation ends, the trainee and the actor are electronically transferred to a private online breakout room to conduct a personal feedback session. Upon the trainee's return to the virtual plenum, a survey is conducted to create insights and concepts from the simulation.

The ST workshops, both F2F and online, are accompanied by concluding feedback that is requested to be completed by the workshop participants immediately upon conclusion of the session. The feedback questionnaire is structured according to Kirkpatrick's model (Kirkpatrick, 1996). This model is considered one of the oldest and most valued models (Smidt et al., 2009) used to examine workshops' effectiveness (Abdulghani et al., 2014). The model includes four levels: response level (refers to aspects of satisfaction), learning level (refers to what the participant knows), application level (what has changed in behavior; and what can be done with what they have learned), and outcome level (to what extent has the activity contributed to the organization and its goals).

The use of OST in various fields was common even before the recent COVID-19 pandemic, such as in the training of medical professionals, pilots, and educators. It is an effective tool for

learner involvement in a safe and controlled learning environment that enables repetitive practice, reflection, and feedback (Dotger, 2013; McGarr, 2021). Computer-based simulation provides an online learning environment that allows educators to improve pedagogical and communication skills through experience and reflection, similar to F2F simulations. The online environment provides an opportunity for rehearsal without the risk of wasting resources (e.g., budget, time, and people). The online environment also helps educators build and reinforce data-based practices, that are rooted in constructive and authentic teaching experiences (Landon-Hays et al., 2020). Regarding computer-based simulations in the field of education, it was found that these are usually experimental programs, unlike in the field of medicine (Ran & Dalal, 2020). A model described at Syracuse University found that the contribution of OST with professional actors is similar to that of F2F simulations (Thompson et al., 2019). Various online learning environments that offer simulation experiences have also been described in a study conducted in Greece (Stavroulia et al., 2016). The study examined the emotional experience of teaching trainees following their experience in the "simSchool" learning environment. The findings of this study were that participants who trained online exhibited an emotional range that contributed to emotional involvement and encouraged them to respond during the experience. The computer simulation environment evoked a sense of presence among the participants, which led to the creation of emotions similar to realistic situations in the classroom.

Because many aspects of teaching and education moved from F2F to online platforms due to physical distancing as a consequence of the COVID-19 lockdowns, and in light of the possibilities of OST, it is important to investigate the differences between the two modes of ST, F2F and OST.

Research Aims and Hypothesis

The present study aimed to examine the impact of ST in Online Simulation Only (OSO) condition on the Experience, Learning, and Application aspects as compared to Online Simulation after F2F (OSF). We hypothesized that: (1) When going through OSO, the Experience aspect would be less intense than that of OSF, and (2) Consequently, its Learning aspect will decrease, and following that, (3) The Application aspect would be more limited. Finding no differences between OSO and OSF served as the null hypothesis.

METHODOLOGY

Participants

Four hundred thirty-seven teachers participated in the study, of which 138 participated in the OSF workshop, while 299 participated in the OSO workshop. All the teachers went through the simulation workshops as part of their professional development. Of these, 143 did not answer all the questions in the questionnaire. In the two groups, women constituted the majority of OSO (84%) and OSF (87%).

Research Instruments

To compare the training results of OSO and OSF groups, we used a qualitative feedback survey and a quantitative feedback questionnaire specifically developed for the current study as an integral part of the workshop summary process. The qualitative survey was conducted after each simulation and included the participants' observation of themselves, reflective discussion, self-feedback, peer feedback, and feedback from the actor. Qualitative data from the survey served to complement the quantitative data from the questionnaire.

The quantitative questionnaire was constructed based on Kirkpatrick's instructional assessment concept (1959) and included the three levels of assessment relating to the individual (experience, learning, and application). The questionnaire included 14 questions: three background questions for general variables (i.e., gender, age), nine closed questions (three dichotomous questions, two questions with a 1–4 Likert-type scale, three elective questions for nominal variables, and one question with a 1–5 Likert-type scale), and two open-ended questions.

