



Mindful Dating Online: An Examination of the Effects of Mindfulness on Dating Success

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Mindful Dating Online:

An examination of the effects of mindfulness on dating success

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A Thesis in the Field of Psychology

for the Degree of Master of Liberal Arts in Extension Studies

Harvard University

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Abstract

The present study investigated how trait mindfulness relates to dating outcomes. An online survey was conducted on 68 self-reported heterosexual men between 25 and 43 years old. Contrary to expectations, no significant associations were found between trait mindfulness and dating success, as measured by the number of total first and second dates in the past year. Despite these findings, this research adds to the growing body of research on mobile dating applications, as no studies have yet investigated associations between trait mindfulness and dating outcomes.

Dedication

I dedicate this thesis to my dear friend, Anthony Patrick Sylvester, you believed in me and pushed me to go back to school. I am sorry you are not here to see me accomplish our plans. I also would like to dedicate this thesis to my dear Aunt Martha.

Acknowledgments

I would like to acknowledge my research advisor Dr. Dante Spetter, as well as Dr. Ellen Langer and Dr. Jack Demick for their patient guidance and support. I also would like to express the deepest gratitude to my thesis director, Dr. Dante Spetter, for her tireless availability, help and advice. A huge thank you to Dr. Christelle Ngnoumen, I will always associate our time at Harvard as “Study Party” time, thank you for all your assistance with this project. Lastly, I would like to acknowledge my mother for all her love, support and encouragement.

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Chapter I

Introduction

During the past two decades, the use of online dating platforms to initiate a romantic relationship has seen a marked increase. According to the Pew Research Center (2016), 15% of United States adults polled reported having used online dating websites or mobile dating applications (Smith, 2016). Attitudes towards the use of online dating have shifted in the past decade as well; whereas it was once stigmatized as being only for the “desperate” (e.g., Baker, 2002; Gibbs, Ellison, & Heino, 2006; Madden & Lenhart, 2006), online dating is now considered a viable way for relationship-seekers to meet a prospective date (e.g., Rosenfeld & Thomas, 2012).

In fact, it is now common for individuals who initially meet online to marry. For instance, in a national representative sample ($N=19,131$) taken between 2005 to 2012, it was found that approximately one in three marriages in the United States were formed via online meeting sites, with 45% of those couples specifically indicating that they met through online dating sites (Cacioppo, Cacioppo, Gonzaga, Ogburn, & VanderWeele, 2013). These statistics seem promising for the online dating industry; however, conflicting evidence directly contradict these findings. For instance, it was found that one-third of the people surveyed indicated their online activity did not lead to meeting with someone in person (Smith & Anderson, 2016), and for those who did progress to at least one in-person meeting, only a fraction reported developing a ‘long-term’ relationship offline.

What individuals who are seeking ‘real life’ relationships want to know is the real success rate for online dating overall, and as they choose which platforms to engage with, which one is most likely to be successful for them. Other questions frequently posed include: what distinguishes those who succeed in finding love from those who fail? Perhaps an additional and more worthwhile question to ask is: how do users themselves approach their online dating experience, and does this predict their outcomes?

Technology and online dating applications

Today’s online dating experiences and platforms, as Finkel et al. (2012) pointed out, provide an opportunity to meet people who are also looking for a match as the first step. While dating websites vary in approach, the central aim is to facilitate the process of seeking prospective romantic partners (e.g., Finkel et al., 2012; Ramirez et al., 2015). The online dating experience can vary depending on the dating websites or mobile apps. There are traditional online dating or matchmaking sites, and there are niche dating websites. Others offer different features: for instance, geographical-location-based sites—connecting users based on their physical GPS location.

Finkel et al. (2012) specifically suggested three unique services that online dating sites provide to users: (a) an unparalleled opportunity to gain access to connect with potential relationship partners; (b) the ability to engage through computer-mediated communication before deciding whether to take a conversation offline and to meet in person; and (c) the chance of being matched with potential relationship partners using matching algorithms. There are many factors that affect whether any two people will ‘hit

it off' and develop an ongoing relationship, but those who eventually meet a romantic partner generally have multiple dates with more than one person before finding 'the one'.

In considering what makes some people better able to meet in person and to meet for more than a single drink or cup of coffee, the question of how an individual may increase his or her own likelihood of forming a lasting relationship from this vast pool of resources arises. Understanding such distinctions may have practical implications for individuals seeking romantic relationships both online and offline.

Finkel et al. (2012) recommends that when meeting potential partners it may be helpful to avoid repeatedly assessing the situation and instead focus on creating a pleasurable interaction with the other person. We interpret this as mindfulness. Being mindful of the goal of connecting or simply noticing the subtle contextual variations around us, or being mindful—is important (Langer, 2014).

This study, therefore, explored whether participating mindfully in the online dating process leads to more successful dating outcomes, with success measured as progressing to a face-to-face meeting or 'date'.

Mindfulness

The term 'mindfulness' has been described in many ways, but two distinct, albeit related, concepts exist (e.g., Haas & Langer, 2014; Zilcha-Mano & Langer, 2016). Within scientific research, mindfulness is divided into two major areas: meditative mindfulness (e.g., Kabat-Zinn, 1994; Kabat-Zinn, 2003) and socio-cognitive mindfulness (Langer, 2014).

The Eastern perspective, meditative mindfulness, is often conceptualized as “paying attention in a particular way: on purpose, in the present moment, non-judgmentally” (Kabat-Zinn, 1994; Kabat-Zinn, 2003), which draws from philosophical practices and incorporates the practice of meditation, using breathing exercises among other techniques (Zilcha-Mano & Langer, 2016).

The Western perspective, socio-cognitive mindfulness, is an active state of mind (Langer, 2014) achieved through the active process of seeking novel distinctions (Burpee & Langer, 2005; Langer & Moldoveanu, 2000; Zilcha-Mano & Langer, 2016).

Mindfulness has been used to enhance positive effects in a variety of creative activities (e.g., Langer & Piper, 1987), employment productivity, social performance (e.g., Chanowitz & Langer, 1981; Langer & Imber, 1979) and health (for a review, see Langer, 1989; 1997; 2005; 2009; Ie, Ngnoumen & Langer, 2014). Langer argues that much of our waking hours are spent in a mindless state or “on autopilot” (Langer & Moldoveanu, 2000), keeping us from noticing and observing the present moment (Langer, 2014). When we are reliant on past distinctions focusing on a single narrow perspective, this makes it difficult to keep an open mind. We thereby pass up possible positive alternative knowledge, thus reducing our choices (Langer, 2000). One way to combat this is for an individual to focus on noticing and paying attention to new things, hence being mindful (Langer, 1989).

Mindfulness & dating I: Mindfulness predicts relationship satisfaction

Mindfulness is positively associated with marital satisfaction. For example, Burpee & Langer (2005) conducted a correlational study, surveying 95 married adults—55 females and 40 males (between the ages of 25 and 74). The authors assessed

participants for overall life satisfaction, marital satisfaction and their perceived overall similarity with their significant other using self-report questionnaires (Burpee & Langer, 2005). In addition, mindfulness was measured using the Langer Mindfulness Scale (Bodner & