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Virtual Dating and the COVID-19 Pandemic: Investigating Motives, Predictors, and Outcomes

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The rise of the coronavirus pandemic in early 2020 initiated a series of restrictions linked to increased loneliness (Ray, 2021; Tull et al., 2020) and social disconnection (Holaday et al., 2021). In response to safety concerns and distancing demands, people turned to communication technologies to meet and interact with others (Canale et al., 2022; Vargo et al., 2020; Wright & Wachs, 2021). One particular form of technology that surged throughout the pandemic was virtual dating, which we define as technologically mediated, non-platonic interactions under the pretense of forming sexual, romantic, and/or intimate connections. In fact, both Tinder and Bumble, two highly used virtual dating platforms, have since reported significant spikes in paid memberships and user engagement (*Activity on Dating Apps*, 2021). Beyond surface-level activity, findings indicate the communication practices of virtual daters have also been impacted by the COVID-19 pandemic. Compared to pre-pandemic, virtual daters report being more open to non-romantic connections (Herrera, 2021), and communicate significantly longer, more honestly, and more purposefully (*Singles in America*, 2021; *The Future of Dating*, 2021).

Despite dreams of post-pandemic normalcy, the COVID-19 pandemic altered social and cultural life. Although restrictions fade and safety concerns wane, impacts of the COVID-19 pandemic continue to ripple across society. In fact, 8% of people surveyed believed COVID-19 has permanently changed their life such that things will never go back to "normal" (Myers, 2021). In the context of virtual dating, a "new normal" has emerged both in terms of technological functionalities and normative behaviors. Virtual dating companies have significantly altered their websites and applications since the emergence of the COVID-19 pandemic (e.g., integrating in-app voice and video functionalities), and position these changes as "long-term enhancements" to virtual dating (Duguay et al., 2022, p. 8). The behavioral practices of virtual daters have also changed significantly; not only are users utilizing video chat with prospective dates significantly more now than pre-pandemic, but they anticipate continuing to use communication technologies for dating regardless of the pandemic (*Singles in America*, 2021).

Despite the wealth of research exploring the early days of the pandemic, little work has investigated enduring impacts of the COVID-19 pandemic on communicative and/or relational processes. For instance, in the modern landscape of virtual dating, we know relatively little regarding why users virtually date or the out-

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comes they experience. Accordingly, this paper has three driving goals. First, the underlying motivations that drive virtual dating are often assumed; unmet social needs were purported to motivate virtual dating during the COVID-19 pandemic (Dibble & McDaniel, 2021; Wiederhold, 2021), yet user motivation is rarely operationalized or explicitly tested. We fill this lacuna by empirically assessing users' underlying motivations for virtual dating in the aftermath of the COVID-19 pandemic. Second, research consistently documents that virtual dating differs across age, sex, and sexual orientation (Bonilla-Zorita et al., 2021; Smith & Duggan, 2013; Bryant & Sheldon, 2017), and similar differences may emerge when considering pandemic-related factors like living situation and vaccination status (Hall et al., 2021). Accordingly, we assess how demographic variables (age, sex, sexual orientation) and situational factors (living situation, vaccination status) shape virtual dating. Finally, we explore relationships between virtual dating motives and loneliness. Taken together, the present study provides empirical insight into virtual dating following the COVID-19 pandemic, investigating motives (i.e., gratifications), predictors (i.e., age, sex, sexual orientation, living situation, vaccination status), and outcomes (i.e., loneliness).

COVID-19 and Virtual Dating

SARS-CoV-2, also known as the coronavirus or COVID-19, was declared a public health emergency of international concern in February 2020 (*COVID-19 Public Health Emergency*, 2020). Resultingly, social life changed drastically. In-person exchanges were largely replaced with technologically-mediated interactions, and the use of communication technologies skyrocketed. Indeed, Gabbiadini et al. (2020) documented increases in both voice and video calls compared to pre-pandemic, and Pew Research Center reports suggest people are participating in more virtual gatherings than ever before (Schaeffer & Rainie, 2020; Vogels, 2020). This pandemic-era dependence on technology developed "new forms of sociality and intimacy" in ways that promoted the meaningful social value of communication technologies (Lupton & Willis, 2021, p. 6). As Vargo et al. (2021) argued, the COVID-19 pandemic triggered "unprecedented changes in both human behavior and emerging technology" that ultimately generate new opportunities for studying communication technologies and mediated interaction (p. 13).

