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Research Article

Experiences of Romantic Attraction Are Similar Across Dating Apps and Offline Dates in Young Adults

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Abstract: This study compared dating experiences through smartphone apps (e.g., Tinder) with offline-initiated dating. Previous research suggests that people feel greater apprehensiveness toward internet dating relative to traditional dating methods. Using an experience-sampling design ($N = 793$) over one month, we examined attraction, perceptions of dating partners (sexiness, warmth), and behaviors (sexual intercourse, alcohol) across dating modalities, and alongside trait sociosexuality, destiny/growth beliefs, romanticism, and gender. Results showed that participants reported experiences were similar for offline and app-initiated dates, except for those high in destiny/growth or romantic beliefs, who tended to feel less attraction to dating partners. Despite this similarity, participants viewed dating apps negatively. We also found little support for ideal partner preferences correlating with attraction or dating outcomes. We suggest that initial beliefs about dating may bias people away from dating app experiences, and personality traits such as romantic beliefs may dictate outcomes much more than the method of meeting.

***Keywords*:** dating apps, attraction, dating, personality, gender, smartphones apps

1. Introduction

Arranging dates and initiating relationships using phone applications is not new, and the prevalence of dating apps has increased over the past decade. Despite this, opinions in the general public about dating apps have remained mixed (Vogels, 2020). Approximately half of never-married Americans have used a dating application or have met significant others through online dating (Vogels, 2020), and this number has increased since the COVID-19 pandemic (Coombe et al., 2021; Dietzel et al., 2021; Wiederhold, 2021). Despite this, a growing number of Americans say that modern dating has become more difficult, especially concerning issues of online harassment and finding compatible partners. Less than 60% of dating app users describe their experiences as positive (Brown, 2020). It is important for scientists to investigate deeper into the socioemotional processes that accompany dating app usage. Thus, the primary focus of the current study was to examine the experiences of young adults who use dating apps to see how they are similar or dissimilar from dating through offline methods. We also used this study to investigate how ideal partner preferences and individual differences predict dating experiences.

Because dating apps present users with an array of potential partner options, some users may feel a sense of choice overload, which leads to a rejection mindset in which people become more pessimistic about dating (Pronk &

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Denissen, 2020), mirroring the paradox of choice found in other contexts (Schwartz, 2004). In addition, a substantial number of online daters believe another person misrepresented themselves on an online dating platform or have felt harassed/uncomfortable by another person's online behavior (Smith & Duggan, 2013). People may exaggerate positive personality traits and conceal negative qualities (Guadagno et al., 2012), while others may also lie about their attributes such as height, weight, or age (Toma & Hancock, 2010).

Despite these notable drawbacks, many users find enjoyment in dating applications and report positive experiences (Smith & Duggan, 2013). Some may utilize alcohol as a method to relieve uncertainty (Sayette, 1999; Tobin et al., 2014), although some studies have found no association between dating apprehensiveness and alcohol consumption (Boyle & O'Sullivan, 2013). In addition, some users report dating disillusionment, measured by decreases in attraction as people move from digital interactions to face-to-face meetings (Sharabi & Caughlin, 2017).

Some people may utilize Tinder for casual sex/hookups, while some use it for initiating romantic and platonic relationships (LeFebvre, 2018). Also, see LeFebvre (2018) for a clear overview of the logistical processes for swiping and initiating messages on dating apps such as Tinder. Other studies have found a range of motivations to use dating apps such as Tinder, including to find love, casual sex, easiness of communication, self-worth validation, excitement, and trendiness (Sumter et al., 2017). Traits such as sensation-seeking, trust toward people online, smartphone use efficacy, and perceived normality for dating apps all in conjunction predict intent to use dating apps (Chan, 2017) as well as low dating anxiety (Valkenburg & Peter, 2007). But *light triad traits* such as faith in humanity, valuing individual human dignity, and Kantianism (valuing humans as ends rather than means) predicted an intention to use dating apps such as Tinder in order to find long-term, loving relationships (Sevi & Doğruyol, 2020).

1.1 *Theories of romantic attraction*

People are romantically attracted to others based on the perceptions of their traits (Tidwell et al., 2013) and hold preferences for partners who are physically attractive, intelligent, charismatic, and warm (Buss & Schmitt, 1993). Physical beauty may be more important than other factors, and ostensibly unattractive qualities like insecurities may not matter to all individuals (Luo & Zhang, 2009). However, there is a disconnect between the preferences that people express for dating partners and actual attraction in dating settings. This not only makes it incredibly difficult for researchers to predict feelings of attraction based on ideal partner preferences (Eastwick et al., 2011) but also to predict mutual attraction and relationship matching (Joel et al., 2017). Rather, people may seek partners based on the degree to which those potential partners help fulfill goals and motivations (Finkel & Eastwick, 2015). Further complicating these dynamics is the fact that many of these studies that examined live attraction were done with speed-dating methodologies, which is not a preferred method in the population of young adults who are utilized for such studies (Selterman et al., 2015). Thus, to what extent initial partner preferences play a role in predicting actual attraction outcomes remains an open question. It is possible that when people meet potential partners through apps, initial preferences will play a larger role.

Another topic within the attraction literature concerns gendered preferences. Some studies have pointed to ideal partner preferences varying to some extent across gender, with men valuing physical beauty somewhat more than women and women valuing status/resources more than men (Buss & Schmitt, 1993). But these gendered preferences do not predict the experiences that men and women have in live attraction settings (Eastwick & Finkel, 2008; Selterman et al., 2015). In terms of online dating profiles, some studies have shown preferences for gender role incongruence (i.e., women with masculine traits and men with feminine traits), but this is limited to experimental settings (Chappetta & Barth, 2016). Furthermore, some other experimental designs highlight interpersonal warmth as a factor that, while important, may be less salient than physical attractiveness (Urbaniak & Kilmann, 2003).

1.2 *Individual differences*

We also considered how various personality traits, including sociosexuality, attachment styles, destiny/growth theories, and romantic beliefs, would all play a role in the context of dating. Sociosexual orientation is the degree to which individuals psychologically link sex with love/intimacy (Simpson & Gangestad, 1991) and is a useful construct to understand the desire for and engagement with unattached sex (Simpson et al., 2004). Sociosexuality has been implicated in dating app usage, with those scoring higher in this trait more likely to use dating apps such as Tinder for

casual sex (Sevi et al., 2018) and more likely to use picture-based dating apps (Botnen et al., 2018).

