



Review

Intimate Relationships during COVID-19 across the Genders: An Examination of the Interactions of Digital Dating, Sexual Behavior, and Mental Health

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Abstract: The COVID-19 pandemic has resulted in economic hardship, psychological stress, anxiety, and depression in a significant proportion of the global population. However, the bidirectional effects of social isolation and pre-existing or developed psychological stress could inform sexual behaviors and affect digital dating outcomes. Additionally, it is unknown whether intimate behaviors and relationships have been equally affected across the genders during the COVID-19 pandemic. The purpose of this study is to contrast the course of intimate relationships pre-and post-COVID-19, with a focus on diverse genders, digital dating, mental health, and behavior. A review of the dating landscape during COVID-19 is developed in this study, encompassing themes including diverse genders, sexual orientation, demographic characteristics, sexual behavior, the state of psychological wellbeing, and interactions with digital dating apps. The authors reviewed the trends and challenges of digital romance. Dating before and during the pandemic is explored, discussing how COVID-19 experiences may inform future romantic partnerships. Mobile dating applications saw a surge in downloads and usage across popular platforms, including Tinder (3 billion swipes in March 2020) and Ok Cupid (700% increase in dates), with the top 20 dating apps gaining 1.5 million daily users. Cross-sectionally, being younger, single, and having higher levels of stress was a predictor of higher dating-app usage during the COVID-19 lockdowns. Risky sexual behavior and having multiple sexual partners were reduced during social distancing as there was an increased worry of contracting the virus. Heightened incidents of domestic/intimate partner abuse have caught the headlines in several countries. COVID-19 during lockdown has also posed barriers to accessing support and help from sexual and mental health services.

Keywords: COVID-19; online dating; dating behavior; dating apps; digital sexual behavior; sexual psychological health; mental health; mental health impacts



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1. Introduction

The COVID-19 pandemic continues to affect the world population globally (Starks et al. 2020; World Health Organization 2021). As of June 2021, the United States alone has accounted for over 33 million cases of COVID-19 infections and over 600,000 deaths (Worldometer 2021). Studies globally have resulted in a significant rise in mental health problems, with exacerbation in individuals with pre-existing mental health disorders (Carmassi et al. 2020; Karantonis et al. 2021), as well as new mental health events across all demographics and age groups (Gavin et al. 2020; Columb et al. 2020; Lyne et al. 2020; Franic and Dodig-Curkovic 2020; Probst et al. 2020; Dawel et al. 2020; Van Agteren et al. 2020; Magson et al. 2021; Broadway et al. 2020; Domínguez-Salas et al. 2020; Guo et al. 2020; Kleiman et al. 2020). Additionally, the pandemic has adversely affected the underinsured, uninsured, or unemployed in the USA, causing additional stress (Jewell et al. 2020).

Interestingly, being subjected to COVID-19-related information for three hours or more per day can induce new-onset or worsening depression, anxiety, and insomnia (Mongkhon et al. 2021). It is understood in Italy that a proportion of the population may require

psychological interventions for acute post-traumatic stress (Forte et al. 2020). COVID-19-related post-traumatic stress symptoms include “intrusion, avoidance, negative affect, anhedonia, dysphoric arousal, anxious arousal, and externalizing behavior” (Forte et al. 2020). In India, 40.5% of study participants had either anxiety or depression, three-quarters of whom reported moderate levels of stress, and 71.7%, poor mental well-being associated with the COVID-19 pandemic (Grover et al. 2020).

It remains uncertain what impact COVID-19 has had on social relationships. Interestingly, a simple Google search highlights the perceived association with COVID-19 and the breakdown of partner relationships. Indeed, many NGOs dealing with mental health have front-facing website notifications issuing lists of warning patterns of amplified COVID-related behaviors that may be detrimental to pre-existing or new relationships. In the case of those not yet in relationships, how they continue to form meaningful relationships during the COVID-19 pandemic remains somewhat uncertain in the literature, particularly if COVID-related mental stress is also superimposed on an attempt to form a new relationship. This paper explores many of the questions that relate to the development and stability of relationships that have begun during COVID-19.

1.1. COVID-19 and Its Implications for Intimate Relationships

COVID-19 has been associated with a significant decline in economic prosperity. For example, job security across some segments of the economy has been severely impacted and has resulted in increased levels of community stress. During COVID-19 lockdowns, there has also been a lack of active and social contact for individuals. These stressors can also negatively impact relationships and affect one’s sexuality and function (Pennanen-lire et al. 2021). During the COVID-19 pandemic, a cross-sectional study with participants from Germany and Austria concluded that younger cohorts, living alone, who were unmarried or without a partner, experienced higher stress levels (Schnell and Krampe 2020). Previous studies showed that older Germans aged 65 and over saw no change in their mental wellness during the first COVID-19 lockdown, which may be attributed to their greater resilience than younger persons in this age group (Hajek and König 2022). Cohabiting couples are spending more time together because of the COVID-19 crisis, whereas single people are spending more time alone. Although loneliness is not uncommon, time spent with friends or at work during the global pandemic was replaced by more time spent alone, which could exacerbate social alienation for those without romantic partners (Moore and March 2020).