In the context of mediated romance, the COVID-19 pandemic altered the landscape of virtual dating. Virtual dating companies, along with daters themselves, have long battled negative perceptions surrounding mediated dating (Smith, 2016; Smith & Duggan, 2013). In a Pew Research Center report just before COVID-19 was declared a public health emergency, Anderson et al. (2020) revealed that just under half of those surveyed perceived virtual dating as negative (42%) and unsafe (46%). In terms of *communication*, 37% of participants perceived virtual dating as rife with dishonesty and 14% believed it facilitated only impersonal, meaningless communication. Toward a new, more positive image, virtual dating companies used the pandemic as an opportunity to develop additional features (e.g., video chat, virtual "live" speed dating) and promote virtual dating among new and otherwise skeptical users (Myles et al., 2021). In reframing virtual dating services as socially meaningful and relationally valuable, user engagement and communication evolved. A recent survey of over 5000 singles in America revealed

that most virtual daters are more interested in forming meaningful connections and even communicate with others more thoughtfully than pre-pandemic (*Singles in America*, 2021). In another survey of Tinder users, participants predominantly reported being more honest and authentic in how they portrayed themselves and their communication with others compared to pre-pandemic (*The Future of Dating*, 2021). Ultimately, the COVID-19 pandemic has caused people to adapt the ways in which they create and sustain mediated intimacy and romantic relationships. As Gibson (2021) argued, "the pandemic has created a dynamic and highly variable context in which to explore people's experience and negotiation of intimacy with [… virtual dating]" (p. 4).

Virtual Dating Motives

Although frequently assumed that virtual dating during and following the COVID-19 pandemic helps people satisfy unmet social need and mitigate pandemic-related restrictions (Dibble & McDaniel, 2021; Wiederhold, 2021), user motivation is rarely theoretically grounded or empirically tested. To unpack the underlying motivations driving virtual dating following the emergence of COVID- 19, we turn to Uses and Gratifications (U&G) theory. Originally developed to connect people's wants and needs with their media use, U&G theory explains *why* people use certain communication technologies (Katz et al., 1974). A direct contrast to approaches that position users as passive media consumers (e.g., cultivation theory), U&G theory argues that people strategically use media to satisfy needs. U&G theory is an audience-centered approach to media use, such that people are aware of their social and psychological needs and actively engage with media to satisfy those needs (Katz et al., 1974; Rubin, 2009). The broad scope of the theory has enabled it to explain media use across a variety of contexts (Papacharissi, 2009), ranging from radio and television use (Herzog, 1944) to more modern communication technologies such as social media (Chen, 2011; Mull & Lee, 2014; Ryan et al., 2014) and virtual dating (Bonilla-Zorita et al., 2021; Peter & Valkenburg, 2007; Timmermans & De Caluwé, 2017a, 2017b).

In the context of virtual dating, U&G theory illuminates several underlying motives of engagement. Prior to the COVID-19 pandemic, studies document various reasons why people virtually date. Unsurprisingly, several studies report virtual dating as a means for users to find love and casual sex (Clemens et al., 2015; Sumter et al., 2017; Van De Wiele & Tong, 2014). Beyond romantic and sexual motives, research identifies social connection and community building as important motivators (Blackwell et al., 2015). In fact, across several in-depth interviews, users explicitly identified meeting new people and expanding their social network as a primary goal of virtual dating (Henry-Waring & Barraket, 2008; Timmermans & De Caluwé, 2017a). Users also acknowledge the ease of virtual dating as a motivator of use, both in terms of facilitating communication (Wang & Chang, 2010) and mitigating physical distance (Williams et al., 2021). Further, boosting one's self-esteem (Welch & Morgan, 2018) and curbing boredom (Carpenter & McEwan, 2016) are frequently identified motives.

How these motives apply to virtual dating following the emergence of COVID-19, however, is unclear. Research indicates that virtual daters are disinterested in casual relationships and engage with others more meaningfully than ever

before (*Singles in America*, 2021). Additionally, upon interviewing virtual daters, Jonsson (2021) found that ease of communication and connection was a major benefit of virtual dating during the COVID-19 pandemic. Although we have preliminary insight, little has been done to develop theoretically grounded explanations of virtual dating in the aftermath of the COVID-19 pandemic. Toward this goal, we pose the following research question:

RQ1: What are the underlying motivations for virtual dating following the COVID-19 pandemic?

Virtual Dating Predictors

Beyond exploring underlying motivations for virtual dating, a driving goal of this paper is to examine predictors of virtual dating motives following the COVID-19 pandemic. Past research identifies demographic variables as significantly influential on the reasons people date virtually. Consider, for instance, discrepancies in virtual dating as a function of *age*. One study found that people in their 40s were the most active users in virtual dating platforms and revealed a positive correlation between age and the frequency of posting and responding to virtual dating messages (Stephure et al., 2009). Beyond patterns of use, age also relates to underlying motivations for virtual dating. Several studies have found that users 30 years and older seek committed relationships in virtual dating platforms, whereas users in their 20s are more interested in hook-ups and casual sex (Bryant & Sheldon, 2017, Stephure et al., 2009).

User *sex* is another powerful predictor of virtual dating. Valkenburg and Peter (2007) found that males visit virtual dating sites more often than females, with similar trends reported by eharmony over a decade later (*10 Online Dating Statistics*, 2021). Regarding motivations for virtual dating, one study found that Dutch men between the ages of 18-30 were more motivated to use Tinder for casual sex; conversely, 60% of women on Tinder were more interested in committed romantic relationships (Sumter et al., 2017). In general, women seem more motivated to virtually date for social and relational purposes, whereas men are more motivated by sex and casual intimacy (Clemens et al., 2015).

