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The coronavirus disease (COVID-19) pandemic necessitated a rapid transition to online instruction, yet data as to the effectiveness of online training for doctoral psychology trainees are sparse. We surveyed clinical psychology students ($N = 152$) regarding their experiences of synchronous online education during the pandemic, with a focus upon factors related to perceived quality, effectiveness, and future preferences. Many students transitioned to both online didactic learning and to online supervision and clinical service delivery. Behavioral engagement with online instruction was associated with students' perceptions of the quality and effectiveness of their online education experience, and these were related to their future preferences. A more positive transition to online clinical service delivery was associated with favorable perceptions of the effectiveness of online education. Findings suggest that students' behavioral engagement in online education plays a pivotal role in the perceived quality of their online educational experience. Findings have implications for students and instructors that may augment online education.

Keywords: clinical psychology graduate training, distance education, online education, educational quality, virtual classrooms

The coronavirus disease (COVID-19) pandemic prompted an abrupt transition from in-person to online graduate education. Although a substantive body of research exists regarding different types of online education (Singh & Thurman, 2019) and how it differs from in-person education (Nguyen, 2015), little is known about clinical psychology students' experiences of online didactic and clinical education during doctoral training. The purpose of the present study was to evaluate factors related to the perceived quality and effectiveness of online doctoral clinical psychology education during the pandemic, as well as psychology graduate students' preferences for online training in the future.

Online education can take various forms (e.g., interactive or static, asynchronous or synchronous). For the purposes of this study, we will use Singh and Thurman's (2019) definition of online education as learning experienced through the internet via computers (or tablets) in a synchronous classroom where students interact with instructors and other students and are not dependent on their physical location for participating in this online learning experience. This type of synchronous online education via videoconferencing has been extensively researched (Martin et al., 2017).

Outside of the pandemic context, students tend to perceive online education generally as at least as effective as the traditional in-person format

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(Nguyen, 2015), but less effective when a graduate course exclusively involves online education (e.g., Evans, 2013). Within a school psychology graduate training program, the majority of students perceived online courses to be less beneficial than their in-person courses, and only 34% indicated that they would like to take more exclusively online courses in the future. Notably, those with previous experience with online classes were more likely to view these courses in a more positive light (Viola et al., 2019).

The model in our study draws on distance learning models developed by Rourke and Anderson (2002), whose "community of inquiry" model identifies three core elements of online education. The elements reflect three interdependent aspects of online presence which work together to support online education (Lehman & Conceição, 2010): (a) interaction with course content (cognitive presence), (b) interaction with instructors (teaching presence), and (c) interaction with fellow students (social presence). A large body of research has supported the importance of the first two factors and linked students' engagement in learning in both traditional (Shelton et al., 2017) and online education environments (Arbaugh, 2002), including synchronous and asynchronous adult learning (Bagriacik Yilmaz & Banyard, 2020; Evans, 2013), with their subsequent educational performance. We therefore reasoned that, after accounting for their prior experiences of online instruction and contextual elements, students' reports of behavioral engagement in online courses would be a key driver of their perceptions of the quality and effectiveness of online instruction, as well as their future interest in such instruction.

Students' level of engagement is integral to effective online instruction and traditionally includes pre- and postcourse assessments as to students' preparation for online instruction, technical difficulties, and satisfaction (Henckell, 2007; Mozzani-Miller, 2006). Those who deliver synchronous online instruction, including faculty in our program, often employ techniques to maximize students' engagement with the content, instructor, and other students as described by the community of inquiry model above. Instructors, for example, worked to engage students by encouraging students to have videos "on" and to cohost and share screens when appropriate, facilitating breaks during lectures, as well as by leveraging the technical features of the online platform that encourage interaction, such as breakout rooms, the use of whiteboards, and survey polls. Indeed, these types of interaction between instructors and the students have shown to be the most important predictor of online educational outcomes (here measured as enrollment trends, student retention, and engagement) in a systematic review by Pardino et al. (2018).

Recent reports and studies suggest guidelines for providing online education to graduate students in response to COVID-19 (Huang et al., 2020; Lamming & Carter, 2020), comment upon the experiences of instructors in graduate schools providing online courses (Howitz et al., 2020; Lowenthal et al., 2020; Ross & DiSalvo, 2020), or describe novel training for instructors providing online graduate education during the pandemic (Lipscomb & Tate, 2020). However, relatively little is known about doctoral clinical psychology students' experiences regarding online education in general and during the pandemic. This is surprising given their unique multifaceted experiences with online training, in didactic classes, supervision, and clinical practice with their clients. Although there are barriers to remote clinical training (Viola et al., 2019), tele mental health training and service delivery likely will be part of clinical psychology training into the foreseeable future. The lessons learned from doctoral students' transition to online didactic and clinical training can therefore inform educators who seek to infuse such training into future coursework or clinical practicums.