The effect of family planning and COVID-19 has drawn some media attention. For example, expressions such as “coronavirus baby boom” and popular social media hashtags have arisen, including #coronials or #quaranteens (a generation conceived during the COVID-19 pandemic) (Döring 2020; Burges 2020). The opposite was true for a study in China on sexual and reproductive health, where 22 percent reported decreased sexual appetite, 41 percent reported decreased sexual intercourse frequency, and 30 percent reported increased masturbation frequency. Additionally, 20 percent reported decreased alcohol intake before or after sexual intercourse, and 31 percent reported a decline in partner relationships (Li et al. 2020). In a study that weighed the effects of the COVID-19 pandemic on sexual functioning and activity, there was a gender-specific variation in the decline of sexual activity and desire, with females experiencing a greater decline than males (Masoudi et al. 2022). Possible explanations for these discrepancies include the fact that women are more inclined than males to disclose their sexual status. Additionally, prolonged stress raises cortisol levels, particularly in women, causing sexual dysfunction due to a lower sex drive. In Australia, participants with spouses reported more sex, with a decline in intercourse in boyfriend/girlfriend relationships and casual hook-ups (Coombe et al. 2021). Abstinence from sexual intercourse was attributed to interruptions in reproductive health care and the availability of abortion services, contraceptive access, STI management, and concerns regarding the COVID-19 infection rate risk. Despite the rise in frequency of sexual intercourse reported in certain countries (Yuksel and Ozgor 2020), the evaluation of couples’

intent to become pregnant due to pandemic-related barriers is yet to be established; such a rise in frequency may lead to unwanted pregnancies, abortions, and challenging financial situations in the wake of the post-pandemic economic recession.

Mobile phone and dating site applications have seen a global surge in usage since the start of COVID-19. In the fourth quarter of 2020, 39% of single, divorced, or widowed consumers said that they had used an online dating site in the previous month, based on the online dating landscape (Morris 2021). According to the research firm *Apptopia* (Garsd 2020), the top 20 dating apps had 1.5 million daily active users in 2020. Freer (2020) reported an 18% increase in dating apps during the second quarter compared to the first quarter of 2020. From March to May 2020, the dating site Bumble reported a 76 percent increase in in-app video calls (Becker 2020), while Ok Cupid observed a 700% increase (Fortune Editors 2021). At the start of the COVID-19 pandemic, Tinder reported 3 billion swipes in a single day. Tinder is a significant dating application; in 2018, there were 57 million users worldwide (Holtzhausen et al. 2020). Currently, Tinder is the most downloaded dating service in the world, with over six million monthly users in January 2021 (Tankovska 2021a). According to data from an April 2020 study of online-dating-app consumers in the United States, 31% of respondents used online dating applications or sites more than they had before the COVID-19 pandemic (Tankovska 2021b). The effects of fast-tracked relationships developing in the context of COVID-19 may have long-term mental health consequences that have yet to be explored.

COVID-19 posed a question for new lovers—could this be love or lockdown stress? Some partnerships may have ignited due to the “misattribution of arousal”, in which people misinterpret mental or physical stimuli, such as the tension of a global pandemic, for romantic feelings (Steeth and Dulaney 2020). Contrary to dating apps being used as a platform for explicit sexual interactions, trends in dating apps have altered, with users honing their conversational skills due to the limitations of no-contact restrictions (Dockterman 2020), fostering stronger communication to counter this distance. Whether emotions were genuine or were “taken hostage” by the misattribution of arousal, globally, people were confessing their romantic feelings more prominently (Fetters 2020), a by-product conferred by the pandemic’s effects of fear, boredom, loneliness, and cabin fever-induced irresponsibility.

As suggested above, traditional mediums of meeting a potential life partner have been replaced by the adoption of dating applications and digital platforms. The worldwide demand for online dating services was previously projected to be USD 3.2 billion, with the United States having the highest number of users, followed closely by the European countries of Spain and France (Buchholz 2021). According to data from a 2017 survey, the frequency of meeting online for heterosexual couples has increased from 2% to 39%, whereas meeting a potential romantic interest through friends and family has decreased dramatically (Rosenfeld et al. 2019; Buchholz 2020). According to the Pew Research Centre, three out of ten Americans have used a dating platform or website, with 12 percent of those who met someone online marrying or staying in the relationship (Anderson et al. 2020). To the authors’ knowledge, there is a lack of statistics comparing the success rate of dating app usage of meeting online, forming relationships and transitioning to long-term courtship or marriage.

1.2. Aims

Given a plethora of data on enhanced dating app usage due to COVID-19, we are unaware of any research studies pertaining to the effects of dating and digital dating that are focused on people of different sexual orientations, diverse populations, and each gender’s mental health. Our study aimed to: (1) review the current knowledge on psychological measures related to sexual and romantic relationships as a result of COVID-19, and (2) examine the mental health implications of traditional and digital dating during the global pandemic among various genders and sexual orientations across global populations.

2. Materials and Methods

This study adopted a state-of-the-art review approach that outlines the current state of knowledge in the field of diverse genders and sexual orientations as our chosen cohort of investigation. The authors reviewed articles on heterosexual and LGBTQI+ orientations and relationship behaviors in relation to mental health.

The selected literature addressed the study's aims by combining retrospective insights from relevant studies that observed the attitudes and behaviors of our study's cohort in previous pandemics, in contrast with recent developments both before and during the global COVID-19 pandemic. To highlight the priorities for further investigation that will inform the application of attachment theory in clinical settings through an endemic lens, these priorities were considered when identifying suitable studies. Only published studies in English were considered.