Sexual orientation is also likely to shape virtual dating. Although less explored in extant research, non-heterosexual individuals tend to engage in virtual dating more frequently and perceive their experiences as more positive than their heterosexual counterparts (Anderson et al., 2020). Considering non-heterosexual individuals have been historically marginalized, often isolated from peers and potential romantic partners, virtual dating platforms offer users safe spaces through which they can search for sexual, romantic, and/or intimate relationships. Homosexual virtual daters have previously been shown to be motivated by both romance and sex (Bonilla-Zorita et al., 2021; Clemens et al., 2015), sometimes even more so than heterosexual individuals (Grov et al., 2014). In general, however, relatively little is known regarding what motivates non-heterosexual users to virtually date or how their experiences differ from heterosexual users.

In light of the COVID-19 pandemic, it is equally likely that situational factors related to the pandemic may impact the use of communication technologies, such as living situation and vaccination status. Consider, for instance, virtual dating as a function of one's *living situation*; those who live alone may have unfulfilled

relational needs and, in turn, utilize communication technologies to connect with others and fulfil their social needs (Hall, 2020; Hall et al., 2021). Sarkisian and Gerstel (2016) found that single individuals (i.e., being single or living alone) socialized more with parents, siblings, neighbors, and friends more than married people. It could be, then, that those living alone rely more strongly on communication technologies, such as virtual dating, to socialize and connect with others.

Vaccination status may equally impact virtual dating. In response to the pandemic, dating platforms such as Tinder and Bumble added features to display one's vaccination status on dating profiles. Bumble found that 30% of survey respondents would refuse to go on a date with someone who has not received the vaccination; similarly, Match reported that 56% of users were concerned with a date's vaccination status (Underwood, 2021). As such, toward a more exhaustive account of ways the COVID-19 pandemic has uniquely shaped virtual dating, we examine the influence of vaccination status on dater motives.

Due to the potential influences of demographic (age, sex, sexual orientation) and situational factors (living situation, vaccination status) on virtual dating motivations, we propose the following research question:

RQ2: How do (a) age , (b) participant sex , (c) sexual orientation, (d) living situation, and (e) vaccination status predict virtual dating motivations following the COVID-19 pandemic?

Virtual Dating Outcomes

Similar to the psychological effects of past pandemics like SARS and H1N1 (Hawryluck et al., 2004; Wheaton et al., 2012), the COVID-19 pandemic globally heightened feelings of loneliness and disconnection (Holaday et al., 2021; Tull et al., 2020). Several studies reported increased loneliness both immediately following shelter-in-place orders (Killgore et al., 2020a) as well as months into the pandemic (Killgore et al., 2020b). Although some evidence suggests loneliness has decreased since the emergence of the COVID-19 pandemic (Ray & Shebib, 2022), loneliness levels are still dire. Even before the pandemic, loneliness was a public health crisis (Murthy, 2017); over 50% of U.S. adults reported feelings of loneliness in 2018, with rates surpassing 60% just one year later (*Loneliness and the Workplace*, 2020). Loneliness is particularly problematic because it is frequently linked to various negative health consequences, including decreased mental health, reduced subjective well-being, and increased risk for mortality (Cacioppo et al., 2002; Holt-Lunstad et al., 2015; Richard et al., 2017).

Identifying factors associated with loneliness, especially following the COVID-19 pandemic, is crucial to global health. Loneliness often stems from social isolation and the perception of achieving less social interaction than desired (Pinquart & Sorensen, 2003). To mitigate social disconnection, people often turn to communication technologies to interact with others (Hall et al., 2021) and using communication technologies has been shown to negatively relate to loneliness (Gabbiadini et al., 2020). Communication technologies have become particularly valuable social tools that facilitate connection in ways that can help manage psychological distress. Accordingly, we position virtual dating as an opportunity for users to interact and connect with others in ways that mitigate loneliness.

People often engage in virtual dating for social purposes, such as social con-

nection, community building, and network expansion (Blackwell et al., 2015; Henry-Waring & Barraket, 2008; Timmermans & De Caluwé, 2017a), and past research documents that using communication technologies for social reasons is negatively connected to loneliness. In one study, elderly individuals who identified social motives underlying mobile phone use reported less loneliness than those motivated by personal or entertainment-based needs (Wang et al., 2018). Conversely, using virtual dating for personal reasons (e.g., entertainment, validation) may positively associate with psychological distress. For instance, social media research shows that relational motives positively relate to well-being, whereas passive/consumptive motives negatively relate to well-being (Liu et al., 2019). As such, we propose the following hypotheses:

H1a: Social gratifications pertaining to virtual dating are negatively related to loneliness.

H1b: Personal gratifications pertaining to virtual dating are positively related to loneliness.

Methods

Participants

Participants were recruited from Amazon's Mechanical Turk (MTurk), an online crowdsourcing marketplace commonly used as a research participant pool. All participants were recruited from the United States to minimize socio-cultural differences pertaining to (virtual) dating across our sample. Further, to be eligible, participants could not be in a committed romantic relationship and must have been actively engaged in virtual dating at the time of participation (e.g., using virtual dating applications [Tinder, Bumble]; using communication technologies [text messaging, video chat] to interact with potential romantic/sexual partners). To yield high-quality responses, participants were also required to meet certain MTurk metrics commonly used to indicate reliability and participation reputation (e.g., HIT approval >95 percent, HITS approved >100) (Peer et al., 2014). All participants were compensated $5 for their time; considering average study participation duration (M = 15.4 minutes, SD = 4.12), participant compensation was well above the federal minimum wage of $7.25/hr.