Aims

In the present study, we aimed to examine the perceived quality and effectiveness of synchronous online instruction during the COVID-19 pandemic, as well as preferences to learn online in the future among doctoral psychology students at a large urban graduate school of psychology. The educational context of clinical psychology doctoral training during the COVID crisis was unique in that the subgroup of trainees engaged in practicum-based training (McCutcheon et al., 2020) offered tele mental health to clients stressed by the pandemic while experiencing some of the same personal and societal challenges themselves.

In framing our hypotheses, given the lack of prior knowledge of the exact nature of the

interactions of these variables, we considered several alternative models (Frazier et al., 2004). Our analyses tested whether hypothesized variables in these models exerted independent effects on outcomes as well as whether interaction effects with third variables (moderator or mediator variables) affected these relationships. A moderator variable affects the strength of the relationship of two other variables, whereas a mediator variable suggests the mechanism that accounts for this relationship. We aimed to address the following three research questions: (a) Which student experiences before and during the transition to online education predict their perceived quality of the received online education during COVID? We expected students' previous experience with online education, their experience of the transition to online education itself, their relative level of engagement during classes, as well as perceived instructors' support to have a positive impact on their perception of the quality and effectiveness of online education. We further hypothesized a mediating role for behavioral engagement, that is, students' relative ability to be present and engaged in online classes, in explaining the relationship between the transition experience and the perceived quality and effectiveness of online education; (b) Do experiences before and during the transition to online education, as well as students' reports of perceived educational quality and effectiveness predict their preference for using online education in the future? Extrapolating from the existing theoretical frameworks (Rourke & Anderson, 2002), we expected that students' behavioral engagement and perceived quality and effectiveness of online education would be related to their future preference for online education. We thus tested each predictor in mediation models, along with instructor support as a hypothesized moderator. To address the unique nature of clinical graduate training, we included a third research question; (b) How do students' online clinical practicum training experiences during the COVID-19 pandemic impact their reports of perceived educational quality and future preferences for using online education? Given the lack of literature on the influence of online clinical practicum experiences per se, our examination of the impact of clinical training experiences (i.e., providing therapy and receiving supervision) on students' perceptions was exploratory.

Method

Participants

The graduate school consists of three doctoral programs: the Clinical Psychology Health Emphasis PhD Program, the School–Clinical Child Psychology PsyD Program, and the Clinical Psychology PsyD Program. All programs are full time and in person, but during the onset of the pandemic (March through May 2020), all didactic and practicum-based courses (between 4 and 27 students per class) were provided synchronously online via videoconferencing (i.e., Zoom). In addition to online coursework, many students also transitioned to an online clinical supervision format with their supervisors and an online therapy format with their clients. Within the context of this rapid transition to online education, no programmatic changes (e.g., curriculum, course requirements, class size) were made with regard to training.

This pivot to online didactic and clinical training required faculty and students to rapidly learn the technical skills required to master online platforms, and teach and learn clinical skills to effectively deliver tele mental health interventions, including both practical considerations (e.g., the client's familiarity with specific technologies) as well as clinical concerns (e.g., the need to assess the remote environment in which the client is receiving services, maintenance of engagement and rapport, ethical and cultural considerations) in this context, see American Psychological Association (2013) "Guidelines for the practice of telepsychology." In addition to instrumental support, training directors and faculty engaged students in processing the emotional impact of the pandemic and its mental health and societal consequences. The subgroup of students who provided tele mental health received both instrumental support, in the form of direct supervisory guidance, readings regarding tele mental health, and emotional support for their efforts during this difficult transition to tele mental health.

For this cross-sectional survey study, students from all three doctoral programs were recruited via an email list 9 weeks after the transition to online education (early May 2020). After providing consent, students were directed to an online survey that included questions about experiences with different aspects of their online education during the pandemic. The study was approved by Yeshiva University's Institutional Review Board.

Nine responses were removed from the data set because these students completed less than 10% of the survey. Data from $N = 152$ participants were analyzed.

Measures

The survey included items sampling students' demographic characteristics, including gender, age, living situation, COVID-related stressors, and their previous online educational and therapy experiences. Key academic online education variables assessed students' experience of online education during COVID-19, experience of support from instructors during the transition, and future preference for online education (see Table 1 for the individual items and response categories). To evaluate participants' online educational experiences, we created two composite scores:

1. "Students' behavioral engagement," consisting of the sum of four subitems of "Compared to in-person classes, in virtual classes I tend to be . . . ," that ask about level of preparedness, activity, attentiveness, and ability to learn, rated as ($1 = less$ *than in-person classes*, $2 = same$ *as in-person classes*, or $3 = more$ *than in-person classes*). The internal consistency of the perceived behavioral engagement composite was strong ($\alpha = .76$).
2. "Perceived quality and effectiveness of online education," based on the sum of the question "How do you judge the educational quality in your virtual classes during the pandemic?" (rated as $1 = lower$ *than in-person*, $2 = same$ *as in-person*, or $3 = higher$ *as in-person*) as well as the set of six questions "Compared to in-person classes, how do you view the effectiveness of virtual classes in regard to . . . ?" This question was answered in regard to effective communication, sense of community, convenience, participation, meeting learning needs, and offering an effective learning environment. Response categories ranged from $1 = $ *much less effective than in-person* to $5 = $ *much more effective than in-person*. The internal consistency for this composite variable was excellent ($\alpha = .83$).