Attachment theory, originally conceived as a way to understand deep emotional bonds (Bowlby, 1969/1982), including romantic relationships (Hazan & Shaver, 1987), has also been utilized to understand initial attraction (Klohnen & Luo, 2003). Those higher in attachment anxiety, or the tendency to experience greater preoccupation with abandonment, are more likely to use dating apps compared to those higher in attachment avoidance or the tendency to remain emotionally distant (Chin et al., 2019). Anxious attachment is also associated with a greater likelihood of deceiving others and to be deceived themselves through dating apps, relative to attachment avoidance (Mosley et al., 2020). Attachment anxiety is also associated with greater dating confidence, perceived partner availability, and a greater tendency to "swipe right," while attachment avoidance was linked with less confidence (Timmermans & Alexopoulos, 2020).

Finally, implicit theories of relationships, while not yet investigated in the context of dating apps, have been studied with respect to cultural dating variables and internet usage. Those higher in destiny beliefs tend to think that there must be initial compatibility with dating partners for a long-term relationship to work, whereas those higher in growth beliefs tend to think that successful relationships require effort and that partners develop chemistry over time (Knee, 1998). Similar to destiny beliefs, those high in romanticism espouse an ideology that love is powerful and endorse ideas such as love-at-first-sight and love-finds-a-way (Sprecher & Metts, 1989). These beliefs affect how people respond to partners initially, with those higher in destiny beliefs more likely to engage in "ghosting" or cutting off contact with partners (Freedman et al., 2019), while romanticism may be associated with more traditional courtship (offline) behaviors (Anderson, 2005).

1.3 *The current study*

The study's central hypotheses (H) are as follows:

H1: Participants will have more negative attitudes toward dating apps compared to other dating methods.

H2: When romantic encounters are initiated through dating applications, participants will report greater negative affect and lower positive affect, feel less attraction to their dating partners, and rate their dates less positively in terms of perceived attributes compared to dates initiated through other methods.

We also posited several non-directional research questions (RQs) about attraction to dating partners as a function of the other variables in our study. We framed these RQs as non-directional (rather than directional hypotheses), given the mixed evidence in prior studies pertaining to them. Thus, we did not have a high degree of confidence in making directional associations.

RQ1: Do other dating outcomes (sexual activity, alcohol usage) differ across app-initiated and offline-initiated dates? Some prior studies show not only negative attitudes toward dating apps but also feelings of uncertainty associated with meeting dating partners through them. Some people also use alcohol as a coping strategy to relieve uncertainty (Tobin et al., 2014), but most studies in this area have focused on problematic alcohol use and addiction rather than socially normative alcohol use in a dating context.

RQ2: Do personality traits (attachment style) predict felt attraction to dating partners? Some studies show that individual difference traits predict feelings of attraction (Overall & Sibley, 2008), but this may be context-dependent, as these same traits do not have predictive value in live attraction settings (Luo & Zhang, 2009).

RQ3: Do date-specific variables (such as sexual intercourse) moderate pre-date to post-date partner ratings? Given the studies showing disillusionment after meeting dating partners (Sharabi & Caughlin, 2017), we sought to better understand what variables predict changes from pre-post dates. We surmised that sexual intercourse might serve to bond dating partners to each other (Hazan & Zeifman, 1994).

RQ4: Which ratings of partner traits predict attraction and sexual outcomes? Past evidence shows that people tend to value many socially desirable traits such as warmth, intelligence, charisma, and beauty in potential romantic partners (Buss & Barnes, 1986). However, in online dating, perception of dating partners' traits may be elusive, and people may engage in heightened impression management strategies (Guadagno et al., 2012).

RQ5a: Do ideal partner preferences predict attraction to dating partners? RQ5b: Do partner traits (intelligence, friendliness) predict attraction differentially for men and women? This is a point of contention amongst social psychologists, with some evidence that stated ideal preferences do not predict live attraction, nor do they explain gendered preferences for partners (Eastwick & Finkel, 2008), while others argue that null effects are explained by a

restricted range of attributes and that stated preferences do in fact predict attraction (Li et al., 2013).

2. Method

2.1 *Participants*

Our sample consisted of 793 participants, 537 women, 235 men, and three other genders; mean age of 19.4 (*SD* = 1.58; Range = 18-40), who were recruited through announcements made to student organizations/groups at a large mid-Atlantic university. Participants either received extra credit in their courses or a chance to win a $ 25 gift card at the conclusion of the study. Our exclusion criteria for the study required all participants to be above 18 years of age since dating apps legally require this of their users. Participants identified as White (55.2%), Hispanic (5.4%), Black (16.9%), Asian or Pacific Islander (18.7%), Biracial/Multiracial (2.0%), or other (1.8%). Participants identified as heterosexual (89.5%), bisexual (5.3%), homosexual (2.2%), pansexual (.9%), asexual (.1%), or other (1.9%). Participants were overwhelmingly single (85.9%), with some reporting casual dating (10.1%), a committed relationship (3.8%), or cohabitation (.3%). Most participants (59.4%) reported having at least one "serious" relationship in their lives.

2.2 *Procedure and measures*

The total participation period lasted one month. Participants first completed an initial questionnaire in the laboratory. This included measures relevant to dating, sex, and relationships. We assessed participants' preferences for traits in romantic partners, including physical attractiveness, intelligence, warmth, etc. After the initial questionnaire, participants were instructed on how to complete the remaining materials, which were administered online via email. Utilizing an experience-sampling method, participants were told to click on a link to complete dating surveys on their devices during every romantic encounter they had over the one-month study period. We prompted participants to consider the broadest possible definition of "dating" that could occur, including hanging out, hooking up, etc., which would all qualify for the study. We sent reminder emails to participants each Friday, which included the link to the experience sampling surveys for convenience. These emails also included contact information should participants have any questions during the course of their study. But aside from this, all official communication between research assistants and participants concluded after the initial survey completion. We monitored participation as they completed surveys online. The full set of study materials can be found here: https://osf.io/qakzy/

2.2.1 *Dating app questionnaire*

With the exception of sociosexuality and the Positive and Negative Affect Schedule (PANAS), all survey items were formatted with 1-7 Likert-type scales. We created 12 items to gauge participants' attitudes toward mobile dating apps with items such as, "*I think phone dating apps are a good way to meet potential romantic partners.*" One item was dropped for a final 11-item scale (α = .76). We assessed personal experiences with dating apps (e.g., "*If you use a dating app, are you using it to actually meet people for dating/relationships, or just for fun/entertainment purposes?*") and perceived norms ("*If you use a dating app, how would you characterize the dating experiences you've had (using the apps) compared to general dating experiences?*"). We separately assessed participants' views on a variety of methods to meet potential dates (with single-item questions), including approaching a total stranger and asking them out, being introduced through mutual friends and then going out, meeting at a party, meeting through clubs/organizations, speed-dating events, etc.