To ensure quality responses, especially given previously documented challenges with MTurk data accuracy and reliability (Chmielewski & Kucker, 2020), the data were thoroughly cleaned and processed. Initially, various attention check questions were included to identify inattentive responses within the survey; participants who missed more than two check questions were removed from the data (n = 121). Additionally, participants who completed the survey in less than 3 minutes were beyond three standard deviations from the mean survey completion time, so these data were removed (n = 89). Responses containing inconsistencies between overlapping questions were removed, such as indicating the use of only "1" dating application while simultaneously reporting use data for more than 1 application, like Tinder and Bumble (n = 42). Finally, participants with suspicious, irrelevant, and/or nonsensical text-entry responses were removed (n = 66). In total, an initial pool of 711 participants completed the survey, with a final corpus of 393 participants retained for data analysis.

In our final sample, 50% of participants identified as female, 49% identified as male, and 1% identified as nonbinary. Participants were primarily 25-40 years old (63%), with fewer aged 18-24 (19%), 41-56 (14%), or over 56 (4%). Most participants were straight (78%), with 10% identifying as bisexual, 5% as lesbian, 4% as gay, and 3% as queer. Half of the participants reported living alone, and most were from urban geographic locations (44%), with less from suburban (43%), or rural areas (11%). The sample was 68% white, 10% Asian American, 9% Black, 6% Latinx, 5% Native American, 2% other race/ethnicity. In terms of vaccination status, 16% of respondents had been vaccinated for COVID-19 by the time of participation, with 66% saying they would get the vaccine as soon as it was available to them and 18% saying they had no plans to get the vaccine regardless of availability.

Procedure

Data collection began approximately one year after the initial shelter-in-place and lockdown orders went into effect across the globe, running from March 15-22, 2021. Details about the study were posted to MTurk, including general study information and eligibility/participation requirements. MTurk users who voluntarily signed up to participate and met eligibility requirements were provided informed consent and forwarded to an online survey via Qualtrics. Participants initially responded to demographic questions, such as sex and age, as well as questions about living situation (i.e., alone vs. with others) and vaccination status (i.e., vaccinated, not vaccinated, but will when possible, will not vaccinate). Subsequent questions were asked about virtual dating use and behaviors, as well as general psychological and psycho-social measures of loneliness and social connection.

Measures

Dummy codes were created for several demographic, situational, and control variables. Sex was coded into three categories, including male (reference group), female, and trans/nonbinary. Sexual Orientation was coded into five categories, including straight (reference group), bisexual, gay, lesbian, and queer. Vaccination status was coded into three categories, including vaccinated (reference group), intends to vaccinate, and no intention to vaccinate. Ethnicity was coded into six categories, including white (reference group), Black, Latinx, Asian American, and Native American, and South Asian/Indian. Finally, geographic region was coded into three groups, including urban (reference group), suburban, and rural.

Virtual Dating Motivations

Underlying motivations for virtual dating following the COVID-19 pandemic were measured using various items pulled from past research applying Uses and Gratifications theory to the study of communication technologies within relationships (Clemens et al., 2015; Jung & Sundar, 2018; Kim, 2016; Ko et al., 2005; Korgaonkar & Wolin, 1999; Sundar & Limperos, 2013; Timmermans & Caluwé, 2017; Van De Wiele & Tong, 2014; Welch & Morgan, 2018). In total, 39 items were included in the survey, all measured using a five-point Likert-type scale (1=*strongly disagree*; 5=*strongly agree*).

Loneliness

Loneliness was measured using the UCLA three-item Loneliness scale (Hughes et al., 2004). Items ranged from 1 (*never*) to 4 (*very often*), and asked participants to reflect on their experiences over the last 2 weeks while answering questions like: "how often do you feel that you lack companionship," "how often do you feel left out," and "how often do you feel isolated from others." The scale has previously demonstrated sufficient consistency and validity (Czerwiński & Atroszko, 2021; Igarashi, 2019; Trucharte et al., 2021), and adequate reliability was achieved in this study ($\alpha = 0.87$). As such, a composite variable was created by calculating the sum of all three items such that higher scores reflected greater levels of loneliness.

Results

Virtual Dating Gratifications (RQ1)

An Exploratory Factor Analysis (EFA) was conducted to identify underlying motives of virtual dating following the COVID-19 pandemic. The Kaiser-Meyer-Olkin measure of sampling adequacy was meritorious (0.88), and Bartlett's Test of Sphericity was statistically significant ($p<.001$). Together, these tests indicate that the data is suitable for principal component analysis. The 39 items were subjected to an EFA with varimax rotation; item retention criteria were consistent with past research applying Uses and Gratifications Theory to the study of virtual dating, such as eigenvalues of 1.0 or greater, individual factor loadings of 0.50 or above, and no significant cross-loadings above 0.40 (Van De Wiele & Tong, 2014; Welch & Morgan, 2018).