Students who provided tele mental health were also asked about the number of hours they provided tele mental health per week (by phone or videoconferencing), the level of support they received from clinical supervisors, as well as their previous experience of receiving tele mental health themselves (see Table 2 for individual items and response categories). Two additional composite scores were calculated:

1. "Prior tele mental health (phone and video) experience," consisting of the sum of two items: "What is your experience providing therapy via the phone?" and "What is your experience providing therapy via videoconferencing?" Both items were rated on a 5-point Likert scale, from $1 = $ *not at all* to $5 = $ *a great deal*.
2. "Clinical transition experience," comprised of the sum of two ratings for the practicum experiences, at the University's training clinic and at externship/internship: "How was your overall transition to tele mental health (phone/video) delivery of psychological services at the training clinic?" and "How was your overall transition to tele mental health (phone/video) delivery of psychological services at externship/internship?" (both items rated as $1 = $ *difficult*, $2 = $ *neutral*, $3 = $ *easy*).

Data Analysis

Given the stand-alone items in our survey and the variance among participants, we did not impute the missing items. The sample size of subsequent analyses ranged from $N = 132$ to $N = 152$. Reverse-scored items were recoded when needed for higher scores to indicate a more positive score. To compare and combine items with different response scales and categories, we calculated standardized scores for each nondescriptive variable and treated single-item and composite scores as continuous variables. Analyses were performed with Statistical Package for the Social Sciences (SPSS), Version 25. We used descriptive data to characterize the sample and study the frequency distribution of the variables of interest. We conducted preliminary tests to assess normality of the data and associations with demographic variables. All statistical tests were two tailed, with α set at .05. All study variables were standardized, and zero-order correlations were computed to examine bivariate relationships among variables in the study. To test our hypotheses regarding the direct and indirect effects of

Table 1

Responses on Likert-Scale Items Pertaining to Experiences Before and During the Transition to Online Education as Reported by 152 Graduate Students

Item	n	$\%$
Previous experience with virtual educational classes		
None at all	49	32.2
A little	67	44.1
A moderate amount	18	11.8
A lot	7	4.6
A great deal	5	3.3
What are the challenges of virtual learning?[a]	*M*	*SD*
Increased distraction	2.63	1.39
Reduced concentration	2.74	1.41
Harder to be motivated	3.28	1.73
Preoccupied with other life stressors	3.95	1.87
Harder to juggle work–school–family balance	4.46	1.74
Harder to find a quiet learning environment	4.62	1.45
What are the benefits of virtual learning?[b]	*M*	*SD*
Convenience	2.35	1.22
Better than no classes	3.31	1.92
Less concern of safety	3.41	1.95
Efficient use of my time	3.69	1.58
Cost savings (commuting)	4.02	1.56
Comfort of home environment	4.41	1.29
Did instructors spend enough time to check in about COVID-19-related situations in classes?		
No, not at all	4	2.6
No, not enough	27	17.8
Yes, a bit too much	12	7.9
Yes, enough	99	65.1
How did you experience the transition to online classes during the pandemic?		
Extremely difficult	5	3.3
Somewhat difficult	56	36.8
Neither easy nor difficult	14	9.2
Somewhat easy	48	31.6
Extremely easy	19	12.5
In the future, if you could choose, would you study …		
All in person	25	23.0
More virtual than before the pandemic	56	36.8
Some in person, some virtual	30	19.7
All virtual	11	7.2
Students' behavioral engagement composite items		
Compared to in-person classes, in virtual classes I tend to be …		
…More or less prepared:		
Less than in-person classes	50	32.9
Same as in-person classes	84	55.3
More than in-person classes	8	5.3
Compared to in-person classes, in virtual classes I tend to be …		
…More or less active:		
Less than in-person classes	86	56.6
Same as in-person classes	49	32.2
More than in-person classes	7	4.6
Compared to in-person classes, in virtual classes I tend to be …		
…More or less attentive:		
Less than in-person classes	104	68.4
Same as in-person classes	34	22.4
More than in-person classes	4	2.6
Compared to in-person classes, in virtual classes I tend to be …		
…More or less able to learn:		
Less than in-person classes	88	57.9

(table continues)

Table 1 (*continued*)

