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Why settle when there are plenty of fish in the sea? Rusbult's investment model applied to online dating

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Abstract

The current mixed-methods study reports the results of a cross-sectional survey of 205 online daters and uses the Investment Model to examine the antecedents of commitment in online dating and users' decisions to delete their online dating account(s). We hypothesized that the quality of alternatives, investments, and satisfaction with the online dating relationship would mediate the association between online dating intensity and commitment, which, in turn, would predict the intention to terminate an account. The analyses revealed that online dating intensity was associated with greater commitment and a lower likelihood of account termination. There were also specific indirect effects on commitment through the quality of alternatives, investments, and satisfaction, and on termination through investments. Responses to an open-ended question provided more information about users' decisions to quit online dating. These results point to ways online dating may facilitate the desire for commitment while potentially undermining the long-term stability of relationships.

Keywords

Account termination, commitment, computer-mediated relationship development, online dating, Rusbult's Investment Model

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When there are plenty of fish in the sea, one can afford to throw a few back.

—Bruch and Newman (2018: 4)

Over the last few decades, online dating has become increasingly popular. In fact, data from a nationally representative sample of American adults in 2017 showed that meeting online has become the most popular way couples meet in the United States (Rosenfeld et al., 2019). Online dating platforms such as mobile dating apps have succeeded in reducing stigma toward online dating practices (Anderson et al., 2020). Unlike traditional online dating sites, mobile dating apps are often used on smartphones and thus benefit from several affordances related to mobile media. For instance, due to the availability and mobility affordances, dating apps can be used anywhere at any time, both in public and private spaces. Such affordances have increased the mainstream appeal of online dating, as people can enjoy browsing others' profiles at their own convenience, thereby creating mobile experiences that are no longer restricted to finding sexual encounters (Timmermans and De Caluwé, 2017). Yet, despite the popularity of these platforms, researchers have shown that online dating can come at a cost.

Several experimental studies have shown that providing a large pool of potential partners creates choice overload (D'Angelo and Toma, 2017), makes online daters more pessimistic and rejecting (Pronk and Denissen, 2020), and triggers more searching and decreases the perceived quality of the final partner selection (Wu and Chiou, 2009). Moreover, studies point out that online daters are likely to remain active on dating platforms even when reporting to be in a committed relationship, with numbers ranging between 15% and 40% (e.g. Alexopoulos et al., 2020; Botnen et al., 2018; Timmermans et al., 2018).

Although some studies suggest that online daters succeed in finding a romantic partner (e.g. Rosenfeld et al., 2019; Timmermans and Courtois, 2018), less is known about the duration, successfulness, and threats surrounding these relationships given the lack of longitudinal research following up on relationships formed through online dating platforms (for an exception, see Sharabi and Caughlin, 2017). Yet, researchers have used *relationshopping* as a metaphor to describe the online dating experience (Heino et al., 2010), thereby suggesting that online daters may struggle with commitment issues and knowing when to leave this virtual marketplace. One theoretical model that aids in a better understanding of commitment in the context of online dating relationships, and with it the decision to terminate an online dating account, is the Investment Model (Rusbult, 1980; Rusbult et al., 2012). According to the Investment Model, quality of alternatives, investments, and satisfaction with the relationship may serve as explanatory mechanisms for online dating's effect on commitment. Therefore, the main goal of this study is to apply the Investment Model to the online dating environment to examine the antecedents of commitment and the decision to stop dating online. In addition to its theoretical contribution, this study also advances the online dating literature by being among the first to (a) elucidate the commitment process and its underlying factors within an online dating context and (b) provide an in-depth exploration of the decision to terminate an online

dating account, as this is often an overlooked consideration within the research on computer-mediated relationships.

Online dating intensity and commitment

In 2007, Ellison et al. created the Facebook intensity scale “to obtain a better measure of Facebook usage than frequency or duration indices” (p. 1150). Scholars have frequently adopted this measure as a predictor or control variable in social media research (e.g. Billedo et al., 2015; LeFebvre et al., 2015; Orosz et al., 2015). More recently, efforts have been made to extend the concept of intensity to online dating (Bloom and Taylor, 2020). In keeping with Ellison et al.’s conceptualization, we define online dating intensity as attitudes and behaviors that reflect a high frequency of use and degree of involvement in online dating. This includes both the amount of time users devote to these platforms and their extent of psychological engagement with the online dating experience (Ellison et al., 2007). Within online dating research specifically, studies often focus primarily on the use of a certain platform or the frequency of use to predict behavior and psychosocial functioning, such as risky sexual behavior (Hahn et al., 2018; Shapiro et al., 2017) and body image and self-esteem (Strubel and Petrie, 2017). Yet, a recent study examining the links between dating app use and intentions to commit infidelity showed that dating app frequency was not a significant predictor of relational outcomes (Alexopoulos et al., 2020). This points to the importance of considering users’ attitudes alongside their behaviors in a comprehensive definition of online dating intensity.

In terms of online dating, we thus argue that intense use of these services could be a precursor to commitment for two reasons. First, intense users are probably highly motivated given their willingness to allocate resources such as time and money to their search for a romantic partner (Finkel et al., 2012). Studies on online dating frequency indeed confirm the strongest significant associations with active motives such as relationship seeking and meeting others (Timmermans and De Caluwé, 2017) and an increased number of actual offline meetings (Timmermans and Courtois, 2018). Second, individuals who use these platforms intensely may be doing so because they are optimistic that the online dating process will be effective for finding someone, thereby potentially increasing feelings of commitment once they decide they have identified a good match. Therefore, the first hypothesis is formulated as follows:

H1. Online dating intensity will be positively associated with commitment to a partner.