2.2.2 *Sociosexual Orientation Inventory*

We assessed sociosexuality (α = .88) with the revised Sociosexual Orientation Inventory (SOI; Penke & Asendorpf, 2008). It includes items measuring attitudes ("*Sex without love is OK*"), desire ("*How often do you have fantasies about having sex with someone with whom you do not have a committed romantic relationship?*"), and behaviors ("*With how many different partners have you had sexual intercourse on one and only one occasion?*"). For this questionnaire, we utilized 1-9 Likert-type items, as the authors of the scale developed.

2.2.3 *Experiences in Close Relationships Scale*

We assessed attachment styles with the short-form Experiences in Close Relationships Scale (ECR-S; Wei et al., 2007), which captured avoidance (α = .76) with items such as "*I want to get close to my partner, but I keep pulling back*" and anxiety (α = .76) with items such as "*My desire to be very close sometimes scares people away.*"

2.2.4 *Implicit Theories of Relationships Scale*

We assessed destiny beliefs using a subset of items from the Implicit Theories of Relationships Scale (ITRS; Knee et al., 2003), which captured beliefs in romantic destiny (α = .60) with items such as "*Relationships that do not start off well inevitably fail*" and romantic growth (α = .57) with items such as "*Challenges and obstacles in a relationship can make love even stronger.*"

2.2.5 *Romantic Beliefs Scale*

We assessed romanticism (α = .85) with the Romantic Beliefs Scale (Sprecher & Metts, 1989), which contained items such as "*If I love someone, I know I can make the relationship work, despite any obstacles.*"

2.2.6 *Perceptions of dating partners' traits*

We assessed participants' impressions of their dating partners' qualities using items from similar studies on live attraction (e.g., Eastwick & Finkel, 2008; Selterman et al., 2015), including (a) physically attractive, (b) sexy/hot, (c) good career prospects, (d) ambitious/driven, (e) friendly/nice, (f) responsive, (g) fun/exciting, (h) passionate, (i) charismatic, (j) confident, (k) intelligent, (l) approachable, (m) kind/caring. For those who met their dating partner through an app, participants indicated whether the person matched their dating app profile picture, biographical description, and personality traits. We ran an exploratory factor analysis with oblimin rotation and parallel analysis (Sakaluk & Short, 2016) for this group of items, which yielded four factors. The first factor, Warm/Friendly, included: *friendly/nice, approachable, responsive, and kind/caring.* The second factor, Fun/Exciting, included: *passionate, charismatic, fun/exciting, and confident.* The third factor, Sexy/Hot, included: *physically attractive and sexy/hot.* The fourth factor, Intelligent, included: *intelligence, good career prospects, and ambitious/driven.*

2.2.7 *PANAS*

We employed PANAS (Watson et al., 1988) to measure participants' emotional state at the time of their romantic encounter ("interested," "excited," "upset") and whether participants felt comfortable. The items on this questionnaire were displayed on a 1-5 Likert-type scale. Both positive and negative affect had good internal consistency (α = .88 and α = .87, respectively).

2.2.8 *Felt attraction*

Participants indicated their felt attraction toward dates ("*I am romantically interested in this person*"), eagerness to know them better, and intent to meet again.

2.2.9 *Dating behaviors*

Participants responded to behavioral survey items, including sexual activity (e.g., oral/vaginal sex) and alcohol use. Participants indicated if they met through a dating app.

3. Results

3.1 *Sample characteristics*

All statistical analyses were conducted after data collection was completed with jamovi software (The Jamovi

Project, 2021). Correlations between major study variables, along with means and standard deviations, are displayed in Table 1.

Table 1. Correlation matrix for level-2 variables, along with means and standard deviations

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	Mean (*SD*)
(1) Attitudes Toward Online Dating	-															3.69 (.84)
(2) Preference Sexy/Hot	.01	-														5.28 (.83)
(3) Preference Intelligence	-.07	.34***	-													5.92 (.89)
(4) Preference Friendly/ Warm	-.02	.33***	.60***	-												6.25 (.82)
(5) Preference Fun/Exciting	-.06	.41***	.66***	.68***	-											5.84 (.86)
(6) Interest in Dating	.16***	.12***	-.04	.02	.07	-										5.32 (1.33)
(7) Interest in Commitment	-.01	.09**	.06	.10**	.02	.09*	-									5.73 (1.30)
(8) Interest in Friends with Benefits	.19***	.19***	-.16***	-.11**	-.03	.44***	-.15***	-								4.29 (1.93)
(9) Interest in Marriage	-.14***	.02	.12**	.10**	.07	-.13***	.36***	-.28***	-							3.77 (2.17)
(10) Interest in Consensual Non-monogamy	.10**	.03	-.13***	-.12**	-.07	.21***	-.15***	.45***	-.18***	-						2.58 (1.72)
(11) Sociosexuality	.24***	.24***	-.11**	-.11**	.02	.27***	-.14***	.62***	-.32***	.31***	-					4.07 (1.63)
(12) Attachment Avoidance	.03	-.05	.02	-.03	-.05	.11**	-.14***	.10**	-.12**	.13***	.06	-				3.59 (.79)
(13) Attachment Anxiety	-.02	.04	-.01	.09*	-.01	.05	.25***	-.06	.20***	-.06	-.03	.02	-			4.09 (1.10)
(14) Romanticism	-.13***	.13***	.12**	.12**	.17***	-.04	.05	-.06	.22***	-.04	-.18***	-.16***	.18***	-		4.15 (.86)
(15) Destiny Beliefs	-.14***	.12**	.11**	.05	.15***	.02	.02	.04	.04	-.06	-.01	.01	.13***	.32***	-	4.33 (.93)
(16) Growth Beliefs	.04	-.02	-.20***	-.11**	-.12***	-.01	-.11**	.14***	-.16***	.18***	.16***	.10**	-.05	-.15***	-.01	2.41 (.72)

Note: * $p < .05$, ** $p < .01$, *** $p < .001$

Throughout their participation, 59.5% of the sample reported at least one date, with the remaining 40.5% reporting zero dates. The median/modal number of completed pre- and post-date surveys was one, with only 11.6% of participants reporting more than one date over the study period. Thirty-one percent (31%) of dates were app-initiated, while the rest (69%) were through other dating methods. Those who reported at least one date during the study period did not differ from those who reported zero dates in terms of their partner preferences, interest in dating/relationships/marriage, destiny beliefs, attachment avoidance, attachment anxiety, attitudes toward online dating, or romanticism, (all *p*s > .05). However, those reporting at least one date scored higher on sociosexuality t (781) = -2.13, p = .033, d = .16, 95% *CI* [-.49, -.02] and destiny beliefs t (764) = -3.32, $p < .001$, d = .24, 95% *CI* [-.36, -.09] compared to those reporting no dates. Women were more likely (65.2%) to report at least one date compared to men (46.4%).