Item	n	%
Same as in-person classes	50	32.9
More than in-person classes	4	2.6
Perceived quality and effectiveness of online education composite items		
Compared to your in-person classes, how do you judge the educational quality in your virtual classes during the pandemic?		
Lower quality	51	33.6
Same quality	79	52.0
Higher quality	5	3.3
Compared to in-person classes, how do you view the effectiveness of virtual classes? *Contribution to effective communication*		
Much less effective	15	9.9
Somewhat less effective	66	43.4
Same	40	26.3
Somewhat more effective	12	7.9
Much more effective	6	3.9
Compared to in-person classes, how do you view the effectiveness of the virtual classes? *Increasing sense of community*		
Much less effective	32	21.1
Somewhat less effective	47	30.9
Same	33	21.7
Somewhat more effective	25	16.4
Much more effective	2	1.3
Compared to in-person classes, how do you view the effectiveness of the virtual classes? *Offering convenience*		
Much less effective	3	2.0
Somewhat less effective	6	3.9
Same	13	8.6
Somewhat more effective	52	34.2
Much more effective	65	42.8
Compared to in-person classes, how do you view the effectiveness of the virtual classes? *Promoting participation and interaction*		
Much less effective	30	19.7
Somewhat less effective	59	38.8
Same	43	28.3
Somewhat more effective	3	2.0
Much more effective	4	2.6
Compared to in-person classes, how do you view the effectiveness of the virtual classes? *Meeting individual learning needs*		
Much less effective	20	13.2
Somewhat less effective	52	34.2
Same	52	34.2
Somewhat more effective	10	6.6
Much more effective	5	3.3
Compared to in-person classes, how do you view the effectiveness of the virtual classes? *Offering an effective learning environment*		
Much less effective	23	15.1
Somewhat less effective	67	44.1
Same	37	24.3
Somewhat more effective	7	4.6
Much more effective	5	3.3

Note. Multiple answers were possible per respondent. COVID-19 = coronavirus disease.
[a] Placed in rank order (1 = *most challenging* to 6 = *least challenging*).   [b] Placed in rank order (1 = *most beneficial* to 6 = *least beneficial*).

experiences before and during the transition to online education on the perceived quality and effectiveness of online education, and to examine predictors of future preference for online education, we conducted a series of multiple regression analyses using the PROCESS Macro Version 3.1. The 10,000 bootstrap samples for a 95% CI were applied. The sample size in the

Table 2

Responses on the Likert-Scale Items Pertaining to Students' Online Clinical Experiences Before and During the Transition

Item	n	%
Did you feel supported by supervisors in managing the transition to tele mental health at your externship/internship site? ($n = 85$)		
No, not supported at all	4	5.2
No, not supported enough	4	5.2
Neutral	3	3.9
Yes, somewhat supported	25	32.5
Yes, very supported	41	53.2
Previous experience with receiving therapy via videoconferencing		
None at all	71	77.2
A little	11	12.0
A moderate amount	5	5.4
A lot	5	5.4
A great deal	0	0
Previous experience with receiving therapy via phone		
None at all	53	57.6
A little	30	32.6
A moderate amount	5	5.4
A lot	3	3.3
A great deal	1	1.1
Prior tele mental health experience composite score		
Previous experience with providing therapy via videoconferencing		
None at all	76	82.6
A little	9	9.8
A moderate amount	3	3.3
A lot	2	2.2
A great deal	2	2.2
Previous experience with providing therapy via phone		
None at all	58	63.0
A little	25	27.2
A moderate amount	4	4.3
A lot	5	5.4
A great deal	0	0
Clinical transition experience composite score		
How was your overall transition to tele mental health at the training clinic ($n = 60$)		
Difficult	14	23.3
Neutral	31	51.7
Easy	15	25.0
How was your overall transition to tele mental health at externship/internship? ($n = 68$)		
Difficult	22	32.4
Neutral	29	42.6
Easy	17	25.0

Note. Due to missing data, the sample sizes ranged from 60 to 92 on these items. The sample size was $n = 92$ unless otherwise indicated.

correlation, regression, and mediation analyses was $N = 152$ for the total sample and $n = 92$ for the subsample of students who provided tele mental health during their training. A power analysis indicated that the clinical subsample of 92 was sufficient for a simple mediation (with an α set at .05, the resulting power is .81), which is supported by the fact that published mediation analyses often report on sample sizes of <100 (Fritz & Mackinnon, 2007).

Results

Preliminary Analyses

Descriptive Analyses

A total of 145 of the 152 students were in their first 4 years of doctoral training (95.4%), with only seven students in their fifth year of training. A total of 92 (61%) students were providing

services to clients and answered the items about their clinical experiences during their graduate training. The students' average age was 27.38 ($SD = 4.04$), and 130 students were females (89%). At the time of the survey, 16 students lived alone (10.5%), and 9 lived with a roommate (5.9%), whereas 63 students lived with their partners (41.4%), and 62 students lived with their parents or other family members (40.8%). Sixty of the 152 students reported feeling stressed about finances ($n = 60$; 39.5%), and 36 students reported stress about family members who are frontline health care workers (23.7%). Twenty-seven students reported a poor internet connection (17.8%), 21 students reported fears of a family member or themselves being COVID-19 positive (13.8%), and 11 students reported stress due to childcare demands (7.2%).