Rusbult’s Investment Model applied to an online dating context

According to Rusbult’s Investment Model, there are three factors that influence the degree to which a person is committed to a romantic partner: the availability of alternative partners, the couple’s relational satisfaction (or the positive qualities that attract

partners to one another), and the amount of resources invested by each partner (e.g. a shared apartment or mutual friends; Rusbult, 1980; Rusbult et al., 2012).

Fletcher (2002) suggests that individuals, regardless of whether they are single or in a committed relationship, are constantly assessing the availability and suitability of potential romantic partners. Given that online dating provides a convenient platform for such assessments, it is not surprising that online dating researchers have looked at perceptions of alternatives from a choice overload perspective (e.g. D'Angelo and Toma, 2017). However, through the lens of the Investment Model, one could also posit that online dating intensity leads to less commitment, given that this model assumes that commitment is diminished if a person perceives there to be many alternative partners available should their current relationship end (Rusbult et al., 2012).

In addition, there might be a discrepancy between platform owners'/developers' goals for online dating, on the one hand, and users' best interests on the other (e.g. Courtois and Timmermans, 2018). Whereas platform owners/developers encourage users to connect with each other online, a strong offline connection resulting in a committed relationship is probably not their ideal scenario as this might mean losing (possibly paying) customers. Supplying online daters with an abundance of quality alternatives is a better strategy as it will likely keep them coming back to the platform (e.g. Alexopoulos et al., 2020; D'Angelo and Toma, 2017). The *scarcity principle* provides one way of thinking about how people are affected by alternatives (see Finkel and Eastwick, 2009). Relationships tend to feel more disposable when they are abundant (i.e. people do not value partners as much when they have lots available). Online dating provides a virtual marketplace in which users are able to observe potential relationship candidates (Alexopoulos et al., 2020; Sharabi and Dykstra-DeVette, 2019), and platforms generally possess features that emphasize the options people have available to them (e.g. notifications to let them know someone viewed their profile; Slater, 2013). Thus, having access to such a large pool of alternatives and being constantly reminded of this access might influence online daters' commitment, especially given that research supports that merely thinking about online potential romantic alternatives decreases relationship commitment (Drouin et al., 2015). As a result, online dating platforms may provide people with more and potentially better options, which may lead to decreased commitment to the current partner.

However, the Investment Model does not only theorize about quality of alternatives as a predictor of commitment, but also investments in a partner and satisfaction with the relationship. Yet, these other factors have received less attention from researchers studying the effects of choice overload and perceived partner availability in online dating. Online dating requires the investment of resources in a partner that cannot be regained if the relationship terminates (Rusbult et al., 1998). For example, online daters often spend money to use the platform or on dates with their (potential) partner, they put energy into creating a profile, they invest time in getting to know someone even before considering meeting that person, and so on (Coleman, 2009). There is also the amount of effort involved in using online dating to actively seek out a partner instead of waiting for one to come along. While online dating platforms may make online dating seem easy and convenient, qualitative studies on online daters' experiences show that it is hard work, and that users have a love-hate relationship with such platforms and tend to complain about being unsuccessful or encountering negative

experiences such as harassment (e.g. Fitzpatrick and Birnholtz, 2018; LeFebvre, 2018; Pond and Farvid, 2017; Sharabi and Dykstra-DeVette, 2019). Moreover, finding a partner might not be as easy as relationship shopping suggests, given that online daters cannot just pick out whomever they desire but need to find a person who is not only interested in them but also wants a committed relationship. Given that online daters tend to have different motives for using dating platforms (e.g. Timmermans and De Caluwé, 2017) and the odds of finding casual sex are often higher than the odds of forming a committed relationship (Timmermans and Courtois, 2018), online daters' desires might not always be compatible. This suggests that those who invest in their partners may find commitment more appealing.

Given that research has shown that 30%–45% reported never having had face-to-face (FtF) meetings with other dating app users (e.g. LeFebvre, 2018; Timmermans and Courtois, 2018), being satisfied with an online dating partner might also be an important predictor in deciding to move the relationship forward. Satisfaction in this context can be defined as the feeling of happiness and fulfillment from having an online relationship meet one's needs for intimacy. Although some may argue that online connections are not as important as FtF interactions, research suggests that individuals who report engagement with others online experience even more intimacy compared to their FtF relationships (Scott et al., 2006). Moreover, although few studies have investigated satisfaction with online partners, some indicate that satisfaction does play an important role in the online dating process, as those who were less satisfied with their matches were more likely to continue their search for other partners (D'Angelo and Toma, 2017). Online interactions are also used to make decisions about future meetings (Sharabi and Dykstra-DeVette, 2019), which suggests that some degree of satisfaction must be present for partners to escalate the relationship offline. Consequently, once users succeed in finding a partner, the benefits of the investments and satisfaction with the relationship might in fact outweigh the temptation of the quality of alternatives. Therefore, the second hypothesis is as follows:

H2. The Investment Model mechanisms (i.e. quality of alternatives, investments, and satisfaction) will simultaneously mediate the association between online dating intensity and commitment to a partner.

Should I stay or should I go now?