The following electronic databases were used to perform the search: PubMed, the authors' institutions' library databases, global associations, and organizations' prime communication outlets (e.g., the WHO). Keywords and the MeSH descriptor included a minimum of two key terms across various combinations: "COVID-19", "SARS-CoV-2", "COVID-19 global pandemic", "domestic relationships", "romantic relationships", "intimate relationships", "couples relationship", "relationship health", "relationship behavior", "attachment theory", "attachment styles", "women's mental health", "men's mental health", "LGBTQI+ mental health", "COVID-19 relationships", "COVID-19 social behavior", "COVID-19 dating", "pandemic relationships", "pandemic dating", and "pandemic social behavior".

3. Discussion

3.1. Gender-Diverse Communities

3.1.1. Women

Rosenberg et al. (2021) reported that during the initial response to the USA pandemic, the population most at risk of depression and loneliness was single women aged between 20 and 29, in addition to low-income Americans. This contrasts with Americans who had frequent face-to-face social and sexual interactions during that period. Another study, based on evaluating pandemic distress, noted higher levels of psychological detachment, depression, anxiety, and stress in women (Domínguez-Salas et al. 2020).

3.1.2. LGBTQI+

Current research highlights the existence of a disproportionate COVID-19 impact on LGBTQI+ populations (Phillips et al. 2020; Gibb et al. 2020). Although LGBTQI+ minorities share the same vulnerability to infection from the virus as the general population, LGBTQI+ individuals are more likely to encounter numerous psycho-social complexities, ranging from immunocompromised states, elevated comorbidities with sexually transmitted illnesses, other chronic medical conditions, drug misuse, decreased access to health services, economic restrictions, and the lack of social connection through public events such as Pride gatherings and ceremonies (Banerjee and Nair 2020).

COVID-19-related stress experienced by the LGBTQI+ populations was heightened due to the pre-existing stigma imposed on sexual minorities. Physical shifts to move back home due to necessity have heavy mental ramifications for LGBTQI+ persons with previous domestic abuse and/or traumatic environments, coupled with potential financial severance from pre-existing therapeutic engagements (Salerno et al. 2020a). Rejection from family homes was exacerbated by mandated lockdowns, resulting in homelessness, and previously allocated funding intended for these populations was redirected toward combating the pandemic health crisis (Camargo et al. 2021). Another plausible consequence of moving back under 'traditional parental roofs' with conservative structures is this action may pressurise gender-diverse young adults towards obscuring their current identity, postulating the possibility of off-shoot effects toward identity dissociation.

These conversations put further emphasis on the need for the development of mental health e-therapies tailored for LGBTQI+ users. Lucassen et al. (2018) state that LGBTQI+

youths were interested in eHealth tools (as shown in their study on the Rainbow SPARX program), reporting positive responses. Due to the complexities of language that was deemed patronizing of certain phrases utilized in the program, future e-health or m-health developments could include preference levers where individuals can personalize the customization of e-therapy profiles, aiding their utility for long-term mental health improvements.

3.1.3. Men Who Have Sex with Men (MSM)

In 2018, gay men still accounted for 69 percent of new HIV diagnoses in the United States, including transgender, bisexual, and other men who have sex with men (Starks et al. 2020). Gay men and MSM are 27 times more likely than the general population to contract HIV worldwide (United Nations Aids 2018). It is obvious that social distancing practices are effective in mitigating both sexually transmitted diseases and COVID-19 disease. In a study by Starks et al. (2020), the proportion of participants disclosing marijuana and other illegal substance usage decreased, as did the reporting of condomless anal sex (CAS) with casual partners, but the connection between other illegal drug use and risky sexual activity became stronger. Similarly, excessive alcohol intake escalated in the wake of the pandemic as an avoidant coping mechanism for loneliness, isolation, and stress (Neill et al. 2020; Tran et al. 2020).

Another study conducted on individuals aged between 18 and 29 years in MSM polyamorous communities found that, during the pandemic, they were less likely to use digital platforms to seek partners (Timmermans and Courtois 2017) and had fewer multiple partners; this reduced sexual activity was associated with lower psychological well-being because of COVID-19 restrictions (Camargo et al. 2021). Comparably, a study focused on MSM in Israel indicated that 39.5% of Israelite young men who identified as single continued to meet new casual sex partners during COVID-19 lockdowns (Shilo and Mor 2020), with an average of 3 sexual partners. Web-based sex-seeking behavior for MSM and transgendered women is correlated with higher levels of endorsement of conventional machismo ideals and a greater outness of being male, according to Espinosa da Silva et al. (2020). Studies suggest that not being in a committed relationship and having elevated levels of mental health stress were the main predictors of risky sexual behavior among people aged 18 to 30. Seeking sexual counterparts on the internet was also positively associated with internalized stigma and the experience of discrimination.