After deleting three items due to significant cross-loadings (e.g., "when there is no one else to talk to or be with", "to express my emotions", "to seek out someone to date") and two items due to low primary factor loadings (e.g., "when I'm feeling lonely", "because it facilitations interpersonal communication"), results from factor loadings and the scree plot identified an eight-factor solution. However, the eighth factor containing three items (e.g., "because it's less effortful than other ways of interacting with people", "because I can use it anytime, anywhere", "because it is convenient to use") was not retained due to low alpha reliability and because results from a parallel factor analysis revealed the eigenvalue did not exceed the randomly generated eigenvalue of 1.09 (O'Connor, 2000). As such, the final structure retained for subsequent analysis contained a seven-factor solution that explained 65.31% of the variance (Table 1).

The strongest factor accounting for the most variance was *entertainment*, which reflected the desire to combat boredom and pass time. The ability for virtual dating to facilitate *communication* also emerged as a significant factor, which reflected a psycho-social benefit of communication with others in ways not possible in person. Interestingly, several items in this factor pertained to the ability to communicate across distance and experience others without being physically present. A third factor was *validation*, or the ability of virtual dating to enhance one's self-esteem and sense of attractiveness. The fourth factor was *connection*, which reflects the use of virtual dating to broaden one's social network and enable the formation of new relationships. *Romance* also emerged as a significant factor due to the role of virtual dating in users' search for love and the establishment of romantic connections. A sixth factor was *support*, or the ability for virtual dating to provide users

Table 1. *Results for the Exploratory Factor Analysis of virtual dating gratifications.*

	Loading	Eigenvalue	Variance	α
Factor 1: *Entertainment*		8.14	26.25	.87
to combat boredom.[a]	.818			
to occupy my time.[b]	.778			
when I have nothing better to do.[b]	.746			
to distract myself from something I am supposed to be doing.[a]	.732			
to procrastinate.[b]	.655			
to be entertained.[a]	.610			
as a break at work or during a study period.[b]	.595			
Factor 2: *Communication*		4.26	13.75	.85
because it is easier to communicate with others than in-person.[c]	.785			
because it allows me to communicate with others in ways I cannot in "real life".[c]	.739			
to be able to openly discuss how I feel.[d]	.723			
because it allows me to immerse myself in places I cannot physically experience.[e]	.601			
because I feel like I am able to experience things without actually being-there.[e]	.563			
because it creates the experience of being present in distant environments.[e]	.555			
Factor 3: *Validation*		2.04	6.58	.72
to feel good about myself.[f]	.855			
to feel attractive.[f]	.831			
to get an "ego-boost".[b]	.731			
to feel validated.[f]	.675			
Factor 4: *Connection*		1.73	5.56	.89
to meet new people.[a]	.720			
to meet other people in my area.[g]	.678			
to talk to other people in my community.[g]	.650			
to broaden my social network.[b]	.582			
to find social companionship.[a]	.579			
to find other people using location-based searching.[g]	.527			
Factor 5: *Romance*		1.67	5.35	.74
to fall in love.[a]	.862			
to develop a romantic relationship.[a]	.777			
to establish an emotional connection with someone.[a]	.709			
Factor 6: *Support*		1.23	3.96	.78
to find support and understanding.[d]	.689			
to find encouragement and/or reassurance.[d]	.627			
Factor 7: *Sex*		1.20	3.86	.80
to increase my sexual experience.[a]	.826			
to find a new sexual partner.[a]	.812			
to find a one-night stand.[a]	.742			

Note. Item sources denoted by superscript: [a]Clemens et al., 2015; [b]Timmermans & Caluwé, 2017; [c]Korgaonkar & Wolin, 1999; [d]Kim, 2016; [e]Jung & Sundar, 2018; [f]Welch & Morgan, 2018; [g]Van De Wiele & Tong, 2014.

with support, understanding, encouragement, and reassurance. Finally, *sex* was a significant factor as people use virtual dating to find sexual partners and engage in sexual activity. Correlation analyses reveal several significant positive and negative relationships between gratifications (Table 2). Entertainment and romance, as well as romance and sex, were negatively correlated. Conversely, many gratifications were positively related, including communication and support, connection and romance, and support and connection, among others.

Table 2. *Bivariate correlations among continuous study variables.*

	V1	V2	V3	V4	V5	V6	V7	V8	V9
Mean	3.14	3.27	3.22	3.97	3.83	3.20	3.02	38.4	6.26
SD	0.95	0.90	1.10	0.60	0.87	1.09	1.15	18.12	2.20
Range	1-5	1-5	1-5	1-5	1-5	1-5	1-5	18-87	3-12
V1: Entertainment	--	.50**	.58**	.08	-.17**	.21**	.41**	-.30**	.02
V2: Communication		--	.54**	.35**	.09	.57**	.29**	-.14**	-.08
V3: Validation			--	.17**	.05	.39**	.39**	-.21**	.11*
V4: Connection				--	.39**	.33**	.06	.08	.01
V5: Romance					--	.28**	-.14**	.11*	.07
V6: Support						--	.22**	-.11*	-.06
V7: Sex							--	-.12*	-.11*
V8: Age								--	-.01
V9: Loneliness									--

Note. N=393. *p<.05; ** p<.01.