Despite the widespread use of online dating platforms, not everyone believes they aid in finding a romantic partner. In fact, a number of Americans are convinced that the use of online dating keeps people from settling down (Anderson et al., 2020). Hence, we argue that active use of online dating platforms might encourage commitment but discourage users from quitting their accounts. After all, such platforms benefit from their users and thus might be designed in such a way that they are more likely to lead to short encounters rather than long-term relationships as shown by Timmermans and Courtois (2018). Such design decisions may even be seen as necessary in order to have users continuously return to the platform.

Part of the online dating relationship development process involves knowing when to abandon the platform and fully commit to the current partner and relationship. Yet, several

experimental studies support the idea of a *paradox of choice* in online dating and have shown that the abundance of partner choice leads to less satisfaction with the final selection and an increased willingness to choose another partner if given the opportunity (D'Angelo and Toma, 2017; Pronk and Denissen, 2020; Wu and Chiou, 2009). Thus, we propose that the more intensely someone uses an online dating platform, the less likely that person will be to terminate an account, even after having successfully found a potential dating partner:

H3. Online dating intensity will be negatively associated with intending to terminate an account.

Next, we examine whether commitment is also associated with users' decisions to terminate their online dating account(s). When assessing Tinder users' motivations to quit swiping, LeFebvre (2018) found that the primary reason was because they were in a committed relationship and felt dishonest remaining active while committed to another. However, research suggests that lower commitment is associated with reduced intentions to terminate online dating. For instance, Drouin et al. (2014) showed that those with lower commitment in their relationship were more likely to make or accept Facebook friend requests from romantic interests. In contrast, higher commitment inhibits partners from taking an interest in extradyadic relationships (Rusbult et al., 2012). Consequently, the Investment Model mechanisms and their links to commitment might help predict decision-making in online dating, such as the decision to keep active on or delete an account. Thus, the final hypothesis is formulated as follows:

H4. The Investment Model mechanisms (i.e. quality of alternatives, investments, and satisfaction) and commitment will serially mediate the association between online dating intensity and intending to terminate an account.

However, in an online world in which norms are not entirely clear or are constantly changing (see Gershon, 2010), people might differ in their attitudes and behaviors regarding when it is appropriate or expected to terminate online dating once a bond with another user has been formed. Therefore, the final goal of our study is to qualitatively explore the following:

RQ1. At what point (if any) will online daters decide to terminate their online dating account(s)?

Method

Participants and procedures

Two hundred and ninety online daters were recruited through a campus-wide email announcement at a large public university in the United States. Students in select classes also received extra credit for referring an eligible participant to the study or for

participating themselves if they qualified. To be eligible, participants needed to be active online daters who were currently communicating with someone through the platform. They also had to be willing to share some anonymous messages from their online dating history as part of a larger study. Forty-one individuals were screened out for not meeting these criteria, and an additional 44 were eliminated due to missing data. Participants who completed the study were compensated with a US\$5 Amazon e-gift card, along with entry in a drawing for a US\$100 Amazon e-gift card.

To enroll, potential participants sent an email to a private study account and were provided with the link to an online survey. The survey began with a cover letter outlining the details of the study and several screening questions to confirm eligibility. From there, participants responded to items about their background and demographics, followed by their general online dating history and experiences, and then their current online dating relationship(s). All data collection procedures received Institutional Review Board (IRB) approval.

The final sample ($N=205$) comprised adults (62.0% women) between the ages of 18 and 49 ($M=20.95$, standard deviation [SD]=4.03). Participants were predominantly White (78.5%), with smaller proportions reporting to be Black or African American (7.8%), other (5.9%), Asian or Asian American (4.9%), Hispanic or Latino/a (2.4%), and Native American or Pacific Islander (.5%). Most participants were heterosexual (90.2%), whereas a minority reported to be bisexual (7.3%), gay (1.5%), or lesbian (1.0%). They mainly used Tinder (91.2%) for online dating, followed by Bumble (30.0%), Plenty Of Fish (4.9%), OkCupid (3.4%), Match (3.4%), Hinge (2.0%), eHarmony (1.5%), Grindr (1.5%), Seeking Arrangement (1.5%), Coffee Meets Bagel (1.0%), MeetMe (.5%), Connected2.me (.5%), and other (.5%), with 32.7% of participants reporting accounts on multiple platforms. Participants were primarily interested in casual dating (62.4%) or serious dating (30.7%), although some knew they desired marriage or its equivalent (6.8%). These different relationships types were not defined for participants, but casual dating often refers to early-stage relationships with low levels of involvement, whereas serious dating implies a desire for long-term stability (Surra and Hughes, 1997). On average, participants had been active on online dating for 9.87 months ($SD=11.33$).

Measures

The survey items were averaged to create separate composite scores for online dating intensity, each of the four Investment Model variables, and online dating termination. Means, SD s, and Pearson's correlation for all study variables can be found in Table 1.

Online investment model scale. The Investment Model Scale (Rusbult et al., 1998) was adapted to measure participants' perceived alternatives, investments, satisfaction, and commitment to an online dating partner whom they were currently talking to online but had yet to meet in person. All participants were required to have such a partner to qualify for the study. If they were talking to more than one person, they were asked to report on the relationship they considered their most important. The measure contained 22 Likert-type items (1 = *strongly disagree*, 7 = *strongly agree*) for quality of alternatives (e.g. "The

Table 1. Means, SDs, and Pearson's correlations between variables.