On a positive note, dating apps have been shown to be a promising outlet for disseminating sexually transmitted disease psychoeducation. Yang et al. (2019) found that only 10 apps out of 575 featured sexual health information, such as HIV/sexually transmitted disease awareness, the importance of HIV testing, and contraceptive use in a report on the characteristics and quality of smartphone apps aimed for MSM in China. Even though the number of apps with content advocating safe sex seemed nominal in comparison to the plethora of dating apps available, young adults accepted sexual wellbeing promotion across these channels, with two-thirds agreeing to receive sexual-health-related information and 26% requesting HIV and STD testing referrals (Yang et al. 2019). Similarly, a pilot study on MSM in Boston, Massachusetts, USA reported supporting results. In the study, 23% of its participants (young adult males aged between 18 and 26 years) reported utilizing the dating app for its educational components; it also facilitated COVID-19 vaccine information (Fontenot et al. 2020).

3.2. Intimate Partner Violence and Conflict

An increase in domestic and intimate partner violence cases during the COVID-19 pandemic has been documented globally. Experts warn the anticipation of a 'second wave' in domestic violence will surface amid post-covid recovery (Hughes 2020). Financial stress and economic distress, such as that experienced during economic downturns, can increase romantic partner conflict. The existing literature suggests that stressful or life-threatening incidents, such as disasters, may deteriorate relationship quality due to tensions and

disagreements. This may contribute to increased divorce rates (Luetke et al. 2020). Pre-COVID-19 data indicates that one in three women and girls worldwide were victimized by an abusive partner in their intimate relationships (Emezue 2020). The prevalence of intimate partner violence ascended threefold during the pandemic when compared to 2019.

Domestic abuse or domestic violence (DV) incidents and calls to helplines have increased globally because of the COVID-19 pandemic. Increased calls to domestic abuse helplines have been recorded in Australia (Australian Government eSafety Commissioner n.d.), with an 11 percent rise in calls to 1800RESPECT and a 26 percent increase in calls to MensLine (Neil 2020). Time magazine reported that “victims of domestic violence feel they cannot seek refuge at their parents’ home for fear of endangering their elderly parents, exposing them to the virus” (Godin 2020) and due to mandatory travel restrictions. Sexual assault and experienced violence have a higher prevalence in LGBTQI+ communities. When compared to heterosexuals, lesbians (44%), bisexual women (61%), gay men (26%), and bisexual men (37%) were more likely to be subjected to abuse, physical assault, and stalking (Human Rights Campaign n.d.).

Domestic violence agencies and organizations have implemented digital platforms as helpline services for survivors, bystanders, and the abusers themselves. Resources have included DV hotlines, web-based tele-counseling, real-time chat forums, and virtual meetings (Emezue 2020). The synthesis of data collection during and after COVID-19 will serve as a model for post-disaster trauma digital approaches, with a focus on protective factors, resilience, coping mechanisms, support service respondents, psychosocial providers, and practitioners. Understanding the estimated prevalence of relationship conflict and its effect on intimate and sexual behaviors mid- and post-pandemic may aid in determining the need for and development of psychosocial and relationship therapy interventions. Conversely, improved relationship quality and intimacy have also been observed in the literature (as demonstrated by increases in marriage and birth rates post-disaster, reported in a study by Marshall and Kuijer (2017)). Thus, despite the focus on growing domestic violence rates, studies strengthening relationship-building during global lockdowns warrant further investigation. Additionally, longitudinal studies observing the emergence of survivors’ behavioral and psychological responses to the effects of pandemic domestic abuse will contribute to understanding the epidemiology of PTSD/trauma disorders.

3.3. Race, Gendered Minorities, Transgenerational Traumas, and Intimate Relationships

Australia has had a long tradition of multiculturalism. However, evidence of a rise in ethnic microaggressions and xenophobia has arisen during this pandemic (Furlong and Finnie 2020). Intersectional violence in the form of racism can affect the health of communities (Timothy 2018; Trawalter et al. 2020; Laurencin and Walker 2020). In the wake of COVID-19, racism has increased in some global communities, manifesting itself in the form of ethnic slurs, verbal violence, cyber-bullying, violent assaults, arson, and other forms of attacks on Asian communities in the USA (Edara 2020), and accelerated xenophobia globally (Zeng et al. 2020; Mamun and Griffiths 2020; Esses and Hamilton 2021; Le et al. 2020; Cheng 2020; Batasin 2020; Chuvileva et al. 2020; Elias et al. 2021; Ho et al. 2020; Suen et al. 2020). Xenophobia is the general fear of something alien or strange (in this case, COVID-19, rather than the victim’s ethnicity), even though it is generally described as a more particular fear or hatred of foreigners or outsiders (Reny and Barreto 2020). In some cases, government officials played a role, whether indirectly or implicitly, by using anti-Chinese rhetoric, xenophobic conspiracy theories, and scapegoating behaviors that escalated hate crimes (Human Rights Watch 2020). White nationalism, xenophobia, structural bias, and prejudice were further examples. In addition, reducing the stigma on sexual minorities is critical to discouraging homophobia, which may contribute secondary pressures on public health efforts that are already overwhelmed by the demands of a global pandemic (Banerjee and Nair 2020).