The mode of the simulation (OSO/OSF) was the independent variable. As intermediate variables, we examined background characteristics (Gender and Age), workshop preparation components (including Passive or Active preparation components), and parameters that take place in the workshop itself. The latter included parameters related to the participant being Active or Passive, verbal references related to the content of the ST, the Quality of the scenario, the emotional components in the workshop (Communication,

Table 1. Research Variables. Categories, Operationalization, and Title of the Question Taken from.

Type	Category	Operationalization	Content
Independent Variable	*Workshop mode*	Questionnaire response	OSF / OSO
Intermediate Variables	*Background*	Questionnaire response	Age
			Gender
	Preparation	Questionnaire response	Active / Passive
	Workshop Participation Components	Grouped by similar content in possible responses in the questionnaire	Active process: · Acting · Debriefing · Colleague discussion Passive process: · Observing · Abstracting · Involved in choosing the scenario
		Questionnaire response	Content: · Quality of Scenario
		Questionnaire responses	Emotional aspects: · Communications · Involvement · Safety · General feeling
		Questionnaire responses	Results related: · Experience · Insights · Attained workshop objectives
		Questionnaire responses	Activity Environment: · Technology · Efficiency · Comfort
		Questionnaire responses	Climate: · Professionalism · Safety
Dependent Variables	*Experience*	Questionnaire response	· Willing to participate in additional simulations
	Learning	Index based on Cronbach's Alpha	· New knowledge · Refining insights · Formulating positions
	Application	Index based on Cronbach's Alpha	· Applicable tool · Ability to handle complexities · Extending repertoire · Mastering skills
	Combined Evaluation	Index based on Cronbach's Alpha	· Joined all components of dependent variables

Involvement, Safety, General Feeling), results-related components (Experience, Insights, and Attained Workshop Objectives), the activity environment (Technology, Efficiency, and Comfort) and climate-related components (Professionalism and Safety). These were based on direct questions answered by the participants.

The results of the ST were dependent variables and were categorized and combined to form three indexes according to the three dimensions of Kirkpatrick relating to the individual (Experience, Learning, and Application) and their joined responses as a general evaluation of the workshop. The Experience dimension included the element of desire to participate in additional simulations again; the Learning dimension included the components of position formation, and tools that can be used right away as is (Cronbach's Alpha = 0.80); and the Application dimension included components such as the ability to handle complexities, repertoire expansion, and skill control (Cronbach's Alpha = 0.855). The Learning and Application dimensions were constructed as indexes by the average of their components. A Combined Evaluation was constructed as an index by combining the averages of all variables used in the Experience, Learning, and Application (Cronbach's Alpha = 0.886). The variables in the study may be seen in Table 1.

The questionnaire was initially constructed and given in ten workshops where the facilitators refined the questionnaire. Following this, a final version of the questionnaire was prepared. The questionnaire was used in 80 F2F workshops before moving to online workshops. With the transition to online workshops, three background questions for the online situation were added to the questionnaire.

Research Process

The ST workshops normally were F2F. Due to COVID-19, the workshops took place online using Zoom. תילגנאל סוגרת. The workshop included a process of identifying needs that resulted in scenarios relevant for learning and experimentation. As part of the simulation programs, professional actors were trained to play different characters to produce an authentic meeting with teachers/students. During the simulation, the actors played a scenario relevant to the participants' content world (Eizenhammer et al., 2010). Each workshop included three simulations.

The study was conducted in full compliance with the standards of the Helsinki Declaration. Before completing the questionnaire at the end of the online workshops, each participant signed an informed consent form to participate in the study. The questionnaires were filled out anonymously. The study received the approval of the Institutional Ethics Committee (4/2021-11). Data collection was conducted over seven months and during this period the workshops were held online.

Data Analysis

The data from the questionnaires were first compiled and processed in Excel to debug, cross-reference, and complete them. The processed data were imported into SPSS software version 23 and analyzed therein. Since the study was carried on with descriptive and explorative purposes, the statistical analyses included descriptive statistics, Cronbach's Alpha to construct variable indexes, multiple linear regression analysis, and independent *t*-tests. The alpha level was set to 0.05.