	M	SD	V1	V2	V3	V4	V5	V6
V1: Intensity ^a	−.31	.61	–					
V2: Alternatives	4.56	1.13	.24**	–				
V3: Investments	3.19	1.52	.38**	.07	–			
V4: Satisfaction	3.70	1.45	.40**	.11	.74**	–		
V5: Commitment	3.71	1.17	.28**	−.10	.74**	.74**	–	
V6: Termination	5.94	1.33	−.28**	−.00	−.18**	−.11	−.05	–

All items were measured on a 7-point scale unless otherwise noted.

^aThe online dating intensity items had different response options and were standardized prior to averaging to a composite score.

** $p < .01$.

people in online dating other than my partner are very appealing"; $\alpha = .78$), investment size (e.g. "I've put a great deal into our online dating relationship that I would lose if the relationship were to end"; $\alpha = .93$), satisfaction level (e.g. "I feel satisfied with our relationship"; $\alpha = .92$), and commitment (e.g. "I could see our relationship lasting for a long time"; $\alpha = .77$).

Online dating intensity. The Facebook Intensity Scale (Ellison et al., 2007) was adapted to measure participants' online dating usage. This scale has strong psychometric properties and has been used extensively as a measure of social media intensity (Haimson et al., 2017; Przepiorka and Blachnio, 2016; Stapleton et al., 2017), but only recently has it been applied to the online dating context (Bloom and Taylor, 2020). The scale consisted of one behavioral item on a 6-point scale (1 = *less than 10 minutes*, 2 = *10–30 minutes*, 3 = *31–60 minutes*, 4 = *1–2 hours*, 5 = *2–3 hours*, 6 = *more than 3 hours*) to gauge daily online dating frequency ("In the past week, on average, approximately how many minutes per day have you spent on online dating?") and six Likert-type items on a five-point scale (1 = *strongly disagree*, 5 = *strongly agree*) to assess attitudes toward online dating (e.g. "Online dating is part of my everyday activity"). The behavioral and attitudinal items were significantly correlated, $r = .39$, $p < .001$. Because they had different scale ranges, we followed Ellison et al.'s (2007) approach and standardized the items before averaging to create a composite measure of intensity. The measure was reliable ($\alpha = .82$), with higher scores indicating a greater intensity of use.

Online dating termination. A new scale was designed to measure participants' likelihood of terminating online dating. The measure began with the stem, "If you were to start regularly dating someone offline, how likely would you be to . . .?" followed by four Likert-type items (1 = *very unlikely*, 7 = *very likely*) to capture a range of behaviors associated with active online dating use ("Continue to use your online dating account to browse profiles," "Continue to use your online dating account to talk to other people," "Continue to use your online dating account to go on dates with other people," and "Delete your online dating account"; $\alpha = .87$). A principal component analysis (PCA)

with varimax rotation showed that all four items loaded on one component (eigenvalue=3.03; cumulative variance=75.9%) to form a unidimensional scale. The first three items were reversed such that higher scores represented a greater likelihood of termination.

Coding of the qualitative data

The likelihood of online dating termination was further probed with a single open-ended item that read, "When, if at all, would you consider deleting your online dating account if you were to start regularly dating someone offline?" All of the participants in the study supplied an answer to this question, and we used analytic induction (Bulmer, 1979) to code their responses. First, we developed a preliminary categorization system using a small subset of the data. Next, we tested our proposed categorization system on the larger sample of responses. When we encountered negative cases that did not fit with this system, we modified and refined the categories until they represented the full complexity of the responses. As a final step, we trained two research assistants who were unfamiliar with the aims of the study to apply our coding scheme to the data. The research assistants unitized and coded 20% of the data and then met to talk through disagreements. After achieving excellent reliability (Guetzkow's $U = .99$; Krippendorff's $\alpha = 1.00$), they proceeded to categorize the rest of the data independently.

Results

Prior to performing the main quantitative analyses, we evaluated a number of variables as potential covariates, including participants' age, sex, sexual orientation, the type of relationship they were seeking, and the length of time they had been active in online dating. There was a significant difference in commitment between the three desired relationship types, $F(2, 202) = 7.34, p = .001$, with a Tukey's post hoc test indicating that participants who reported being primarily interested in casual dating ($M = 3.50, SD = 1.03$) were somewhat lower in commitment than those who were actively looking for serious dating ($M = 3.97, SD = 1.29$) or marriage ($M = 4.53, SD = 1.40$). There was also a significant difference between men ($M = 5.68, SD = 1.41$) and women ($M = 6.09, SD = 1.26$) in terms of their likelihood of online dating termination, $t(148.99) = -2.09, p = .03$. Based on these preliminary findings, we recoded the relationship-type variable as either casual or serious (including marriage) and controlled for the desired type of relationship and sex in the models for commitment and termination, respectively.