As previously discussed, gendered communities (LGBTQI+) experience stigma and discrimination because of their identity, which were heightened in the pandemic (Kneale

and Becares 2020). Online, social media platforms provide minority groups with digital spaces where they can congregate and share experiences. Such digital spaces can help communities to obtain support; however, they can also be a space in which cyber-bullying can be a stressor, increasing levels of depression and suicidal ideation (Escobar-Viera et al. 2018). LGBTQI+ young adults may experience both distal stressors (experienced externally through racist incidents committed against their identified sexuality groups, as a direct result of their LGBTQI+ identities) and proximal stressors (negative internalized discrimination or internalized transphobia) (Salerno et al. 2020b). Gamarel et al. (2020) reported that anti-transgender (specifically for women of color) interpersonal bias took the form of dehumanizing assumptions and sexual objectification among those who were dating and pursuing relationships. Due to the increased assault rates experienced by LGBTQI+ individuals, the stigma and discrimination they face surrounding their identities often prevent them from seeking support (Human Rights Campaign n.d.). Anti-transgender interpersonal stigma results in substantial gender-based violence outcomes, including physical aggression, social distress, and the use of coping strategies. How the pandemic will translate these experiences into psychological issues and behaviors is yet to be explored, given the ongoing pandemic crisis at the time this paper was written.

As demonstrated during the pandemic, racism directly affects a person's psychological functioning through experiencing "stereotyping" (cognitive), prejudice (affective), and discrimination (behavioral). The psychological effects of racism will last for many years after the incident, due to what is known as "collective trauma" (people's anticipation of another person's mutual identity experiencing violence). Interestingly, there are epigenetic changes that can be inherited because of "intergenerational" or "transgenerational" traumas that have prevalence (DeAngelis 2019; Yehuda and Lehrner 2018; Youssef et al. 2018).

3.4. Perspectives from Historical Health Pandemics May Inform Psycho-Social Behaviour Post-Lockdown

Cutler and Summers (2020) modeled the overall cost of COVID-19-related mental health issues for US residents (who did not contract the virus) and predicted that it may exceed USD 1.6 trillion, impacting 80 million people, and costing each person USD 20,000 per year. Historically, the 2003 epidemic's 21-day lockdown was associated with poor sleep, poor concentration, loneliness, concerns regarding social interaction, and depressive symptoms. According to a study undertaken during a prior H1N1 pandemic, 76.5% of respondents avoided crowded spaces and medical centers, with 15% showing concerns about contracting H1N1 and 6% reporting a range of mental health stress-related symptoms (Lau et al. 2010). Increased negative psychological effects, risk of mood and stress-related disorders were observed in SARs patients and particularly among infected health care workers (Chua et al. 2004). How these psychological consequences would translate into fostering or developing sustaining intimate relationships are yet to be discussed, requiring future longitudinal studies. Suicidality poses another concern in relation to COVID-19. A study correlating suicidality in MERS survivors in South Korea outlined that 10–22% experienced suicidality (including suicidal ideation and suicide attempts) after recovering from the illness, due to its associations with chronic fatigue and the disruption of daily life, heightening suicide risks (Ahn et al. 2021). With millions of recovered COVID-19 survivors worldwide (Statista 2021), there is scope to explore the role of intimate relationships as protective factors against the negative psychological effects of COVID-19.

3.5. Online Dating

The smartphone swipe-based dating applications (e.g., Tinder) provide users with a platform to explore potential matches before meeting them for a physical date (Holtzhausen et al. 2020). The phrase "swipe logic" (David and Cambre 2016) refers to dating platforms utilizing the feature of "screening" a fellow dating user by approving or rejecting a user through the decision to swipe left or right. When two individuals have approved each other's profiles, a "match" is formed, which allows the two users to begin interaction.

Swipe-based dating apps provide users with a range of potential dates that otherwise would be limited to individuals within their own communities, with reduced opportunities to meet a potential partner.

When compared to traditional dating, online dating has various advantages (Finkel et al. 2012); for example, online daters do not have to incur the costs of travel, make dinner reservations, or allocate physical time prior to an initial date (Azad I. and Wibowo 2011). Bengzinga (2014) formulated a cost equation evaluating the difference in dating offline compared to online dating site membership, proving that the latter is more cost-effective. However, the overabundance of choices means that “everybody’s head seems to be on a swivel, making it hard to settle down” due to “dating’s fear of missing out on someone better” (Bindley 2018). Based on this proposition, the likelihood of establishing permanent relationships, due to “endless” swiping, appears scarce.

It is possible that “gratification theory”, as described by Katz et al. (1973), may describe some of the online motivations in dating app usage. Gratification theory is a “combined product of psychological dispositions, sociological influences, and environmental circumstances”. Cognitive needs, emotional needs, personal integrative needs, social integrative needs, and tension relief needs are the five major types of needs served by social media. Whiting and Williams (2013) suggest that user motivations are met through online mediums because of their immediacy, convenience, ease of expressing opinions, and available knowledge of others. Dating platforms provide companionship and offer users escapism from stereotypic roles, life crises, or a mundane life. Additionally, their benefits include elevated self-esteem, the ability to seek out sexual partners, the relief of boredom, the fulfillment of social media addiction needs, and immersion in romantic fantasy (Lawson and Leck 2006; Wang 2019; Bryant and Sheldon 2017; Lemke and Merz 2018; Sumter et al. 2017).

Attachment theory is a valuable method for examining discrepancies in relationship selection. Anxiety and avoidance are two orthogonal dimensions that are used to conceptualize individual differences in attachment orientation (Timmermans and Alexopoulos 2020). Individuals with attachment anxiety display a greater need for physical intimacy but also fear abandonment. Contrastingly, individuals with attachment avoidance dislike physical and emotional intimacy. Attachment anxiety, avoidance, and gender are predictors of the likelihood of being a “catfisher”¹ or a targeted victim (Mosley et al. 2020). Attachment theory also assumes a positive mechanism for early predictors in adults (Toplu-Demirtaş et al. 2020). Due to mistrust, fears of infidelity, and jealousy, people with attachment anxiety are more likely to engage in psychological cyber-dating abuse.