Consistent with our first prediction (H1), participants reported that meeting partners through mobile dating apps as less acceptable/appropriate compared to all other methods (all *p*s < .001) except for bars/clubs, which was rated equivalently (p = .175), and speed-dating events or approaching a total stranger, which was rated the lowest (*p*s < .001). See Table 2. Participants who reported never using a dating app (52%) reported that they were unlikely to use one in the coming year (M = 2.51, SD = 1.55), but this likelihood was significantly higher if their close friends were also using

a dating app (M = 3.03, SD = 1.77) t (466) = -12.27, p < .001. For those who do use dating apps, most (58%) reported irregular use (i.e., once a month or less), while 27% reported using apps once a week, and 15% reported daily usage. Users reported an average of 10.76 matches per week (SD = 18.92) and an average of 2.22 in-person meetings after matching (SD = 4.82). Participants characterized their app usage more for short-term rather than long-term relationships (M = 3.07, SD = 1.55), and more for entertainment purposes rather than seriously looking for matches (M = 3.10, SD = 1.60). Participants characterized the people they have matched with on their app as somewhat above average (M = 4.33, SD = 1.05), but their actual dates as below average (M = 3.48, SD = 1.13). All these means were significantly different from the scale midpoints (4). Most app-based dates were through Tinder (79%), while others were through Bumble (9%), Grindr (3%), OKCupid (2%), JSwipe, Willow, Hinge, or Coffee Meets Bagel (1% combined), or other apps (5%).

Table 2. Acceptability ratings for various methods to find romantic/sexual encounters

	Mean (*SD*)
Through activities/organizations	6.58 (.61)
Through school-run social events	6.49 (.70)
Being introduced through mutual friends	6.47 (.72)
At parties	6.15 (.96)
Through online dating services	6.34 (.81)
Through the workplace	5.56 (1.29)
On a blind date	5.35 (1.30)
At a bar or club	4.60 (1.41)
Through a mobile dating app	4.53 (1.44)
At a speed-dating event	4.41 (1.43)
Approaching a total stranger	3.94 (1.72)

3.2 *Dating experiences*

For all remaining analyses, we utilized the entire dataset, which included dating experiences (Level-1) nested within participants (Level-2). We employed multilevel modeling (generalized mixed models) with random intercept analyses. For regression models with continuous predictors, variables were entered as simultaneous covariates. We standardized all variables with grand-mean centering, and standardized beta coefficients are displayed, while for categorical predictors, unstandardized coefficients are displayed.

Women in the study felt less attraction to their dating partners compared to men b = -.33, p = .012 [-.58, -.07], even though men and women did not significantly differ in viewing their dates as sexy, intelligent, friendly, or fun. For app-initiated dates, participants were asked to rate the extent to which their dates matched the profile they had seen in terms of photos, bios (self-description), and general traits (extroversion). Men and women did not differ in their perceptions of their dates' app profile photos or bios, but women in our sample reported that their dates' personalities matched their dating profiles less so than men b = -.61, p = .002 [-.99, -.23]. Men and women did not differ to the extent they felt comfortable on their dates, nor did they differ on whether their dates matched their expectations, but women were less likely to say they wanted to see their dates again compared to men b = -.48, p = .017 [-.87, -.09].

Men reported initiating conversation 81% of the time, while women reported doing this only 23% of the time, χ^2 = 116.22, p < .001. Men reported initiating dates 78% of the time, compared to 22% of the time for women, χ^2 = 110.60, p < .001. Participants using apps reported exchanging over 30 messages before meeting on a date 40% of the time, 20-30 messages 24% of the time, 10-20 messages 18% of the time, and 10 or fewer messages 18% of the time.

3.3 *Comparing app-initiated dates to offline-initiated dates*

We found mixed support for our prediction (H2) that participants would report greater negative affect and lower positive affect on app-initiated dates compared to other (offline) dating methods. Participants reported less positive affect on app-initiated dates $b = .21$, $p = .006$ [.06, .35], and felt more "uncomfortable" $b = -.52$, $p = .003$ [-.87, -.18] compared to offline-initiated dates, though there was no association between app usage and negative affect or feeling "comfortable". Furthermore, participants did not perceive their dates differently in terms of attributes (sexy/hot, intelligent, or friendly) based on whether an app was used, nor did their felt attraction differ. However, for app-initiated dates, participants rated their partners as less fun/exciting compared to offline dates $b = .29$, $p = .028$ [.03, .55]. No differences emerged in whether their dates matched their expectations, nor a difference in desire to see the person again.

Alcohol use on dates did not differ across dating app-initiated dates or offline-initiated dates, nor did specific sexual actions such as oral sex (RQ1). For personality traits (RQ2), we found that sociosexuality $\beta = .09$, $p = .014$ [.02, .17], and romanticism $\beta = .17$, $p < .001$ [.09, .25] were associated with positive affect on dates, while other traits were not. Sociosexuality was also associated with less negative affect on dates $\beta = -.08$, $p = .011$ [-.14, -.02], while attachment avoidance $\beta = .09$, $p = .002$ [.04, .15], and attachment anxiety $\beta = .15$, $p < .001$ [.09, .21] were associated with greater negative affect on dates. See Table 3.

Table 3. Multilevel regression models predicting effect on dates as a function of personality traits and dating app use

	Positive Affect		**Negative Affect**	
	β	**95% *CI***	***β***	**95% *CI***
Sociosexuality	.09*	[.02, .17]	-.08*	[-.14, -.02]
Attachment Avoidance	-.07*	[-.14, -.01]	.09**	[.4, .15]
Attachment Anxiety	-.05	[-.12, .02]	.15***	[.09, .21]
Attitudes Toward Dating Apps	-.02	[-.09, .05]	-.02	[-.08, .04]
Romanticism	.17***	[.09, .25]	-.01	[-.08, .05]
Destiny Beliefs	-.03	[-.10, .05]	.06	[-.01, .13]
Growth Beliefs	.04	[-.03, .11]	.01	[-.08, .08]
Dating App (Yes = 1; No = 2)	.23**	[.07, .39]	-.06	[-.20, .07]

Note: * $p < .05$, ** $p < .01$, *** $p < .001$

Sociosexuality $\beta = .24$, $p < .001$ [.12, .36], attitudes towards online dating $\beta = .13$, $p = .041$ [.01, .26], and growth beliefs $\beta = .20$, $p = .002$ [.08, .32] predicted greater attraction to dating partners. An interaction emerged between destiny beliefs and app usage $\beta = .28$, $p = .045$ [.01, .56], but simple slopes analyses did not reveal significant associations. See Table 4.