We tested our hypotheses about commitment and termination in online dating using ordinary least squares path analysis in PROCESS v3.4 (Hayes, 2018), which provides estimates of the indirect effects along with their 95% bias-corrected confidence intervals (CIs) using 5000 bootstrap samples. We considered mediation to be present if the 95% CIs for the indirect effects were entirely above or below zero. Following Hayes (2018), we used contrast analyses to compare the strength of the mediators by requesting bootstrap estimates of the differences between the absolute values of the specific indirect effects. The completely standardized indirect effect was used as a measure of effect size

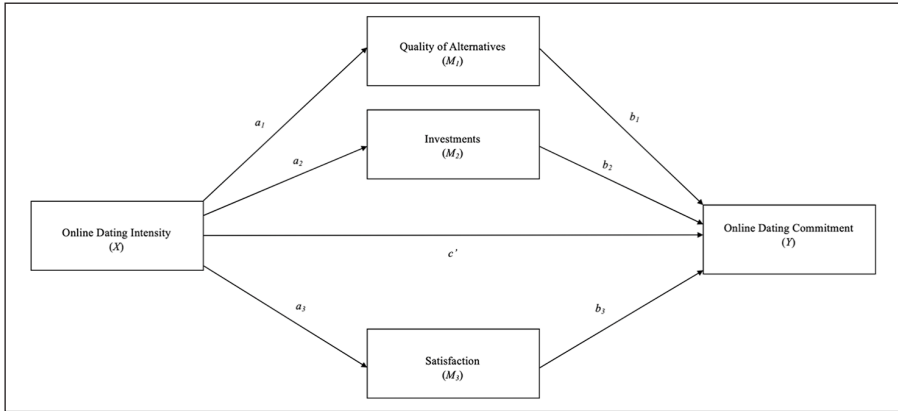


Figure 1. Statistical diagram of the Investment Model mechanisms mediating the effect of online dating intensity on commitment.

and scaled to the standard deviation of X and Y (Preacher and Kelley, 2011). All path coefficients shown represent unstandardized effects.

Online dating and commitment

Predictors. A parallel multiple mediation model (see Figure 1) was used to estimate the direct and indirect effects of online dating intensity on commitment simultaneously through the multiple Investment Model mechanisms (i.e. quality of alternatives, investments, and satisfaction). As anticipated ($H1$), online dating intensity positively predicted commitment ($c = .52, p < .001$), explaining 12% of the variance. Also as expected ($H2$) and shown in Table 2, online dating intensity had specific indirect effects on commitment through all three of the Investment Model mechanisms while controlling for each of the other mediators: quality of alternatives ($a_1b_1 = -.08, 95\% \text{ CI} [-.15, -.03], a_1b_{1cs} = -.04$), investments ($a_2b_2 = .28, 95\% \text{ CI} [.16, .44], a_2b_{2cs} = .15$), and satisfaction ($a_3b_3 = .33, 95\% \text{ CI} [.19, .51], a_3b_{3cs} = .17$). That is, online dating intensity positively predicted quality of alternatives ($a_1 = .45, p < .001$), which, in turn, negatively predicted commitment (quality of alternatives: $b_1 = -.19, p < .001$). Online dating intensity also positively predicted investments ($a_2 = .90, p < .001$) and satisfaction ($a_3 = .93, p < .001$), with both sharing positive associations with commitment (investment size: $b_2 = .31, p < .001$; satisfaction level: $b_3 = .36, p < .001$). The covariate was a significant predictor of commitment in the tests of $H1$ and $H2$ and of investments in the test of $H2$, with participants who were primarily interested in casual dating being less likely to invest or commit than those who desired more serious relationships (see Table 2). Intriguingly, contrast analyses indicated that the specific indirect effects were stronger through investments ($|a_1b_1| - |a_2b_2| = -.19, 95\% \text{ CI} [-.35, -.06]$) and satisfaction ($|a_1b_1| - |a_3b_3| = -.24, 95\% \text{ CI} [-.43, -.09]$) than through the quality of alternatives. The difference between investments and satisfaction was nonsignificant ($|a_2b_2| - |a_3b_3| = -.04, 95\% \text{ CI} [-.27, .16]$). Consistent with complete

Table 2. Summary statistics for the parallel mediation model.

Antecedent	Consequent															
	Alternatives (M ₁)				Investments (M ₂)				Satisfaction (M ₃)				Commitment (Y)			
	Coeff.	SE	p		Coeff.	SE	p		Coeff.	SE	p		Coeff.	SE	p	
Covariate ^a	-0.02	.16	.85		-0.47	.20	<.05		-0.34	.19	.07		-0.24	.09	<.05	
Intensity (X)	.45	.12	<.001	a ₂	.90	.15	<.001	a ₃	.93	.15	<.001	c'	-0.01	.08	.83	
Alternatives (M ₁)	-	-	-	-	-	-	-	-	-	-	-	b ₁	-0.19	.04	<.001	
Investments (M ₂)	-	-	-	-	-	-	-	-	-	-	-	b ₂	.31	.04	<.001	
Satisfaction (M ₃)	-	-	-	-	-	-	-	-	-	-	-	b ₃	.36	.04	<.001	
Constant	4.72	.13	<.001	i _{M2}	3.78	.16	<.001	i _{M3}	4.21	.15	<.001	iy	2.40	.26	<.001	
						R ² = .06					R ² = .17				R ² = .67	
						F(2, 202) = 6.69,					F(2, 202) = 21.80,				F(5, 199) = 83.30	
						p = .001					p < .001				p < .001	

SE: standard error.

^aThe desired type of relationship was included as a covariate and indicator coded where 0 = serious and 1 = casual.