Dating online through social platforms that can also be accessed via mobile applications provides connections through augmented digital landscapes as an auxiliary to traditional face-to-face settings. Smartphone-based dating application (SBDA) users are mainly between the ages of 18 and 34. This same age group accounts for 25% of the annual incidents related to mental diseases, out of which, 12% of incidents result in mental disorders and substance abuse. Individuals who used swipe-based dating apps on a regular basis and for more than a year were also shown to have slightly statistically higher rates of psychological anxiety and depression, which is comparable to a finding regarding people who used social media more often and for longer periods of time (Holtzhausen et al. 2020). Within these data, Australian women and LGBTQI+ people displayed higher levels of psychiatric distress when compared to men, but not lower self-esteem.

On the contrary, females are accustomed to receiving more validation than men, thereby reinforcing their self-esteem via “ego-booster” apps such as *Tinder* (Alexopoulos et al. 2020). Another study found that *Tinder* use can be harmful to one’s well-being, especially for compulsive users who exhibit increased self-comparison behaviors and for those looking for romantic relationships (Her and Timmermans 2020). A third study explored dating on *Tinder* and its effects from both ends of the spectrum, in terms of its impact on healthy intimate relationships (Chisom 2021). The positive outcomes of digital dating included greater respect for face-to-face contact and valued attention, the ability to

discern “false” personalities, the realization that dating apps cannot be a substitute for a healthy sexual relationship, the discovery of love, the realization of one’s fear of rejection, and the affirmation of one’s self-worth. However, the lack of reciprocal communication and/or attention and dedication, needless comparisons that are self-projected or that are made between potential “dates”, deceit, and sexual risk were among the drawbacks.

3.5.1. Self-Presentation and Deception

It is a common strategy for self-representation to be inflated in virtual dating, in response to the social constructs of beauty and attractiveness. Digital dating is a symptom of a broader social and technical shift that has turned contemporary courtship into a commodified game (Hobbs et al. 2017; Bonilla-Zorita et al. 2020). There is psychosocial relevance to exploring how people interpret internet dating and how this has affected sexual practices, perspectives on long-term relationship formation, monogamy, and other effects on self-representation through the gamification of digital intimacy. Men are more prone to emphasize their positive characteristics if the “match” is more attractive, compared to scenarios where more face-to-face interactions are present (Guadagno et al. 2012). The lower the attractiveness of online daters, the more likely they are to alter their profile images and falsify their physical descriptors, such as weight, height, and age (Toma and Hancock 2010). Despite the dangers of *catfishing* (the activity of using falsified images and information in formulating a new identity), young people like to use online dating and flirting (Lykens et al. 2019). Nascent relationships require fostering trust before they can transition into sustainable adult relationships. As the results indicate, initial misrepresentations of virtual selves often dissolve the potential of first encounters transitioning into potential relationships (Sharabi and Caughlin 2018).

3.5.2. The Association of STDs with Dating Apps and Behavior

Online dating and its association with the habit of sex with casual partners indicates additional concerns regarding the rising rate of sexually transmitted diseases, particularly in young adults. Aligned with deception, online users may limit self-declaring their sexual infections due to the possibility of their “information” leaking out into the wider pool of potential “matches”. When compared to other age cohorts, young adult Australians have higher rates of sexually transmissible infections (STIs), lower screening rates, and a rising incidence of STIs (Coleman et al. 2019; Bhattacharya 2015; Coombe et al. 2021).

In 2018, almost half of the 26 million newly transmitted sexual infections in the United States were caused by young adults aged 15 to 24 (Center for Disease Control and Prevention n.d.). Krishnamurti et al. (2020) performed an online dating analysis to assess the risk of sexually transmitted infection, based on attractiveness. According to their findings, participants were no better at distinguishing people with self-reported STIs, and people who were considered “more” desirable were assumed to be more likely to have an STI (Krishnamurti et al. 2020). This adds to the pool of risks in online profiles of self-presentation and deception. The Los Angeles-based AIDS Health Care Foundation highlighted that internet casual sex partners were associated with dating online in an educational campaign on billboards, stating that “dating apps are a digital bathhouse for millennials, wherein the next sexual encounter can literally just be a few feet away, as well as the next STD” (Kaplan 2015). Another study by Sawyer et al. (2017) indicated that young adults who used dating applications were twice as likely to have unprotected sex. There has been an increase during the COVID-19 pandemic of internet impulsivity among young adults that may theoretically promote risky casual partner engagement (Gecaitė-Stonciene et al. 2021). Impulsivity has been related to several sexual risk behaviors in young heterosexuals, including unprotected sexual acts, usually as a result of the influence of alcohol or substance use. The association between increased rates of STD transmission and digital dating warrants attention, putting pressure on eradicating HIV and other sexually transmitted diseases.