FINDINGS

Preference for Workshop Type

To the question of whether the participants' preferred F2F or online simulation training workshop, no significant difference was found between the OSO group and the OSF trainees ($t(225) = 0.04$, $p = 0.968$). For those who experienced OSF, 37.8% of the participants thought that OSO was more effective. This was almost the same as the responses of the OSO group (38%). We found that some of the respondents marked the choice of the online workshop as preferred, but in the literal explanation they stated that for them there was no difference between the two workshops and that they were surprised by the fact that there was no difference:

> *Surprisingly there was almost no difference. The online simulation was very good. I chose online but I think the experience was similar. For me, they both contributed equally, and I even marvelled at the fact that it was as successful as I had experienced in the past. I think it's the same.*

Effect of the Type of Workshop on Its Outcome

Comparing the workshops' outcomes between trainees who experienced OSF and trainees who experienced OSO, we found that the data in the OSF group of trainees were higher in all

parameters. However, in only two dimensions, Learning and Application, were significant differences found in favor of the OSF group vis-à-vis the OSO group. In the Learning dimension, the differences were ($t(435) = -2.503$, $p < 0.05$) in the component of Formulating Position, where trainees in OSF reported higher on formulating a position for the content matter (M = 4.17, SD = 0.84) than the OSO trainees (M = 3.95, SD = 0.9).

In the Application dimension, the component of Ability to Handle Complexities was found ($t(453) = -2.026$, $p = 0.043$) to be higher in the OSF trainees than those of the OSO trainees (M = 3.99, SD = 0.94, and M = 3.8, SD = 0.95 respectively). This was seen also in the component of Mastering Skills ($t(435) = -2.472$, $p = 0.014$) where OSF trainees reported higher (M = 4.11, SD = 0.79) than OSO trainees (M = 3.9, SD = 0.85). The Combined Evaluation of the workshop was also found to be significantly higher ($t(435) = -2.251$, $p = 0.025$) among OSF trainees (M = 4.15, SD = 0.64) compared to the OSO trainees (M = 3.99. SD = 0.71).

The most prominent but not statistically significant ($t(435) = -1.845$, $p = 0.07$) products that the trainees in both groups testified to were Learning, in the component of Refining Insights (M = 4.28, SD = 0.79 in the OSO group compared with M = 4.42, SD = 0.66 in the OSF group) and Experience, in the component of Willing to Participate in Additional Simulations ($t(435) = -0.281$, $p = 0.779$) was high in both groups (M = 4.0, SD = 1.15 vs. M = 4.03, SD = 1.05 respectively).

Comparing Training with an Actor and Just Observing

A significant difference was found ($t(435) = -2.135$, $p = 0.03$) in the personal Feeling of the participants in the workshop between those who actively simulated the scenario with an actor (M = 3.74, SD = 0.53) and those who passively observed (M = 3.56, SD = 0.6).

We also found that the trainees who only observed the simulation rather than acted in it reported significantly more ($t(104) = 2.805$, $p = 0.006$) that they received passive preparation (M = 0.95, SD = 0.22) compared to those who simulated a role in front of the actor (M = 0.83, SD = 0.38). They also reported significantly less ($t(103) = -8.082$, $p = 0.000$) that they received active preparation (M = 0.09, SD = 0.29) than those who simulated a role in the scenario with the actor (M = 0.54, SD = 0.5).

Regarding the training outcomes, the comparison between the experience of training with an actor to when observed only yielded higher results in favor of those who trained with an actor (M = 4.24, SD = 1.01 vs. M = 3.95, SD = 1.14 in Experience; M = 4.40, SD = 0.68 vs. M = 4.06, SD = 0.72 in Learning; and M = 4.23, SD = 0.72 vs. M = 3.91, SD = 0.76 in Application Outcomes, respectively). All were found statistically significant ($t(435) = -2.175$, $p = 0.000$; $t(435) = -3.989$, $p = 0.000$; and $t(435) = -3.622$, $p = 0.000$, respectively).

Furthermore, in the Combined Evaluation of the workshop, we found that the participants who trained with an actor rated the workshop statistically, significantly higher ($t(435) = -4.167$, $p = 0.000$) than those who observed the scenario (M = 4.30, SD = 0.64 vs. M = 3.97, SD = 0.68, respectively).