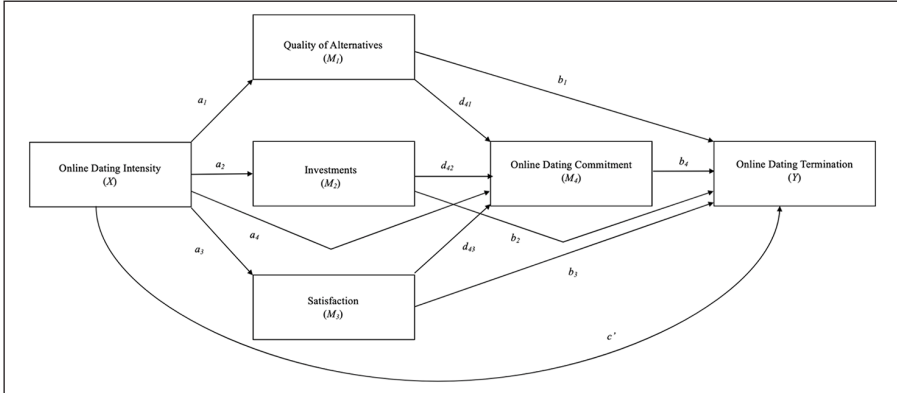


Figure 2. Statistical diagram of the Investment Model mechanisms and commitment mediating the effect of online dating intensity on termination.

mediation, online dating intensity did not predict commitment independently of the mediators ($c' = -.01, p = .83$).

Online dating and termination

Predictors. Building on the previous analyses, a parallel-serial mediation model (see Figure 2) was used to estimate the direct and indirect effects of online dating intensity on termination sequentially through the three Investment Model mechanisms (i.e. quality of alternatives, investments, and satisfaction) and commitment. As hypothesized (H3), online dating intensity negatively predicted termination ($c = -.61, p < .001$), with an explained 10% of the variance. As displayed in Table 3 (H4), online dating intensity also had a specific indirect effect on termination through investments ($a_2b_2 = -.21, 95\% \text{ CI: } [-.42, -.05], a_2b_{2cs} = -.10$). More specifically, online dating intensity positively predicted investments ($a_2 = .93, p < .001$), which negatively predicted termination ($b_2 = -.23, p < .05$). The remaining specific indirect effects through quality of alternatives ($a_1b_1 = .05, 95\% \text{ CI: } [-.01, .14], a_1b_{1cs} = .02$), satisfaction ($a_3b_3 = .01, 95\% \text{ CI: } [-.17, .22], a_3b_{3cs} = .00$), commitment ($a_4b_4 = -.00, 95\% \text{ CI: } [-.07, .04], a_4b_{4cs} = -.00$), quality of alternatives and commitment ($a_1d_{41}b_4 = -.02, 95\% \text{ CI: } [-.06, .00], a_1d_{41}b_{4cs} = -.01$), investments and commitment ($a_2d_{42}b_4 = .08, 95\% \text{ CI: } [-.00, .18], a_2d_{42}b_{4cs} = .03$), and satisfaction and commitment ($a_3d_{43}b_4 = .09, 95\% \text{ CI: } [-.01, .21], a_3d_{43}b_{4cs} = .04$) were not significant. The covariate was a significant predictor of termination in the tests of H3 and H4, with women being more likely to consider terminating an account than men (see Table 3). Online dating intensity still predicted termination after controlling for the mediators ($c' = -.62, p < .001$).

Knowing when to quit

Participants varied widely in their expectations for when to consider terminating their online dating use once they started dating someone offline (RQ1). Some participants

Table 3. Summary statistics for the parallel-serial mediation model.

Antecedent	Consequent																
	Alternatives (M ₁)			Investments (M ₂)			Satisfaction (M ₃)			Commitment (M ₄)			Termination (Y)				
	Coeff.	SE	p	Coeff.	SE	p	Coeff.	SE	p	Coeff.	SE	p	Coeff.	SE	p		
Covariate ^a	.06	.15	.67	-.09	.20	.63	-.22	.19	.23	-.03	.09	.74	.40	.18	<.05		
Intensity (X)	a ₁	.46	.12	<.001	a ₂	.93	.16	<.001	a ₃	.95	.15	<.001	a ₄	-.01	.08	.85	c'
Alternatives (M ₁)		-	-	-	-	-	-	-	-	-	-	-	d ₄₁	-.19	.04	<.001	b ₁
Investments (M ₂)		-	-	-	-	-	-	-	-	-	-	-	d ₄₂	.33	.04	<.001	b ₂
Satisfaction (M ₃)		-	-	-	-	-	-	-	-	-	-	-	d ₄₃	.36	.05	<.001	b ₃
Commitment (M ₄)		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	b ₄
Constant	i _{M1}	4.66	.13	<.001	i _{M2}	3.55	.16	<.001	i _{M3}	4.15	.15	<.001	i _{M4}	2.21	.26	<.001	iy
		R ² = .06			R ² = .14			R ² = .17			R ² = .66			R ² = .13			
		F(2, 202) = 6.76, p = .001			F(2, 202) = 17.19, p < .001			F(2, 202) = 20.77, p < .001			F(5, 199) = 79.64, p < .001			F(6, 198) = 5.28, p < .001			

SE: standard error.

^aSex was included as a covariate and indicator coded where 0 = male and 1 = female.

reported that they would engage in *early deletion* of their account or discontinue using online dating when they found themselves in *frequent contact* with their partner or thinking about the *future potential* of the relationship. Others referenced *later deletion* or wanting to hold off until they were in a *committed relationship*, had “*the talk*” with their partner about removing their accounts, or reached certain *relationship milestones* such as meeting each other’s families or becoming engaged. A startling number of participants also said that they would *never* fully quit online dating or mentioned *workarounds* to complete deletion, such as deactivating their account or hiding their profile on the platform. Several additional responses fell in the *other* category. Table 4 contains descriptions and examples of the 10 primary categories of online dating termination. The table also includes the frequency with which each of the categories occurred in the data.