The significant provision of sexual health treatment and prevention, especially to minors and young adults, remains a public health priority. Human papillomavirus (HPV) is the most prevalent sexually transmitted infection in the United States, and its consequences may be avoided with vaccination. The American College of Obstetricians and Gynecologists ([American College of Obstetricians and Gynaecologists 2017](#)) stated that nearly everyone who engages in sexual activity will encounter the virus at some point in their lifetime ([Kovar et al. 2021](#)). This supports the necessity for public health nurses and medical professionals to leverage their power in accurately educating the public and in making recommendations for HPV vaccination to prevent cancer and improve patients' long-term health. In a subsequent study on transgender/non-binary people and men who have sex with men, [Hoagland et al. \(2021\)](#) suggested that, due to the results of high acceptability, PrEP teleconsultation and PrEP/HIV self-testing home delivery could be implemented (in Brazil) to avoid PrEP shortage during the COVID-19 pandemic and, thereafter, as an option to increase retention and adherence.

These are not easy times, but it is crucial to keep in mind that a significant obstacle such as COVID-19 can offer a major opportunity for health officials to rethink their strategy for boosting sexual health treatment uptake or interventions to minimize conditional sequelae. Future research should further evaluate the psychological motives that activate risky sexual impulsivity, particularly with the background of COVID-19.

3.5.3. Heart-Breaking Scams

The classic relational dynamics of scams in online dating have three typical strategies: (1) portraying the relationship as "permanent" or "eternal", (2) tragic biographic narratives whereby the scammer reports details of their life events, often aligned with tragedy and loss as the "bait" for compassion, and (3) the scammer indicates a "deadline" to the victim, usually for money or other in-kind services, where the consequence of not meeting the deadline involves dissolving the relationship ([Coluccia et al. 2020](#)). In terms of the victims, females and middle-aged individuals are the demographic most susceptible to online dating scams. Scammers target online personas demonstrating the psychological features of high neuroticism and the tendency to idealize romantic relationships. From a clinical standpoint, the authors recommend further studies on moderators, such as the dynamic associations between victim and perpetrator, including dependent personality traits, as these may implicate certain psychopathological outcomes and the risk of post-traumatic stress disorder. Whether more dating scams have occurred during the COVID-19 pandemic remains unknown. Additionally, in long-distance relationships, the inability to travel and to confirm the truth of a scam with a defined time frame is problematic for those being scammed.

3.5.4. Unwarranted Sexual Attention

Online dating has a dark side. According to the [Australian Institute of Criminology \(2020\)](#), a variety of high-profile incidents of sexual and abusive offenses happened after both the perpetrator and the victim interacted over a smartphone dating app. Other events have shown how dating platforms, especially for women under the age of 35, may become an avenue for harassing activity. For example, 60 percent of female users between the ages of 18 and 34 claim that they were contacted by someone on a dating site or app after they had told them they were not interested, while 57% of users were sent a sexually provocative message or photograph that they did not request ([Anderson et al. 2020](#)). The rise in the use of communication devices to promote a variety of sexual offenses, known as technology-facilitated sexual harassment (TFSV), has coincided with an increase in the use of technology to establish and sustain social relationships ([Henry and Powell 2016](#)). Online sexual assault, cyberstalking, image-based sexual violence, and the use of a carriage service to coerce a victim are all forms of TFSV. A common form of digital harassment and abuse is the non-consensual distribution of sexual images ([Henry and Powell 2014](#)). The repercussions of unwanted digital evidence circling the internet after the initial incident of

harassment has receded may have further psychological implications when compared to other forms of abuse. Whether COVID-19 isolation has caused an increase in inappropriate behavior or if it is innate in online sexual encounters remains unknown (Döring 2020).

4. Clinical Implications

4.1. Attachment Theory

Attachment theory, which was developed by Bowlby (1969), is a relationship model that focuses on the bonding quality between persons and provides a helpful framework for understanding the qualities and relative importance of various social interactions (Parent et al. 2021).

There is a minute yet expanding body of literature on the significance that attachment theory gives to mental health and social behavior in studies observing psychological distress resulting from the global COVID-19 pandemic (Eder et al. 2021; Rajkumar 2020; Muzi et al. 2021; Feeney and Fitzgerald 2022). However, empirical studies on how different genders maintain intimate relationships and explorations of changing behavior within intimate social relationships during and after the pandemic have yet to be conducted. Such future studies exploring attachment theory and its systems could ideally focus on the clinical applications of risk aversion and protective factors (Bleiweis and Ahmed 2020). Furthermore, the outcomes could be influenced by the perspectives of the different gender attributes of intimate relationships.

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Leading into adulthood, interpersonal social ties and attachment functions increase in importance, providing higher levels of closeness, companionship, and instrumental support (Parent et al. 2021). Adult attachment styles that are demonstrated in mature romantic relationships often resemble the attachment security and/or anxieties witnessed in childhood (Wagerman et al. 2021). In addition, attachment behavior can be heightened or diminished by intrapersonal and external factors (Wagerman et al. 2021). For example, attachment “alarms” are heightened in situations that are deemed to pose a risk to the relationship, whether the threat is external or internal, such as the probability of being separated from an attached figure/object. The uncertainty stemming from global COVID-19 measures caused attachment “alarms” to “go off” due to emergency lockdowns, restrictions, social isolation, new variants of concern, and border closures.