To assess the extent to which these gratifications motivated virtual dating following the COVID-19 pandemic, one-sample *t*-tests were conducted on the seven gratifications with 3 set as the test value. Results revealed that entertainment ($t(393) = 2.90$, $p < .01$), communication ($t(393) = 5.89$, $p < .001$), validation ($t(393) = 3.91$, $p < .001$), connection ($t(393) = 32.01$, $p < .001$), romance ($t(393) = 18.87$, $p < .001$), and support ($t(393) = 3.71$, $p < .001$) were all significantly above the midpoint of the scale. The *t*-test for sex was not significantly different from the midpoint ($t(393) = 18.76$, $p = .78$). Generally, these results indicate that virtual daters were motivated by these six gratifications in the aftermath of the COVID-19 pandemic.

Predictors of Virtual Dating Gratifications (RQ2)

Hierarchical regressions were conducted to examine associations with age, sex, sexual orientation, living situation, and vaccination status and virtual dating gratifications following the COVID-19 pandemic. Several control variables were included in step 1 using forced-entry, including four dummy-coded variables for ethnicity and two dummy-coded variables for geographic region. Step 2 variables were added using stepwise entry, including two dummy-coded variables for sex, four dummy-coded variables for sexual orientation, one dummy-coded variable for living situation, and two dummy-coded variables for vaccination status (Table 3).

Table 3. *Hierarchical regressions of control, demographic, and situational variables on virtual dating gratifications.*

	Entertainment		Communication		Validation		Connection		Romance		Support		Sex	
Step 1	b	SE	b	SE	b	SE	b	SE	b	SE	b	SE	b	SE
Black	-.09	.16	.22	.16	-.04	.19	-.08	.11	-.36*	.15	.28	.19	-.05	.18
Latinx	.29	.20	.04	.20	.14	.24	-.11	.14	-.43*	.19	.26	.24	-.16	.23
Asian American	.19	.15	.04	.15	.08	.18	-.11	.10	.01	.14	.35*	.18	.09	.17
Native American	.03	.20	.55**	.19	.24	.24	-.18	.13	-.23	.19	.54*	.23	.01	.23
South Asian/Indian	.08	.64	.21	.63	.28	.76	.16	.43	.12	.61	.33*	.76	.28	.73
Suburban	-.17*	.10	-.20*	.10	-.21	.12	-.05	.07	.04	.09	-.20	.12	-.33**	.11
Rural	-.22	.15	-.21	.15	-.24	.18	-.04	.10	.08	.15	-.23	.18	-.35	.18
R^2	.03		.04		.03		.01		.03		.04		.05	
$F(7, 387)$	1.91		2.33*		1.64		.56		1.87		2.33*		2.64**	
Step 2														
Age	-.36*	.07			-.27**	.08							-.24**	.08
Female													-.80***	.11
Trans/Nonbinary													-.38*	.16
Bisexual									-.43**	.15				
Gay									-.60**	.15				
Lesbian														
Queer														
Live alone									.21*	.09				
Will Vaccinate			.25**	.10							.40**	.12		
Will Not Vaccinate					-.32*	.14								
ΔR^2	.07		.03		.05				.06		.03		.16	
F	(8,387) = 5.36***		(8,387) = 3.00**		(9,387) = 3.25**				(10,387) = 3.55***		(8,387) = 3.63***		(10,387)=10.56***	

Note. N=393. Reference groups are white, urban, male, heterosexual, live with others, and vaccinated for ethnicity, geographic region, participant sex, sexual orientation, living situation, and vaccination status, respectively. Unstandardized beta and SE estimates are from the final step of each model. *p<.05; ** p<.01; *** p<.001.

Regarding demographic variables, results revealed significant relationships between age, sex, and sexual orientation and several virtual dating gratifications. Age was negatively associated with entertainment, validation, and sex, such that older individuals were less motivated by these gratifications than were younger participants. Regarding participant sex, male virtual daters reported being more greatly motivated by sex than either female or trans/nonbinary participants. Regarding sexual orientation, heterosexual individuals reported virtual dating in search of romance/love more than either gay or bisexual participants.

For situational factors, results revealed a positive association between living situation and romance; those living alone were more likely to use virtual dating for romance/love than those living with others. Regarding vaccination status, unvaccinated virtual daters with the intention to vaccinate when able reported being more motivated by support or communication than participants who were vaccinated. Relatedly, virtual daters who reported no intention to vaccinated were less motivated by validation than participants who were vaccinated.

Outcomes of Virtual Dating Gratifications (H1)

Hypothesis 1 predicted that social-based gratifications are negatively related to loneliness (H1a), whereas personal gratifications are positively related to loneliness (H1b). Upon assessing the gratifications that emerged in this study, and in line with past research (Sumter & Vandenbosch, 2019), we categorized social gratifications as including communication, connection, romance, support, and sex, and personal gratifications included entertainment and validation. Hierarchical regression was conducted to examine the influence of virtual dating gratifications on loneliness; control variables were included with forced-entry in step 1 (ethnicity, geographic region), demographic variables (age, sex, sexual orientation) and situational factors (living situation, vaccination status) were included with forced-entry in step 2 and the seven gratifications were included with stepwise entry in step 3 (Table 4).