Table 4. Multilevel regression models predicting felt attraction on dates and desire to see the person again as a function of personality traits and dating app use

	Positive Affect		Desire to See Again	
	β	**95% *CI***	***β***	**95% *CI***
Sociosexuality	.24***	[.12, .36]	.18	[-.01, .36]
Attachment Avoidance	-.08	[-.19, .04]	-.10	[-26, .07]
Attachment Anxiety	.01	[-.11, .12]	-.06	[-.23, .11]
Attitudes Toward Dating Apps	.13*	[.01, .26]	.20*	[.01, .38]
Romanticism	.12	[-.01, .25]	.17	[-.01, .36]
Destiny Beliefs	-.10	[-.25, .04]	-.12	[-.31, .08]
Growth Beliefs	.20**	[.08, .32]	.28**	[.10, .45]
Dating App (Yes = 1; No = 2)	.17	[-.09, .43]	.33	[-.06, .72]
Destiny Beliefs x Dating App	.28*	[.01, .56]	.27	[-.10, .63]
Growth Beliefs x Dating App	-.20	[-.44, .05]	-.43*	[-.79, -.08]

Note: * $p < .05$, ** $p < .01$, *** $p < .001$

Positive attitudes toward online dating $\beta = .20$, $p = .038$ [.01, .38] and growth beliefs $\beta = .28$, $p = .003$ [.10, .45] both predicted stronger desires to see their dates again. An interaction also emerged $\beta = -.43$, $p = .017$ [-.79, -.08]. Simple slopes analyses revealed that for app-initiated dates, stronger growth beliefs were associated with a stronger desire to meet again $b = .49$, $p = .001$ [.20, .78], but this association was not significant for offline-initiated dates $b = .06$. This interaction is displayed in Figure 1.

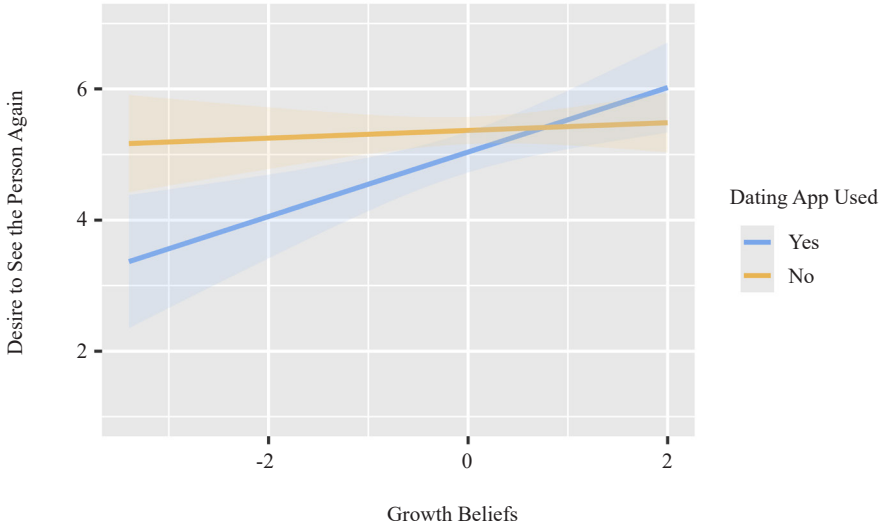

Figure 1. The interaction between growth beliefs and dating app use in predicting desire to see the person again. Shaded areas represent 95% confidence intervals

3.4 *Pre-post date associations*

Here we examined raw correlations between pre-date and post-date ratings for sexy/hot, intelligent, friendly, and fun (RQ3). Correlations fell in the .5-.6 range, which suggested moderate consistency, but with non-negligible remaining variance. A correlation matrix is displayed below (Table 5).

Table 5. Correlation matrix for pre-date and post-date ratings for dating partners

	(A)	(B)	(C)	(D)	(E)	(F)	(G)
Sexy/Hot (A)	-						
Intelligent (B)	.29***	-					
Friendly (C)	.27***	.58***	-				
Fun (D)	.52***	.49***	.60***	-			
Sexy/Hot - Post (E)	.62***	.14**	.10*	.32***	-		
Intelligent - Post (F)	.12*	.60***	.32***	.25***	.46***	-	
Friendly - Post (G)	.08	.30***	.50***	.30***	.45***	.66***	-
Fun - Post (H)	.30***	.25***	.31***	.52***	.63***	.60***	.71***

Note: * $p < .05$, ** $p < .01$, *** $p < .001$

Alcohol use on dates did not moderate pre-post associations, but sexual activity did. Controlling for initial perceptions of partners as sexy/hot, sexual activity was also associated with post-date perceptions of partners as sexy/hot $b = .30$, $p = .005$ [.09, .51]. Furthermore, whether participants reported sexual activity moderated the extent to which initial perceptions of partners as sexy/hot predicted post-date sexy/hot perceptions $\beta = -.37$, $p < .001$ [-.58, -.16]. Simple slopes analyses revealed that when participants reported having sex with their dates, the association between their pre-date and post-date sexy/hot ratings was lower $b = .61$, $p < .001$ [.45, .78] compared to when participants did not report having sex $b = .98$, $p < .001$ [.85, 1.12]. This interaction is displayed below (see Figure 2).

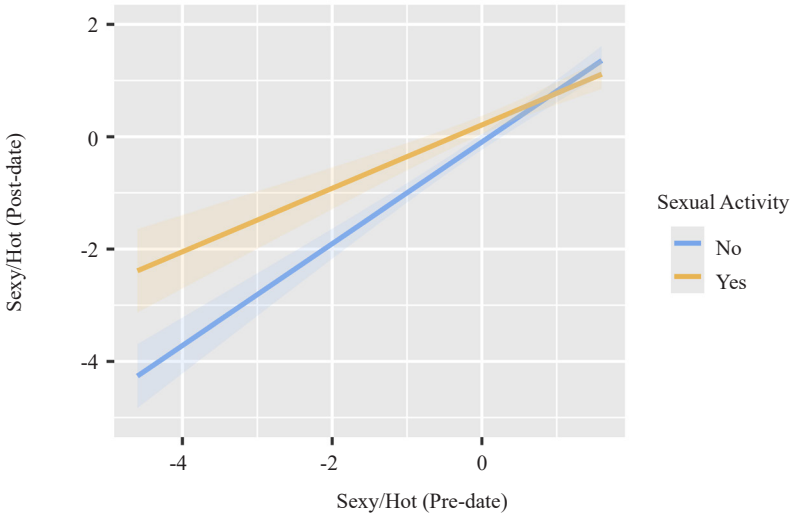

Figure 2. The interaction between sexual activity and perceptions of partner sexiness in pre-date and post-date surveys

Finally, we tested whether participants thought their dating partners had accurate dating profiles affected pre-post ratings. Across the sample, profile accuracy ratings were high for dating partners' pictures ($M = 6.02$, $SD = 1.68$), biographical information ($M = 5.73$, $SD = 1.64$), and personality ($M = 4.58$, $SD = 1.60$), which were all significantly above the scale midpoint ($ps < .001$). No significant interactions emerged, indicating that perceptions of profile accuracy did not play a significant role in pre- to post-date partner perceptions.