Of our doctoral psychology student sample ($N = 152$), 49 students (32.2%) had no experience with online education prior to the study, and 67 students (44.1%) reported having a little experience in online education. On average, they had 9 hr ($SD = 3.5$) per week of online classes after the pandemic began. According to the students, the biggest challenge of online education was increased distraction and decreased concentration, whereas on average, the students reported convenience, better than no classes, and less concern for safety as the most important benefits of online education. A total of 99 students (65.1%) reported feeling supported during the transition, in that instructors spent enough time to check in about COVID-19-

related concerns in online classes. Five students (3.3%) experienced the transition to online classes as extremely difficult, whereas 81 students (53%) experienced the transition as neutral or relatively easy. Overall, the students viewed the perceived relative educational quality of online classes as the same or lower than in-person classes, with only five students reporting that online classes were of higher quality (3.3%). Eleven students (7.2%) preferred online education in the future and a subgroup of students preferred all in-person classes, but 86 students (57%) preferred a combination of in-person and online classes. Table 1 provides frequencies of responses on Likert-scale items pertaining to experiences before and during the transition to online education reported by the 152 graduate students.

Relationships Among Variables

To examine potential covariates in our analyses, we conducted bivariate correlations of students' age, training year, and clinical hours with the outcome variables (educational quality and effectiveness and preference for online education) and conducted independent t tests to compare the outcomes for males and females as well as compare students who did and those who did not see clients via tele mental health during the COVID-19 pandemic. None of these results were significant and these variables were therefore not controlled for in further analyses. Zero-order correlations are shown in Table 3. The correlation coefficients of the predictor variables were

Table 3

Standardized Zero-Order Correlations for the Academic Learning Variables

Variable	n	1	2	3	4	5	6
1. Previous online education experience	135	—					
2. Experience of the transition to online education during COVID	142	.11	—				
3. Student behavioral engagement during online education	142	.18*	.50**	—			
4. Perceived instructor COVID-related support during online education	132	.04	.17*	.04	—		
5. Perceived quality and effectiveness of online education during COVID	142	.20*	.51**	.64**	.01	—	
6. Future preference	146	.03	.13	.37**	−.21*	.43**	—

Note. All correlations are reported based on the z-scores of the variables. $M = 0$ and $SD = 1$ for all variables due to standardization of variables. COVID = coronavirus disease.
* $p < .05$. ** $p < .01$.

relatively moderate (Pearson $r < .80$), and collinearity statistics indicated that the predictor variables were not multicorrelated (all variance inflation factor; VIF < 10, average VIF of 1).

Predicting Perceived Educational Quality and Effectiveness

We examined whether students' experiences before and during the transition to online education as well as their behavioral engagement predicted their perceived quality and effectiveness of the received online education during COVID. We conducted multiple regression to determine the independent contributions of all three independent variables to perceived quality and effectiveness. The model suggested that the online education transition experience itself, $b = .33$, $t(132) = 4.43$, $p < .001$, and students' behavioral engagement during online classes, $b = .37$, $t(132) = 4.90$, $p < .001$, significantly predicted perceived quality and effectiveness of online experience, whereas the contribution of students' prior online educational experience to the prediction of educational quality and effectiveness only approached significance, $b = .14$, $t(132) = 1.96$, $p = .052$. Together these predictors explained a significant proportion of variance in perceived online educational quality and effectiveness, $R^2 = .40$, $F(3, 131) = 29.24$, $p < .001$. Stepwise regression analysis showed that the transition

experience and student engagement together explained 38% of variance in perceived quality and effectiveness, $R^2 = .38$, $F(2, 132) = 41.05$, $p < .001$, whereas previous online education was excluded from the model.

We conducted a mediational analysis to examine if the indirect effect of the transition experience on perceived online education quality and effectiveness emerged through students' behavioral engagement in online education (see Table 4). The mediation model indicated that the effect of students' experience with the transition on their perceived quality and effectiveness of online education was mediated by their level of behavioral engagement during the online classes they attended during COVID. In other words, students' more positive transition experience contributed to their increased behavioral engagement during the online classes, which in turn contributed to the perceived online educational quality and effectiveness. The completely standardized indirect effect was estimated as $ab = 1.33$, $SE = .28$, 95% CI [.81, 1.91], indicating that a 1 SD increase in the experience of the transition conferred 1.3 SDs greater perceived educational quality through the behavioral engagement. The direct effect of the transition on perceived quality remained significant (albeit to a lesser extent) when behavioral engagement was added as mediator, indicating partial mediation. For a schematic representation of this mediation model, see Figure 1.

Table 4

Regression Analyses Examining the Indirect Effect of the Transition Experience on Perceived Quality and Effectiveness of Online Education Through Behavioral Engagement

| Direct effects | Estimate | SE | t | 95% CI | | p |
				LL	UL	
Behavioral engagement						
Transition experience (path *a*)	.383	.058	6.602	.268	.498	<.001
Perceived quality and effectiveness						
Behavioral engagement (path *b*)	3.469	.456	7.517	2.556	4.382	<.001
Transition experience (path *c*)	1.166	.362	3.275	.462	1.870	.001

Indirect effects through behavioral engagement

| | Estimate | BootSE | 95% CI | |
			BootLL	BootUL
Behavioral engagement (path ab)	1.329	.277	.828	1.912

Note. Estimate = unstandardized coefficient. The sample size for this multiple regression analysis was $n = 135$. CI = confidence interval; *LL* = lower limit; *UL* = upper limit. Previous online education experience was not a significant predictor of perceived quality and effectiveness in the multiple regression and therefore was not included in model.