Regarding the important parameters of the workshop, specifically Observing, 71.8% of those who participated as observers only indicated it as important versus 50.6% of those who trained with an actor. This was found to be statistically different ($t(126) = 3.636$, $p = 0.000$). Regarding the active component of Acting, 61.8% of those who trained with an actor indicated it was important versus 15.5% for those who participated as observers only. This was found to be statistically different ($t(114) = -8.366$, $p = 0.000$).

Important Parameters for Workshop Quality

The parameters examined in this category were related to Passive components (the process dimension) that took place in the workshop and on which the participants had no influence, such as the conceptualization process, the accuracy of the chosen scenario for training, and observation of simulation and the technology used. The Active components in the process included those on which a participant had an influence (simulation experience, the research process, and the peer discourse).

We found that in the process of evaluating the Passive components, the trainees in the OSO group evaluated them higher and statistically significant ($t(239) = 1.974$, $p = 0.05$) than their counterpart OSF group (M = 0.8, SD = 0.4 compared to M = 0.71, SD = 0.46).

In the Results Related component (experience of the participants, the insights created by the individuals), verbal references to emotional components in the workshop, to the activity environment,

and training content were also examined.

From the verbal answers that addressed the preference for the type of simulation, three main reasons arose for the choice: issues related to (a) the Emotional Aspects of the workshop, (b) the Activity Environment, and (c) the Workshop Content. Under Emotional Aspects in the workshop, specifically in the safety component, statistically significant differences were found ($t(340) = 2.181$, $p = 0.03$) in the sense of safety, which was higher in the OSF group ($M = 0.15$, $SD = 0.35$ vs. $M = 0.08$, $SD = 0.27$). A possible explanation for this is that the online dimension allowed greater ease for people with characteristics like stress and shyness to express themselves:

> *Because I was less ashamed and more open, I felt that I was expressing myself more than in the simulation when I was face-to-face. That way, I experienced more and learned more.*

> *I'm very shy. I'm stressed by the fact that the simulation is happening in front of everyone.*

> *Because it's less stressful, you don't see everyone's reactions during the simulation, and it allows you to stay focused.*

Concerning the concept of Involvement, which was included in the Emotional Aspects of training, we found reasons related to the experience that did not exist before, i.e., a participant who in a F2F workshop would have observed only, in the online workshop experienced with the actor:

> *I participated in the simulation at the center, but I did not take part except as a spectator, and today I experienced it as an active participant online and it was much more meaningful. ... in addition, learning is much better when trying to cope than if only looking from the side.*

> *The online simulation contributed more to me because I experimented with it. In the other simulations that took place in the college the previous semester, I just observed. I also contributed a lot from the viewing, but when we do something ourselves it teaches even more in my opinion.*

Being a Participant Versus a Spectator Makes a Significant Difference

We found that the reasons under the Activity Environment of the workshop referred to the participants' ability to focus and concentrate on the content of the discourse and not on its form without distractions that took place in the discourse:

> *An online simulation session allows me to better concentrate on resolving conflicts without getting into unrelated elements. … dealing only with the caregiver and patient with no background, body movements, or faces, helped me to listen better to the text of the conversation.*

More Concentration and Less Background Interference

The component of Workshop Content referred to the accuracy of the scenario and the simulation of reality. Participants found that the actor's ability to simulate the event so it was similar to reality contributed to the quality of the training:

> *The actor was great and played the role of the kid in a great way. Because the actor played the role of the child so well, I could deal with the situation in the simulation in the closest way to reality.*

Factors Assisting in Predicting the Products of the Workshop

We computed a regression analysis to determine whether the factors of Gender, Age, Acting in the Simulation, General Feeling, Group Experience, Attained Workshop Objectives, and Participation in OSF, assisted in predicting the Combined Evaluation outcome of the workshop in the sample of 437 participants ($N = 437$). The equation for the regression line was the level of Combined Evaluation = 0.662 + .137*Gender –0.003*Age + 0.267*Acting + 0.345*General Feeling + 0.307*Group Experience + 0.29*Attained Workshop Objectives + 0.08*OSF. $R^2 = 0.389$ indicates that 38.9% of the variance in the Combined Evaluation of Experience, Learning, and Application as a product of the simulation workshop is explained by these factors. To clarify, the results of ANOVA were significant at $F(7, 228) = 20.776$, $p = 0.000$. Furthermore, we found that the variables that significantly predicted Combined Evaluation were Acting ($B = 0.627$, $p = 0.002$),

General Feeling (B = 0.345, p = 0.000), Group Experience (B = 0.307, p = 0.000), and Attained Workshop Objectives (B = 0.290, p = 0.000). Variables that we found not to significantly predict Combined Evaluation were Gender (B = 0.137, p = 0.149), Age (B = −0.003, p = 0.125), and OSF (B = 0.08, p = 0.255).