3.5 *Which partner attributes matter most?*

We examined which perceived partner attributes would most strongly predict feelings of attraction and sexual activity (RQ4). Surprisingly, we found a negative unique association between perceptions of partner friendliness and felt attraction. See Table 6. Because the raw correlation between partner friendliness and felt attraction was positive, we surmised a moderating effect with one of the other partner trait variables, which did emerge $\beta = .24$, $p < .001$ [.17, .30]. Simple slopes analysis revealed that when dates were rated as highly sexy/hot (+1 *SD*), there was a positive association between ratings of friendliness and attraction $\beta = .24$, $p = .023$ [.03, .44], but when partners were rated low in sexy/hot (-1 *SD*), there was a negative association between ratings of friendliness and attraction $\beta = -.23$, $p = .004$ [-.39, -.08]. This suggests that the degree to which participants felt attracted to partners who they perceived as friendly depended on their perceived sexiness (see Figure 3).

Table 6. Multiple regression model predicting felt attraction as a function of perceived partner traits

Perceived Partner Attributes	Attraction		
	β	***p***	**95% *CI***
Sexy/Hot	.31***	.001	[.18, .45]
Intelligent	-.07	.359	[-.21, .08]
Friendly/Warm	-.20*	.020	[-.36, -.03]
Fun/Exciting	.35***	.001	[.17, .52]

Note: * $p < .05$, *** $p < .001$

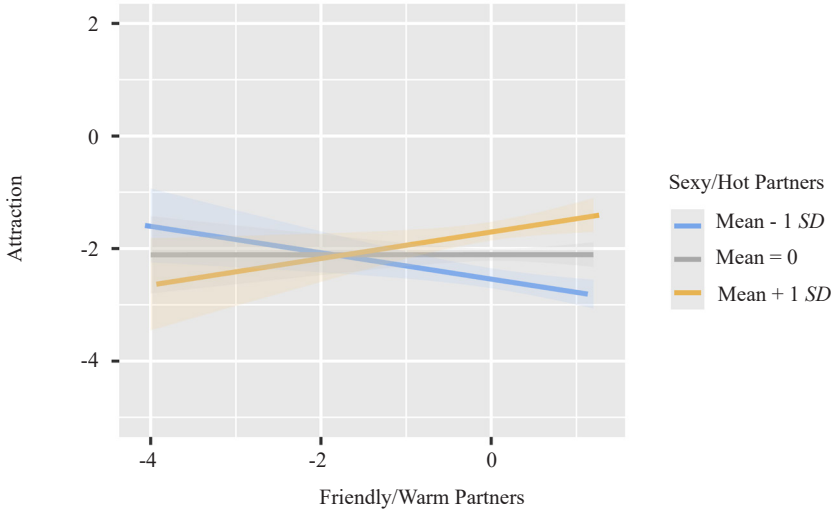

Figure 3. Attraction to dates as a function of perceived partner attributes (sexy/hot and friendly/warm)

Similarly, the likelihood of engaging in some form of sexual activity increased to the extent participants rated their dates as sexy/hot $\beta = .37$, $p = .003$ [.14, .61] or fun/exciting $\beta = .52$, $p = .015$ [.10, .94], whereas perceived partner friendliness was associated with decreased likelihood of sexual activity $\beta = -.65$, $p = .001$ [-1.05, -.25]. The simple association between perceived partner friendliness and sexual activity was not significant $\beta = -.06$, $p = .604$, which suggests a suppression effect that after controlling for physical attractiveness, perceived friendliness may have been a sexual turn-off. Separately, sociosexuality $\beta = .54$, $p = .001$ [.36, .72] and growth beliefs $\beta = .37$, $p = .029$ [.04, .71] were also significant predictors of sexual activity. No other traits predicted sexual activity.

3.6 *How do preferences predict attraction?*

We found no support for initial preferences predicting the extent to which participants felt attraction to sexy/hot partners, intelligent partners, friendly partners, or exciting partners (all *p*s > .100). In no case did initial preferences moderate the extent to which people felt attracted to partners based on those preferred qualities (RQ5).

3.7 *Gender*

Replicating past research, men scored higher than women on preferences for sexy/hot partners t (766) = 4.47, p < .001 [.16, .42], d = .35, while women scored higher on preferences for intelligent/successful t (762) = -4.88, p < .001 [-.47, -.20], d = -.38, friendly/warm t (761) = -2.55, p = .011 [-.29, -.04], d = -.20, and fun/exciting partners t (761) = -2.12, p = .034 [-.27, -.01], d = -.17. Men also scored higher than women in sociosexuality t (770) = 7.41, p < .001 [.67, 1.16], d = .58, romanticism t (742) = 4.64, p < .001 [.18, .45], d = .37 and attitudes toward online dating t (753) = 3.88, p < .001 [.13, .39], d = .31, while women scored higher in attachment avoidance t (764) = -4.20, p < .001 [-.38, -.14], d = -.33 and attachment anxiety t (765) = -2.43, p < .001 [-.38, -.04], d = -.19. Men expressed greater interest in friends-with-benefits relationships t (769) = 6.29, p < .001 [.64, 1.22], d = .49, while women expressed stronger interest in committed relationships t (769) = -4.09, p < .001 [-.61, -.21], d = -.32 and marriage t (769) = -3.39, p < .001 [-.90, -.24], d = -.27. Women scored higher than perceptions of their own desirability t (768) = -2.47, p = .014 [-.37, -.04], d = -.19.

Men felt more attraction to their dating partners compared to women (RQ5b) b = -.33, p = .012 [-.58, -.07], and women reported greater negative affect on dates compared to men b = .16, p = .015 [.03, .29]. However, men and women did not significantly differ in their perceptions of partner traits or positive affect on dates. Ratings for dating partners as sexy/hot significantly predicted attraction to those partners, β = .33, p < .001 [.21, .45], and gender was a significant moderator β = .39, p = .002 [.14, .64]. Simple slopes analysis showed that the degree to which women perceived dating partners as sexy/hot, they felt stronger attraction b = .52, p < .001 [.41, .64], while for men, this association was not significant b = .13. This interaction is displayed below (see Figure 4).