Figure 1
Mediation Model of Perceived Quality and Effectiveness of Online Education
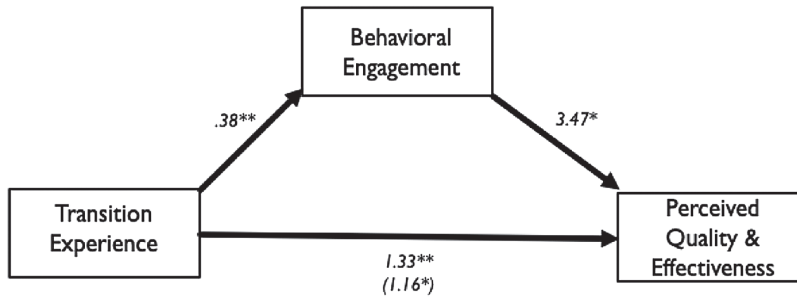
Note. Values reported are unstandardized β coefficients.
* $p < .01$.   ** $p < .001$.

Predicting Future Preference of Online Education

With regard to students' preference for online education in the future, we examined the independent contributions of perceived instructor support, behavioral engagement, and perceived quality and effectiveness on future preference. A multiple regression analysis found that instructor support, $b = -.19$, $t(132) = -2.43$, $p < .05$, behavioral engagement, $b = .22$, $t(132) = 2.38$, $p < .05$, and perceived quality and effectiveness of online education, $b = .31$, $t(132) = 3.43$, $p < .001$, significantly predicted preference for online education in the future. Together these variables explained a substantial proportion of the variance of future preference, $R^2 = .24$, $F(3, 128) = 13.59$, $p < .001$.

We then tested a moderated mediation model, by using the Model 7 PROCESS Macro. Behavioral engagement predicted perceived quality and effectiveness ($\beta = 4.02$, $p < .001$) and perceived quality and effectiveness positively predicted future preference ($\beta = 0.07$, $p = .028$), supporting our hypothesis. Instructor support alone did not predict perceived quality and effectiveness ($\beta = .022$, $p = .944$); however, the interaction term of the behavioral engagement and the moderator (instructor support) reached significance ($\beta = 0.04$, $p < .05$). The overall model accounted for 20% variance of future preference for online education, $F(2, 129) = 38.24$, $p < .001$. The direct effect of the behavioral engagement on future preference was no longer significant when perceived quality and effectiveness was added as a mediator, indicating full mediation. The indirect

effects through perceived quality and effectiveness were conditional at different levels of the moderator of instructor support. All the conditional indirect effects were significant, decreasing from 0.34 for -1 *SD* instructor support over 0.26 for mean instructor support to 0.21 for $+1$ *SD* instructor support (Table 5). In other words, more instructor support dampened the effect of perceived quality on future preference.

For a schematic representation of this moderation–mediation model, see Figure 2. An alternative model which specified instructor support as the mediator and perceived quality and effectiveness as the moderator was also tested. There was no significant indirect effect for behavioral engagement through instructor support, indicated by bootstrapped confidence intervals that straddled zero. Hence, the alternative moderated mediation model with instructor support as the mediator and perceived quality and effectiveness as the moderator between behavioral engagement and instructor support was not supported.

The Role of Online Clinical Practice in Online Academic Experiences

Within the subsample of students who provided tele mental health ($n = 92$), students on average had 3 hr of online supervision per week ($SD = 1.8$) and 5.5 hr ($SD = 3.9$) of online client sessions (either via phone or video) per week during the pandemic. Most students did not have previous experience with providing tele mental health via videoconferencing (83%). Only one tenth of clinically active students had some

Table 5

Regression Analyses of the Indirect Effect of Behavioral Engagement on Future Preference of Using Online Education Through Perceived Quality and Effectiveness

Direct effects	Estimate	*SE*	*t*	95% CI LL	95% CI UL	*p*
Perceived quality and effectiveness						
Behavioral engagement (path *a*)	4.019	.415	9.686	3.198	4.840	<.001
Instructor support (moderator w)	.022	.316	.071	−.603	.648	.944
Interaction of Behavioral engagement × Instructor support	−1.880	.381	−3.116	−1.942	−.434	.002
Future preference						
Perceived quality and effectiveness (path *b*)	.065	.021	3.044	.023	.107	.003
Behavioral engagement (path *c′*)	.211	.136	1.550	−.058	.481	.124

Indirect effect of behavioral engagement on future preference as mediated through perceived quality and effectiveness

Indirect effect of behavioral engagement on future preference	Estimate	*BootSE*	95% CI BootLL	95% CI BootUL
Perceived quality and effectiveness (path ab)				
−1 *SD* below mean instructor support	.337	.137	.073	.606
Mean perceived instructor support	.260	.107	.055	.468
+1 *SD* perceived instructor support	.213	.094	.043	.402

Note. Estimate = unstandardized coefficient. The sample size for this multiple regression analysis was *n* = 132; CI = confidence interval; *LL* = lower limit; *UL* = upper limit.

experience providing video therapy sessions, and 27% had some previous phone therapy experience. Moreover, very few students had experienced being in either online or phone therapy themselves. The transition to providing tele mental health at the University's training clinic and at externship/internship sites were both generally experienced as neutral, however, somewhat more difficult at external sites. For frequencies of Likert-scale item responses pertaining to tele mental health reported by this subgroup of students (*n* = 92), see Table 2.