Discussion

Forty years after its introduction, Rusbult’s Investment Model remains a widely used and influential theory in the study of personal relationships (Perlman et al., 2018). However, much of its development predates the birth of the Internet and ensuing shift from FtF to computer-mediated dating (Rosenfeld et al., 2019). In the present study, we extended the Investment Model to this new digital landscape in an effort to explain online dating’s effects on commitment and the decision to remove oneself from the dating pool. We found that online dating intensity was positively associated with the desire to commit to an online dating partner (*H1*), and that this association was mediated by quality of alternatives, investments, and satisfaction with the relationship (*H2*). We also observed a negative association between intense online dating use and the likelihood of terminating an account (*H3*), which was mediated by investments, but not quality of alternatives, satisfaction, or commitment (*H4*). The decision to stop dating online was further complicated by the lack of consensus among participants on when it was appropriate or expected to do so (*RQ1*). We now turn to the implications of these results for the Investment Model and the burgeoning literature on online dating relationships.

Theoretical implications

In 2015, *Vanity Fair* warned that we are in the midst of a “Dating Apocalypse” (Sales, 2015) created by apps like Tinder that are eroding commitment and threatening the future of courtship for a generation of young people. However, in our study, online dating intensity was shown to positively influence commitment to a current online dating partner. Given the amount of time and conscious effort involved in dating online (Frost et al., 2008), it makes sense that more active use of these services would, in general, be associated with greater interest in securing a relationship. Yet, while we focused on online dating’s overall effect on commitment by controlling for the type of relationship that participants were primarily seeking, past research has revealed up to 13 different motives for use that could be examined as moderators in future studies (e.g. Timmermans and De Caluwé, 2017). For instance, individuals who are motivated by casual sex might experience less of a desire for commitment after using online dating intensely and successfully. Additional factors aside from intensity that might also predict commitment to a partner

Table 4. Categories of online dating termination.

Description	Example	Frequency (%)
<i>Early deletion.</i> Would discontinue soon after meeting; right away or after a few dates.	“I would consider deleting it after about two or three dates.”	10.2
<i>Frequent contact.</i> Would discontinue if they were spending a significant amount of time with their partner or communicating frequently.	“I would consider deleting the app if the person and I have gotten to know each other a little bit more, and we happen to speak to each other every day.”	3.1
<i>Future potential.</i> Would discontinue if they found “the one” or if they thought the relationship had the potential to become long-term.	“If I realize that I don’t need to search for someone else.”	10.2
<i>Committed relationship.</i> Would discontinue if the relationship became committed or was starting to become more serious.	“Once it is official. The relationship has been defined and titles have been given.”	41.2
<i>“The talk.”</i> Would discontinue if they formally discussed it with each other or were asked to do so directly by their partner.	“If he asks me to delete it.”	5.9
<i>Relationship milestones.</i> Would discontinue if they reached a major milestone in the relationship, such as moving in together or getting engaged or married.	“If the relationship went as far as engagement, I would remove my account entirely.”	2.3
<i>Later deletion.</i> Would discontinue later after meeting; after several weeks or months.	“After a few months of dating the person.”	9.0
<i>Workarounds.</i> Would log out, hide their profile, remove the app, or temporarily deactivate their account, thus still retaining the ability to access the platform.	“I would immediately delete the app off of my phone. Obviously, I could redownload it if at any point things went south.”	5.1
<i>Never.</i> Would not discontinue or would use their account indefinitely.	“I won’t delete my account.”	2.0
<i>Other.</i> Responses that were infrequent or did not answer the question directly.	“So people know I am not single anymore and so I am left alone.”	2.3
<i>Other (undetermined):</i> Unsure if they would discontinue.	“I don’t know it depends.”	1.2
<i>Other (affirmative):</i> Completely sure they would discontinue.	“Yes.”	7.5

N=205 participants. Frequencies were calculated based on 255 thematic units that appeared in participants’ responses.

include people’s prior online dating experience (Alexopoulos et al., 2020) or their mediated communication dynamics (Sharabi and Dykstra-DeVette, 2019).

Another primary contribution of this study is in identifying the theoretical mechanisms responsible for online dating's effect on commitment. Consistent with the Investment Model (Rusbult, 1980; Rusbult et al., 2012), intense online dating use affected commitment indirectly by increasing the quality of alternatives, investments, and satisfaction with a current online dating relationship. Thus, although studies have uncovered problems with the abundance of choice in online dating (Alexopoulos et al., 2020; D'Angelo and Toma, 2017; Wu and Chiou, 2009), it is also important to consider the ways that these platforms may encourage people to invest in their partners and help facilitate satisfying bonds. As further evidence of this point, investments and satisfaction were stronger mediators of the association between online dating intensity and commitment than the quality of alternatives to the relationship. Just because online dating provides access to a larger quantity of potential partners (Finkel et al., 2012), it does not guarantee that they are all attainable (Bruch and Newman, 2018). Much like trying to meet someone in a crowded bar, whether one is successful will depend on more than just the number of people in the room. It is also possible that online dating services try to entice people into using their platforms by promising that they will have lots of options (e.g. Courtois and Timmermans, 2018), when in fact it might not be that easy to find quality partners, hence the frustration reported by multiple respondents in qualitative studies (Brubaker et al., 2014; Fitzpatrick and Birnholtz, 2018; Pond and Farvid, 2017; Sharabi and Dykstra-DeVette, 2019).