4.2. Correlated Health Risks and Substantiating Comorbidity

Individuals with avoidance issues, anxiety, and attachment insecurity are prone to physiological health risks. Anxious and insecure attachment styles have been linked to higher stress perceptions and reactivity, as well as a positive association between hypochondriacal and somatic symptoms (Dolatshahi et al. 2020; Taylor et al. 2012). Studies have shown that an anxious attachment style has been linked to health anxiety (Gozan and Menaldi 2020) and a variety of inflammation-driven cardiovascular diseases (CVD), including stroke, heart attack, high blood pressure, and increased chronic illness (Pietromonaco and Beck 2019; Oladi and Dargahi 2018; McMahon et al. 2021; Michal and Beutel 2021). According to Tulloch et al. (2021), couple distress is linked to CVD risk factors, whereas partner support is associated with healthy-heart behaviors and improved CVD outcomes.

Adults with post-traumatic stress disorder (PTSD) or unstable attachment patterns dating from early childhood experiences have reported greater intrusive symptoms and the reminiscence of traumatic events (Mikulincer et al. 2015). Anxious attachment stemming from PTSD caused by domestic violence, which is marked by high levels of anger and anxiety, can affect both adults and children, especially if the abuser was exposed to violence in their own childhood. The global pandemic exacerbated external stressors, which led to widespread uncertainty, amplified pre-existing inequalities, and limited the access of intimate partner violence survivors to accessible care (Williams et al. 2021). Hamam et al. (2021) established younger females in quarantine with past trauma had lower health ratings

and had more peritraumatic stress, avoidance, and hyperarousal symptoms. Another study further supports heightened PTSD symptoms; the researchers observed increased psychological reactions among the children of Holocaust survivors during the COVID-19 pandemic ([Shrira and Felsen 2021](#)).

5. Limitations

To the authors' knowledge, this study is the first to observe how the COVID-19 pandemic has psychosocially affected the relationships of people of diverse genders and sexual orientations cross-culturally. This study also outlines the degree to which attachment styles may inform relationship behavior and the theory's clinical utility. Nonetheless, this research trajectory is in its infancy, due to the following limitations. Sample sizes from diverse gendered studies were scarce, providing a potentially skewed perspective and making it difficult to make impartial comparisons for validity. The studies included were not sufficiently heterogeneous to provide informed conclusions and clinical suggestions. Thus, a state-of-the-art review approach was adopted instead of a systematic review approach, due to the absence of published research. Lastly, studies that were not published in English were excluded from this review.

6. Future Directions

Risky sexual behavior was reduced during social distancing measures, which can be associated with a fear of contracting the virus. Dating app usage heightened as a probable coping mechanism for social isolation, loneliness, and mental distress. Negative implications to the usage of digital dating platforms include deception in terms of online self-presentation, gaslighting, scams, discrimination, risky sexual behavior, intimate partner violence, and digital abuse. Intimate relationship abuse can occur across variable encounters. This is irrespective of the duration of the relationship encounter or of the partnership. There is a current research gap across diverse genders and psychosocial behaviors that motivate online dating during the COVID-19 pandemic. Whether online dating has the ability to supplement or fulfill intimate relationship needs in a time of social distancing and lockdowns has not been explored. Indeed, there is likely a need to develop mental health interventions to promote safety, self-efficacy, and coping strategies for violence and abuse in diverse genders, seeking a path toward establishing sustainable intimate relationships of all types.

7. Conclusions

Smartphones and the internet have provided flexible strategies to ameliorate the difficulties regarding dating arrangements presented by COVID-19 restrictions. Our paper has provided a context by which to determine the psychological and behavioral impacts of online dating mediums (dating websites, applications, and social media platforms) on interpersonal relationships among people of diverse genders and sexual orientations during the global COVID-19 outbreak. The second objective of this paper was to explore theoretical perspectives on how experiences during the pandemic have affected psychological and sexual behavior in the context of intimate relationships and inform clinical preparation post-crisis.

With public attention focused on COVID-19 containment and vaccine rollouts, critical sexual health care and the supply chain of mental health care services have been hampered. Through this discussion, it has been established that loneliness (affecting those without committed relationships or who are single) heightened mental stress and that there is a lack of clinical support services and/or accessibility and a lack of communal support; lockdown regulations, and financial constraints because of the global pandemic are motivational factors that encourage people to establish healthy intimate relationships. The negative consequences are noticeably greater in young adults, marginalized communities, and sexual minorities. The results of this study specifically show the need for community-led approaches, trauma-informed mental health first aid, widespread delivery post-crises,

and accessibility to welfare services, including establishing shelters diversified for various genders for victims of sexual or domestic abuse, gender-affirming interventions to help diverse sexual orientations to cope with intersectional violence, and support after intimate partner violence and interpersonal stigma.

In digital dating, the negative results likely outnumber the positive outcomes. Close collaborations with relationship counselors, academics, and technology developers hold significant promise for enhancing safety and security, preventing cyber abuse and offline-related violence, promoting sexual health awareness, and reducing the harmful psychological consequences for repeat users to promote healthier interpersonal relationships. Indeed, the effects of the COVID-19 pandemic on negative mental health may contribute to impulsive behaviors regarding online dating. This can result in inappropriate behaviors that have negative consequences and make it difficult to form lasting relationships.

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Note

- ¹ A ‘catfisher’ or ‘catfish perpetrator’ is someone who fabricates a fake persona or virtual identity with negative intent to deceive, commit identity theft, or harm their victims (whether individually targeted or not).

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