To explore whether students' online clinical practicum experiences were associated with their perceived online educational experiences, we conducted bivariate correlations of variables related to the students' online clinical experience during COVID with variables measuring perceived educational quality and future preference for online education. None of these clinical practicum experience variables were significantly related to students' future preference of using online academic education. However, perceived quality and effectiveness was significantly related

Figure 2

Conditional Moderation–Mediation Model of Future Preference of Online Education
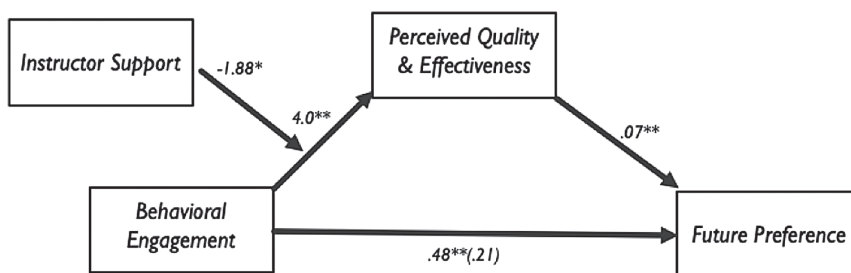
Note. Values reported are unstandardized β coefficients.
* *p* < .01.   ** *p* < .001.

to sum of clinical hours ($r = .210$, $p < .05$) and the clinical transition experience ($r = .511$, $p < .001$). This might indicate that some aspects of the students' online clinical experiences during this time were related to the perceived quality of their online educational experiences in this sample.

An exploratory multiple regression with clinical hours and clinical transition as independent variables and perceived quality and effectiveness as the outcome variable found that the overall model was significant and explained a sizable proportion of the variance, $R^2 = .27$, $F(2, 42) = 7.98$, $p < .01$. Only the clinical transition experience independently predicted, $b = .49$, $t(42) = 3.66$, $p < .01$, perceived quality and effectiveness of online academic courses, whereas online clinical experience did not, $b = .12$, $t(42) = .917$, $p = .36$.

To test a combined model, we conducted a multiple regression analysis predicting perceived educational quality and effectiveness, for which the independent variables were participants' experiences of previous online education, the academic transition, their behavioral engagement, and the clinical transition. We found that only behavioral engagement and clinical transition remained significant predictors of perceived education quality and effectiveness. The students' behavioral engagement during online education and clinical transition experience explained a large portion of the variance, $R^2 = .52$, $F(2, 42) = 23.06$, $p < .001$, of educational quality and effectiveness.

Discussion

This is among the first studies, to our knowledge, of factors that influence the perceived quality and effectiveness of online instruction among doctoral clinical psychology students, including students' experiences of the transition to tele mental health practice. The results suggested that, in line with our hypotheses, students' transition experience was predictive of their perception of the quality and effectiveness of online education after the transition, and this relationship was partially driven by students' engagement in online classes. Moreover, students' ability and willingness to engage in online classes predicted their preference for online education in the future, and this in turn was fully mediated by students' perceptions of the educational quality and effectiveness of the online courses. In contrast with our expectations, prior online educational experiences did not contribute to perceived quality and effectiveness after adjusting for the students' transition experience and behavioral engagement. Moreover, perceived instructor support attenuated the relationship between behavioral engagement and perceived online educational quality and effectiveness. Finally, in our total sample, we did not find a significant relationship between students' clinical training experiences (i.e., providing or receiving online therapy and/or supervision in the past) and their perceived online didactic experience. However, for the subsample of clinically active psychology graduate students, their clinical transition experience together with their behavioral engagement during classes predicted their perception of quality and effectiveness of online academic courses.

Our study results indicate the central importance of students' behavioral engagement in their experience of online education. This aligns with "community of inquiry" models (Rourke & Anderson, 2002; Swan, 2002) that emphasize the role of socioemotional factors in online instruction and support findings of previous conceptual and empirical studies (Lehman & Conceição, 2010; Robey & Crago-Spangler, 2017; Shelton et al., 2017). Students' behavioral engagement in online synchronous classes included factors such as being prepared, active, attentive, and able to learn during classes. Therefore, the findings imply that when students are actively engaged during online classes, they will have a more positive overall experience of the online course's quality and effectiveness, and consequently, they will be more inclined to continue their education online in the future.