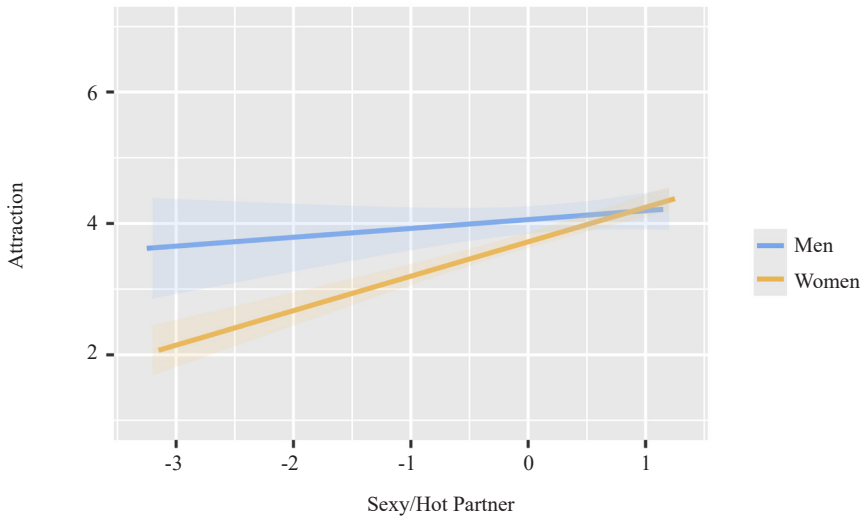

Figure 4. The interaction between perceptions of dating partners as sexy/hot and gender in predicting felt attraction

Similarly, gender moderated the association between partner friendliness and felt attraction β = .30, p = .037 [.02, .58]. Simple slopes analysis showed that the degree to which women perceived dating partners as friendly, they felt stronger attraction b = .17, p = .007 [.05, .29], while for men, this association was not significant b = -.13. Ratings for dating partners as fun/exciting also significantly predicted attraction β = .20, p < .001 [.10, .30], and gender emerged as a significant moderator β = .27, p = .011 [.06, .48]. Simple effects analysis showed that the degree to which women

perceived dating partners as fun, they felt stronger attraction $b = .34$, $p < .001$ [.24, .43], while for men, this association was not significant $b = .06$, $p = .504$ (see Figure 5).

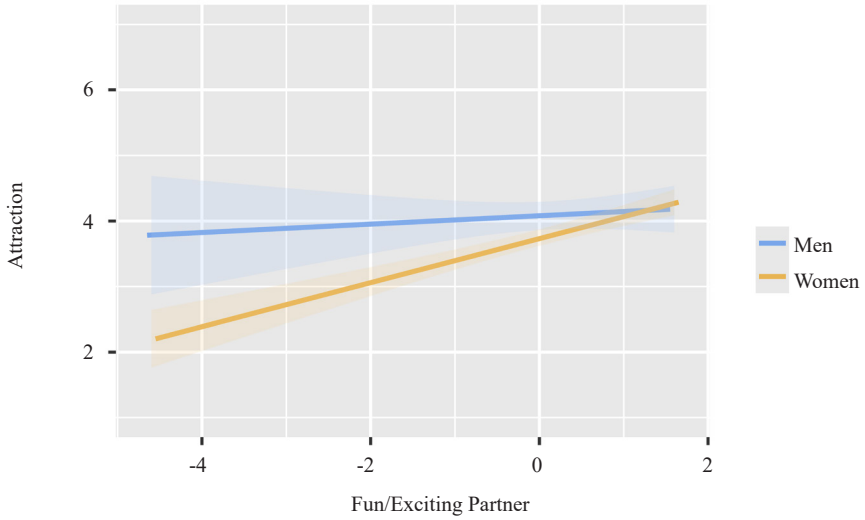

Figure 5. The interaction between perceptions of dating partners as fun/exciting and gender in predicting felt attraction

The dataset for this study can be found here: https://osf.io/jv278/

4. Discussion

This study investigated dating experiences in a large sample of young adults. We examined emotions, perceived partner attributes, ideal partner attributes, self-personality traits, behavioral outcomes such as alcohol use and sexual activity, felt attraction, and attitudes/perceived norms about dating. With this study, we approach a deeper understanding of romantic attraction.

Our data showed mixed evidence with regards to the question of how app-initiated dates compare to offline-initiated dates. Participants reported feeling less positive emotions and more "uncomfortable" on app dates, but no effects were found for negative emotions or feeling "comfortable". Furthermore, no significant effects emerged for felt attraction or perceptions of partners as sexy/hot, intelligent, or friendly, but on app-initiated dates, participants rated their partners as less fun/exciting. Finally, participants were not more or less likely to consume alcohol or engage in sexual activity for app-initiated dates.

Aside from a few exceptions, these data show considerable similarity between app-initiated experiences and offline-initiated experiences in terms of felt emotion, attraction, partner perception, and behaviors. This is notable given the striking differences in attitudes and perceived norms for different methods people use to meet dating partners. In our sample, participants had lukewarm attitudes toward dating apps despite their prevalent usage, and this was in part connected to perceived social norms and acceptability. Among participants who had never used dating apps, they reported a greater willingness to do so if they knew that their friends were also using them. Those who had more positive attitudes toward dating apps were less likely to hold romantic ideals and more likely to believe in the importance of initial romantic chemistry. They were less interested in marriage but more interested in dating prospects and more likely to compartmentalize love as separate from sex. It may be the case that these attitudes were formed before direct experiences with dating apps. But the reverse may also be true — that those experiences with online dating parties shape attitudes regarding sex, romance, and long-term relationships.

4.1 *Theoretical implications*

Some personality traits moderated dating experiences. Those high in growth beliefs, for instance, showed a greater desire to see their dating partners again after meeting them through an app. Because attitudes toward online dating were negatively associated with romantic ideals and destiny beliefs, the experience sampling data make sense in this context. It may be the case that people's negative attitudes toward dating apps caused them to perceive objectively similar partners more negatively than they otherwise would in a different context. We suggest further research to investigate dating app outcomes as a function of initial beliefs.

Those higher in sociosexuality and growth beliefs tended to feel more positively about their dating experiences in terms of effect and attraction and were more likely to report sexual activity. Those higher in sociosexuality may have felt excitement about dating apps as a method for casual sex (Sevi et al., 2018), while those with higher growth beliefs may hold a more optimistic attitude toward initial encounters. Attachment insecurities (anxiety and avoidance) were not associated with dating experiences in a unique way. Other studies have shown that attachment variables are linked with attraction (Klohnen & Luo, 2003), but perhaps those findings are not generalizable beyond the laboratory or are simply less likely to influence people compared to other traits such as beliefs about dating or desire for sex.