Regarding H1a, communication was negatively related to loneliness, indicating that those motivated by the ease of communication when virtually dating were less lonely than those unmotivated by this gratification. Sex motivation was also negatively related to loneliness, as those motivated by sex via virtual dating were less lonely than those unmotivated by the sex gratification. Effect sizes for both communication and sex on loneliness were small. Connection, romance, and support were not significantly related to loneliness. Together, H1a was partially supported.

Regarding personal gratifications, validation was positively related to loneliness, indicating that those who used virtual dating to get validation and receive an ego-boost were lonelier than those who were unmotivated by validation. The effect size for validation on loneliness was small. The entertainment gratification of virtual dating was not significantly related to loneliness. As such, H1b was partially supported.

Discussion

The COVID-19 pandemic has fundamentally impacted the nature of human interaction and social connection. In the context of virtual dating, a "new normal"

Table 4. *Hierarchical regression of control variables, demographic variables, situational factors, and virtual dating gratifications on loneliness.*

	Loneliness			
	b	SE	*p*-value	Cohens f^2
Step 1				
Black	-.53	.39	.07	
Latinx	-.79*	.48		
Asian American	-.08	.36	.82	
Native American	-.41	.50	.10	
South Asian/Indian	-.43	1.54	.52	
Suburban	.53*	.24		
Rural	.55	.38	.15	
R^2		.05		
F (7, 382)		2.72**		
Step 2				
Age	-.01	.17	.96	
Female	.09	.26	.72	
Trans/Nonbinary	.25	.36	.49	
Bisexual	.72**	.36		
Gay	.47	.56	.40	
Lesbian	-.22	.51	.66	
Queer	.59*	.72		
Live alone	-.37	.22	.10	
Will Vaccinate	-.41	.31	.19	
Will Not Vaccinate	-.50	.38	.06	
ΔR^2		.06		
F (17, 382)		2.60**		
Step 3				
Entertainment			.69	
Communication	-.40**	.15		.02
Validation	.54***	.13		.03
Connection			.49	
Romance			.25	
Support			.95	
Sex	-.26*	.12		.02
ΔR^2		.05		
F (20, 382)		3.27***		

Note. *N*=393. Reference groups are white, urban, male, heterosexual, live with others, and vaccinated for ethnicity, geographic region, participant sex, sexual orientation, living situation, and vaccination status, respectively. Unstandardized beta and SE estimates are from the final step 3 model. *p<.05; ** p<.01; *** p<.001.

has emerged in the ways users create mediated intimacy and relationships. Understanding what motivates virtual dating and the resulting outcomes users experience is paramount in explicating mediated romantic relationships following the COVID-19 pandemic. Accordingly, the current project empirically examined the underlying motivations for virtual dating following the COVID-19 pandemic considering demographic variables (e.g., age, sex, sexual orientation) and situational factors (e.g., living situation, vaccination status), and isolated relationships between virtual dating motives and loneliness.

Results revealed various motivations for virtual dating following the COVID-19 pandemic, including personally focused (e.g., entertainment, validation) and socially oriented gratifications (e.g., communication, connection). Several demographic and situational variables were significantly associated with virtual dating motives. Additionally, virtual dating gratifications were associated with loneliness in ways that generally supported predictions; social gratifications of communication and sex were more negatively related to loneliness, whereas the personal gratification of validation was positively related. Taken together, this project offers theoretical and pragmatic insight regarding the predictors, motives, and outcomes of virtual dating following the COVID-19 pandemic.

Implications

The results of this study offer several theoretically grounded explanations of virtual dating following the COVID-19 pandemic. Similar to pre-pandemic research (Bryant & Sheldon, 2017; Carpenter & McEwan, 2016), entertainment explained the most variance among all seven virtual dating gratifications. Also in-line with pre-pandemic findings (see Bonilla-Zorita et al., 2021), gratifications regarding connection, communication, romance, and sex emerged. Mean values indicated connection was the driving reason for virtual dating in this study, followed by romance and communication, respectively. Considering several items of the communication factor regarded the ability to feel present in physically distant environments, these results suggest that people are relying on virtual dating to form new relationships at a distance, something particularly important in light of the COVID-19 pandemic. Ultimately, these findings generally support the notion that users are virtually dating following the COVID-19 pandemic in search of connection (*The Future of Dating*, 2021) and communication (*Singles in America*, 2021).

Not everyone virtually dates for the same reasons, however, and the present study identified several demographic variables related to the motives of modern virtual daters. Consistent with past research (Bryant & Sheldon, 2017, Stephure et al., 2009; Sumter et al., 2017), age was negatively related to entertainment, validation, and sex. The importance of meaningful relationships increases with age (Carstensen, 1995), so older individuals may perceive virtual dating as a relational tool in ways that diminish personal motivations of entertainment and validation. This suggests that older individuals should also be more strongly motivated by social gratifications like communication and connection than younger users, which has been supported in past studies of virtual dating (Stephure et al., 2009; Sumter et al., 2017). Yet, our results deviate from these pre-pandemic findings such that age was not significantly related to social motives of communication or connection. Ultimately, these findings suggest age is a particularly relevant factor for personal

motives associated with virtual dating.