The fact that in our study instructor support (i.e., instructors checking in at the beginning of classes about how students were doing) played a negative moderating role in the relationship between behavioral engagement and perceived quality and effectiveness of online education is surprising given that interactions with instructors have been found to have strong positive effects on students' online educational outcomes (Pardino et al., 2018). However, it is possible that given the unique situation of the pandemic, this support focused on COVID-related general questions rather than the types of learning support measured in previous studies, which might explain the divergent result. Many instructors facilitated a group discussion at the start of an online class about how to best support each other in this stressful time and give each other practical and

technical tips. Similarly, the rapid transition to online classes during COVID-19 might also explain the lack of a predictive relationship between previous online educational experience and perceived quality and effectiveness, as classes during the pandemic might not be directly comparable with any online educational experiences before.

Improving student engagement in online classes is a joint responsibility of students and educators. Students may vary in terms of their capacity to be active, present, and learn in an online environment due to individual and circumstantial factors that are hard to change, such as those related to the COVID-19 crisis. However, educators can place a special emphasis on encouraging and facilitating students' active engagement during online classes.

Previous literature emphasized that most effective student engagement strategies include interactions between students, teachers, and the learning material in various constellations (Kennedy, 2020), such as student–content, student–teacher, and student–student interactions (Moore, 1989). During the COVID-19 emergency, one mixed-method study showed that student–content engagement strategies, such as screen sharing, summaries, and class recordings, were evaluated by students as the most effective to increase their engagement in learning (Abou-Khalil et al., 2021). These strategies' perceived efficiency was closely followed by student–teacher strategies, that is, strategies that involve question and answer sessions and reminders, whereas student–student strategies (such as group chat, collaborative work) were seen as the least effective by students.

Recommendations based on data collected during the COVID-19 pandemic emphasize the importance of designing and producing teaching-efficient learning tools and advise a strong focus on student–content interaction. For example, they suggest faculty design and produce teaching-efficient videos that are able to represent the material from various perspectives and thus engage students, while making sure the videos are created in a way that is accessible on mobile phones with smaller bandwidth as well as other devices (Chiu, 2021). Furthermore, besides traditional tools already used in in-person classes with the aim of encouraging student participation, such as small group exercises or interactive discussions, the use of technology allows for applying new methods for this purpose, such as virtual

breakout rooms, polls, the expression of emoji reactions, raising hands, and chat formats.

Interactions between students and instructors also have been found to play a key role in increasing student engagement. Strategies aiming to promote relatedness between student and instructor can be enhanced by personal, authentic communication, which aims to emotionally engage students in learning and promote a stronger sense of belonging (Burke et al., 2021; Chiu, 2021).

Furthermore, this study emphasizes the importance of the clinical transition to tele mental health. Although postpandemic graduate education will largely involve in-person education, tele mental health will continue to be a growing method for the delivery of mental health interventions because it has shown to be acceptable to patients and comparable in efficacy to in-person treatment (Andrews et al., 2018; Simpson, 2009). It will thus be important to introduce beginning graduate students to the tele mental health format and help students develop basic skills and strategies in their graduate training. For example, key skills for developing a strong online therapeutic alliance include providing a rationale to patients, establishing eye contact, adjusting verbal and nonverbal responses, as well as managing risk assessment and boundaries within the online setting (Abbass & Elliott, 2021; Simpson et al., 2021). It will be important to teach students about the potential challenges (Aafjes-van Doorn et al., 2020; Békés et al., 2021) but also the potential benefits of tele mental health which may include increased connectedness, intimacy, openness, and agency (Simpson et al., 2021). Furthermore, managing technical challenges of online therapy should be addressed in graduate training, such as managing psychological distance (Grondin et al., 2020), silences, lack of patient privacy, unstable internet connection, and distractions during sessions (Békés et al., 2021).

Of notable limitations, our study did not control for several relevant factors such as the instructor's proficiency in using technologies, specific classes or instructors, class size, and differences across the three graduate programs. Second, the majority of participants were Caucasian, female and of likely high socioeconomic status, which limits the generalizability of the results. Third, our survey relied on measures developed for this study and on select one-item questions as outcome measures (i.e., future preference), which although practical, are

controversial in the research literature (Drolet & Morrison, 2001; Nagy, 2002). In addition, select one-item variables were not normally distributed across all levels (i.e., some response categories were only endorsed by a few students), but these levels were deemed conceptually meaningful and were therefore retained in analyses. Our analyses treated these variables as ordinal and continuous, and it may be argued that this is a simplified assumption of the nuanced differences in responses. Moreover, items that assessed behavioral engagement and quality and effectiveness evaluated participants' perceptions of their online participation and educational outcomes relative to in-person classes. Future experimental designs might compare objective measures of students' engagement (e.g., proportion of speech contributed by students) and educational outcomes (e.g., quiz or exam grades) in online classes versus in-person classes or might include the educators' perspectives of students' course engagement and outcomes. Finally, the cross-sectional nature of our study design did not allow for drawing conclusions about the causality of the observed relationships and it is possible that our findings are context specific and would not be replicated in circumstances unlike the current COVID-19 pandemic.

Nonetheless, our study is among the first to describe clinical psychology graduate students' experiences with online education in the midst of a global pandemic and to elucidate the importance of behavioral engagement as a modifiable mechanism to enhance the perceived quality and preference for online education in this context. If replicated, such findings may contribute to the further development of effective online educational experiences as part of doctoral psychology training.

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