We also examined participants' changing perceptions of dating partners before and after dates. We had suspected this would be driven to some extent by participants' realization that their partners did not match their dating profiles, but our data showed that perceived profile accuracy was not significantly related to pre-post date changes. Those who reported sexual activity on their dates also showed more pre-post change in partner ratings for sexy/hot. Although we did not measure sexual satisfaction on dates, it is possible that the reason that participants experienced more change in sexy/hot ratings following sexual activity was that their sexual experiences were unsatisfying. Other studies show low orgasm rates in first-time hookups, and our data are consistent with this general finding (Armstrong et al., 2012).

In terms of which partner attributes mattered most to participants, we found that ratings of sexy/hot and fun/exciting each uniquely predicted attraction and these variables also predicted the likelihood of sexual activity. In addition, the link between ratings for friendliness and attraction depended on ratings of sexy/hot, such that only when dating partners were rated as highly sexy/hot did friendliness predict attraction, whereas, for lower sexy/hot ratings, increased friendliness was associated with less attraction. Separately, ratings for friendliness were associated with a lower likelihood of sexual activity. This is somewhat consistent with other work showing that these variables are relevant to attraction (Urbaniak & Kilmann, 2003), but those prior studies mainly examine general friendly qualities (which are desirable) rather than the degree to which people experience friendliness in others within a romantic context. Our data suggest a nuanced context-dependent effect such that friendliness is desirable in partners who possess other desirable qualities, and friendliness by itself may be a turn-off.

We found little evidence that partners' initial stated preferences were meaningfully associated with dating outcomes. Instead, outcomes such as felt attraction or sexual activity depended on perceived partner attributes. Furthermore, gender was associated with initial ideal partner traits, but in a way that was not reflected in the experience sampling data. Women in our study felt less attraction to their dating partners compared to men and also reported less desire to see their dates again, despite no significant differences in perceptions of their dates' qualities. This is consistent with prior work showing that in natural contexts, women are more selective than men, in part due to gendered dating scripts that dictate men should be more assertive and women should be more coy (Finkel & Eastwick, 2009). However, women were less likely than men to agree that their dates' personalities matched their dating profiles, so the difference in felt attraction may be due to greater disillusionment in women. In addition, we found no evidence that gendered preferences predicted dating outcomes. One caveat, however, is the potential for a restricted range of partner traits, as identified in the experiments by Li et al. (2013). It may be that when people have access to potential dating partners at the extreme ends of the spectrum for traits such as attractiveness or intelligence, gender-differentiated attraction outcomes would appear. But we do not have evidence for this type of pattern in the current data. In fact, our data showed gender-differentiated patterns in the opposite direction of what evolutionary theory would presuppose. Specifically, women felt significantly more attraction to dating partners as a function of perceived physical attractiveness (in addition to perceived warmth and excitement), but this pattern did not emerge for men, and there was no gender interaction for perceived intelligence.

4.2 *Strengths, limitations, and future directions*

Our data suggest that despite similar felt experiences offline and through apps, people are somewhat less comfortable with app-initiated romantic encounters compared to other dating methods. But importantly, our data do not reveal precisely why this pattern emerged. Perhaps it can be attributed to concerns about deception in profiles or the potential for harassment. It may be that participants knew their offline partners longer before dating, compared to dating app partners. Future research should investigate this further. Another possibility is those courtship behaviors themselves are somewhat different through dating apps, such as the types of communication that people use while flirting or the priorities given to one's own dating motivations compared to a partner's motivations. Future research may probe the similarities and differences between online and offline dating in terms of courtship behaviors.

Our study design utilized a prospective, experience-sampling methodology, which afforded us to examine dating experiences in real-time, garnering data that was less vulnerable to memory biases. However, we could not account for possible self-fulfilling prophecies. That is, beliefs about the applications rather than the applications themselves may predict a more negative experience. Perhaps more pessimistic individuals who have a negative dating app experience quickly develop beliefs and cognitions that such apps are not good for dating, and thus, have more negative experiences. Along these lines, though results showed associations between romantic destiny/growth variables and dating variables, the internal consistency for these scales was on the low side. We suggest that the results for romantic destiny/growth be interpreted cautiously and that further work replicates these findings.

As described above, participants were prompted to include a broad definition of romantic/sexual encounters, which included traditional dates, hookups, meeting at parties, etc. The link between dating app usage and negative affect could be moderated by the type of romantic/sexual encounter, which may stem from individual users' motivations as well as available options and social norms. We collapsed across various applications in our survey materials, and although the majority of participants reported using Tinder, some used other apps including Hinge, Bumble, and more. Too few participants reported using those apps for us to run comparative analyses, so this remains an intriguing direction for future studies. Furthermore, we did not assess where/how participants engaged in offline dates, and it may be the case that app-based dates are significantly different from some types of offline dates but not others, which is a ripe direction for future studies.

Previous studies have yielded mixed findings about marital satisfaction/divorce as a function of online dating websites (Cacioppo et al., 2013; Paul, 2014). There is even less information available about these outcomes as a function of dating apps, so we should be cautious about overgeneralizing the current findings to long-term relationship outcomes. While our sample consisted mostly of college-aged students, which is a population of people who are unlikely to be married and desire dating experiences, it may be that other demographic groups utilize dating apps in different ways which would predict different relational outcomes. Future studies could employ more age-diverse samples to study how relationship processes unfold as a function of app usage.

Given our participants' initial positive mindset toward dating, our data suggest that even though young adults desire romantic and sexual experiences, these are not common occurrences. Even those participants who expressed positive views toward sexual encounters lack such experiences themselves. This is consistent with recent studies showing that young adults are having less sex than previous generational cohorts (Twenge et al., 2015, 2017).

Finally, it is worth reiterating that our data were collected prior to the COVID-19 pandemic, a period that saw dramatic increases in digitally mediated communication of all kinds, including online dating. While increased usage rates do not necessarily suggest different emotional or behavioral patterns in dating, this is certainly a possibility. Future research can attempt to replicate and further extend our current findings to see how well they generalize to a post-pandemic era of dating and sex.

4.3 *Conclusion*

The main goal of the current study was to investigate emotional and behavioral outcomes across app-initiated and offline dates. Overall, we found substantial similarities across these modalities, with some nuanced differences in terms of felt experiences mainly as a function of trait-like attitudes toward dating and sex. Our ancillary findings suggested that dating experiences were not significantly influenced by changes in how participants perceived their partners from before to after a date, nor did we find evidence that initial preferences played a significant role in dating experiences.

This is somewhat ironic, given that one of the stated promises from digital dating companies is the ability to help people make meaningful connections according to their stated preferences (Joel et al., 2017) and to offer dating experiences that are unique or special compared to other means. Researchers who study attraction and technology, as well as dating app companies themselves, can devote more attention and resources to studying under what circumstances people have positive experiences through their apps and how exactly their dating needs are met.

Conflict of interest

The authors declare that they have no competing interests.

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