DISCUSSION

Several issues need to be discussed. The first is that about 60% of the participants preferred F2F simulation. A similar figure was also found among those who practiced only online and did not experience F2F. Also, the results from the regression analysis reinforce the conclusion that, although some participants attach importance to various aspects of F2F simulations and others to the online, in general, no significant differences were found between the two, i.e., there is value to an OST workshop as well. The difference found between the groups in the *t*-tests disappears because the regression tests for a "clean" effect of the independent variables on the dependent variable. The leading variables in their effect on the dependent variable were the experiential component in the simulation workshop, which presumably also exists in the OST workshop. Indeed, in this variable, no significant differences were found in the comparison between the means of the two groups.

This finding is also supported by other research in which it was found that there were no significant differences in learning outcomes between F2F learning and online learning (Chingos et al., 2017). In this study, it was found that the participants' preference for an online workshop is related to the dimension of the emotional components in the workshop, and especially to the safety component. A preference was also found related to the dimension of the activity environment in the component of comfort and concentration in the activity. No references were found to preferences that were related to the component of ease of use, e.g., learning from home, distance from college, and the like, as found in other studies (Mather & Sarkans, 2018; Renes, 2015). We assess that no references were found to the ease-of-use component in this study because this is a one-time workshop and not an ongoing learning process. Assuming that this was an ongoing process, it is possible that these components would also be reflected.

The second issue is that the main contribution of the simulation is in the components of experience and learning, while in the OSF experience the contribution is higher. It is not possible to determine whether this is a second experience or whether it can be attributed to the online workshop itself. Despite this, as found in a study by Robbins et al. (2019), their data indicated that trainees who participated in the simulation twice improved their performance and marked repetitiveness and experience as essential for improving skills.

The third issue is that the feeling of well-being was found to be higher in an online environment with the explanation that computer-mediated remote training allows a greater sense of safety because the trainee is sitting in a physical place detached from the occurrence and does not experience some of the physical experiences in the simulation room in a F2F meeting. It is interesting to note that although we expected that the safety dimension would be stronger among those who had already been exposed and experienced in the simulation, this dimension was lower among the OSF training group.

A fourth issue is that no effect was found for Prior Preparation. There is very little information in the literature regarding prior preparation and its effect on learning in simulation training. However, variability in the content of preparation has been found and it seems that the concept is not clear enough. Dekel (2020) also mentioned that the concept of Preparation is not clear enough and includes various actions, some of which are technical (such as sending an information sheet, notifying about the details of the meeting, and sending the scenario in advance for the trainees) and some of them are significant (sharing in thinking about the type of scenario, the goals of the experience, etc.). A wide range of ways of conveying the preparation was also mentioned, e.g., online, via text message, or in a F2F meeting.

The fifth issue is that the participants who participated with an actor gave higher scores in all parameters. We found that there is a significant difference between those participants and the ones who watched the training, although we noted that watching the experience also contributed to the trainees' learning and that indirect learning (which does not require demonstration through experience) is similar to direct learning (Robbins et al., 2019).

LIMITATION

Although the current study and its findings are one of a few that investigated the differences between online and F2F approaches in teaching simulations, it has a major limitation. The study compared two online experiences rather than F2F only versus online only.

CONCLUSION

In conclusion, the present study had an explorative intent, and its main contribution is in drawing attention to the issues of the online experience of simulation training versus face-to-face while documenting the use of a familiar, simple-to-operate, and relatively inexpensive platform. The findings of the study show the effectiveness of the use of this platform and make it possible to make informed decisions regarding the platform's continued use for the benefit of physically distanced populations. Further and more profound research and analysis of the various intermediate factors involved in the successful effect of online and face-to-face simulations on learning is required.

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