Regarding participant sex, the motive of sex differed in stereotypical ways; male virtual daters were more motivated by casual sex than female and trans/nonbinary users. Research consistently shows that men go online in search of sex and casual intimacy (Baumgartner et al., 2010; Sumter et al., 2017), and we report this trend in the context of virtual dating following the COVID-19 pandemic. We also extend these findings beyond a binary approach to sex by documenting male virtual daters as significantly more motivated by casual sex than trans/nonbinary users.

Sexual orientation was not a particularly strong predictor of virtual dating, as romance was the only gratification that differed as a function of sexual orientation. Results showed that gay and bisexual individuals were less motivated by romance than heterosexual virtual daters. Interestingly, lesbian and queer virtual daters did not significantly differ from heterosexual users across any of the seven gratifications explored in the present study. Due to the complete dearth of research exploring virtual dating among non-heterosexual populations, it is difficult to consider how these findings compare to pre pandemic; additional research is needed to further unpack virtual dating across different sexual orientations. However, we offer preliminary insight into how virtual daters are differently motivated as a function of their sexual orientation.

In terms of situational factors, unvaccinated virtual daters with the intention to vaccinate when able reported being more strongly motivated by communication and support than users who were already vaccinated. Conversely, differences in motives between vaccinated virtual daters and those with no intention to vaccinate were not significant for any social gratifications, positioning virtual dating platforms as particularly meaningful for those yet unable to receive COVID-19 vaccination(s). This is important considering coronavirus vaccines are widely available, yet over one-fifth of the U.S. population remains completely unvaccinated (CDC, 2022). As new vaccines for COVID-19 continue to become available annually (Goodman, 2022), researchers must continue to investigate the role of vaccination status on human behavior and social processes.

Considering the wealth of research showing increased loneliness during and resulting from the COVID-19 pandemic (Holaday et al., 2021; Killgore et al., 2020b; Ray, 2021; Tull et al., 2020), we considered associations between virtual dating and loneliness following the COVID-19 pandemic. When controlling for various demographic and situation variables, virtual dating gratifications were associated with loneliness generally in line with predictions; social gratifications of communication and support were negatively related to loneliness, whereas the personal gratification of validation was positively related to loneliness.

Theoretically, these findings support the underlying premise of Uses and Gratifications theory, which argues that media users know what they want and make strategic media choices to meet underlying needs (Katz et al., 1974). A fundamental assumption of the theory is that strategic media choices are related to social and/or psychological outcomes connected to these choices (Katz et al., 1974; Rubin, 2009). The findings from this study support this assumption; accordingly, we provide convincing and theoretically grounded evidence that the motives of virtual dating are significantly connected to outcomes related to social connection

and loneliness. In the wake of the COVID-19 pandemic, virtual dating has been suggested to mitigate pandemic restrictions and resolve psychological distress (Wiederhold, 2021). Virtual dating is often assumed as meaningful for interpersonal communication and connection, and we offer empirical evidence in support of these claims.

Limitations, Future Directions, and Conclusions

The findings presented here must be considered in tandem with several study limitations. Initially, we measured gratifications with items pulled from past research applying Uses and Gratifications theory to the study of communication technologies and virtual dating, all of which were published pre-pandemic. As such, it may be that other gratifications more specific to the COVID-19 pandemic explained virtual dating and were simply not captured in this study. Toward a more exhaustive account of motives explaining virtual dating following the COVID-19 pandemic, future research should interview virtual daters to assess and identify their underlying motivations more qualitatively.

This study was also cross-sectional and thus unable to decisively determine the direction of effects or make causal claims. We proposed that virtual dating motives shape loneliness, but it may be equally likely that loneliness drives virtual dating behaviors. Future research should study virtual dating more experimentally or longitudinally to establish true cause and effect relationships between demographic variables, virtual dating motives, and well-being.

Additionally, demographic and situational variables accounted for relatively little variance in the motives of virtual dating following the COVID-19 pandemic. These effect sizes were consistent with past research (Van De Wiele & Tong, 2014; Welch & Morgan, 2018), suggesting that factors beyond those analyzed here influence virtual dating gratifications. Similarly, the variance in loneliness explained by virtual dating gratifications was also low. Future research must examine how additional demographic, situational, and virtual dating factors shape well- being.

Finally, the data presented here are becoming increasingly outdated. As the present study is placed in the context of a fast-moving phenomenon, it may be that our results no longer accurately reflect virtual dating motives or outcomes. However, the pandemic is enduring, with new variants emerging and vaccines becoming available; all insight regarding impact(s) of the COVID-19 pandemic are important.

Virtual dating has spiked in the wake of the COVID-19 pandemic. The driving goals of the present project were to identify predictors, motives, and outcomes of virtual dating following the COVID-19 pandemic. Several demographic and pandemic-related variables were significantly related to virtual dating motives, and demographic variables, situational factors, and virtual dating gratifications were significantly associated with loneliness following the COVID- 19 pandemic. In recognizing the changing nature of our social ecology and the use of communication technologies resulting from the COVID-19 pandemic, this project sheds light on the modern landscape of virtual dating.

Discussion

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