Of course, commitment in online dating is not just about settling on a partner, but also making the decision to quit the platform. However, our data showed that intense online dating use negatively predicted the intention to terminate an account. If people who start dating online are reluctant to leave, then this could help explain why some continue to use these services even after entering an offline relationship (Alexopoulos et al., 2020; Timmermans et al., 2018). That is, even though people may be ready to commit to someone they meet online, they might also recognize that there is always the chance that the relationship will not work out the way that they hope. In addition, the virtual marketplace created by online dating may serve as a continuous reminder that another (potentially better) partner could be just around the corner (Heino et al., 2010). In this way, online daters may experience a paradox of wanting to commit to a relationship while also wondering whether a better partner is still out there waiting to be found.

Furthermore, we found that the association between intense online dating use and intending to terminate an account could be explained by investments in the online dating relationship. However, neither the other Investment Model mechanisms (i.e. quality of alternatives and satisfaction) nor commitment mediated the association between online dating intensity and account termination. This suggests that perhaps more intense online dating use discourages people from discontinuing their accounts due to a *sunk cost effect* (Arkes and Blumer, 1985), where they invest heavily in their relationships on these platforms and want to get out what they have put in, even once they have found what they initially desired. It also coheres with past research that has shown that the time, money, and energy people devote to online dating can affect their decision-making about potential relationships (Coleman, 2009; Frost et al., 2008). Alternatively, these findings could mean that the fast and strong rewarding value offered by some of these platforms in the form of matches and with it social approval may lead to a relapse even after users find

what they came looking for to begin with (Orosz et al., 2016). For instance, according to the Uses and Gratifications framework (Ruggiero, 2000), people use media such as online dating to satisfy social and psychological needs. If online daters receive social approval from these platforms, they might continue using them to satisfy this need, even after entering a committed relationship. Thus, there are likely still other reasons that people are slow to quit online dating that should be explored in greater depth in future research. These results extend the Investment Model to the contemporary mediated environment by demonstrating its utility for understanding users' stay/leave decisions on online dating platforms.

To further delve into the decision to quit dating online, we also collected open-ended data about when participants would consider terminating their account(s). The results revealed 10 categories indicating that participants developed time-based rules (e.g. *early deletion*, *later deletion*, *relationship milestones*), communication-based rules (e.g. *frequent contact*, "*the talk*"), and relationship-based rules (e.g. *committed relationship*, *future potential*) for when it was appropriate to discontinue online dating. Whereas some of these categories seemed to signal participants' interest in a partner, such as deleting an account because of the relationship's *future potential* or because of the desire for a more *committed relationship*, others did not. For instance, some participants planned to engage in *early deletion* by stopping online dating after the first few dates with a partner or if they found themselves in *frequent contact* with that person. There were also those who said they would *never* delete their account or who devised *workarounds* that would prevent them from having to choose between abandoning online dating and pursuing a committed relationship. The inconsistent expectations evident in participants' responses may reflect shifting norms online (Gershon, 2010), which could pose problems for later stages of relationship development. These qualitative findings complement our quantitative results by illustrating the nuance and complexity in decision making regarding online dating account termination.

Together, the findings from the present study shed light on theoretical processes that may encourage commitment to an online dating partner in the short-term while simultaneously discouraging people from leaving the platform in the long run. In this way, the same qualities of online dating that make these relationships appealing may also be what keeps people around. This seems to echo larger societal concerns that in the current digital landscape "we look to technology for ways to be in relationships and protect ourselves from them at the same time" (Turkle, 2011: xii). Importantly, platform owners/developers also stand to benefit from an online dating experience that keeps people coming back for something better, even if that might potentially harm the future outlook and development of relationships formed online.

These results also advance knowledge about the Investment Model by demonstrating how the concepts of alternative quality, investment size, and satisfaction level can be extended to computer-mediated relationships. Yet, it should be noted that although FtF and virtual investments are similar concepts (e.g. both involve the feeling that one has put a great deal into the relationship), they may not be entirely the same. For instance, people can invest considerable amounts of time, effort, emotional energy, and financial resources in their online relationships, but still manage to keep the rest of their lives separate from their partners (Rusbult et al., 1998). This raises an intriguing question about

whether people may experience the concepts in Rusbult's model differently in virtual environments that would be particularly well suited for further investigation through a qualitative lens.

Limitations and directions for future research

The current study is not without limitations. First, our sample was relatively young, which is not entirely surprising given the rise in online dating among 18- to 29-year-olds (Anderson et al., 2020). However, additional research should be aimed at replicating these findings with an older demographic in order to determine how attitudes toward online dating commitment change across the lifespan. Second, we asked participants to self-report their intentions to commit to a partner or to terminate an account, which can be prone to bias. A valuable direction for future work would be to continue to follow participants over time to see if and when they actually engage in these behaviors. Finally, it is important to recognize that we tested the Investment Model using a cross-sectional sample of online-only relationships. Future research could extend our findings by exploring whether similar outcomes hold for online relationships that transgress offline. Moreover, a longitudinal research design is highly warranted to further study online dating's impact on relationship formation and development and the ways it affects long-term outcomes.

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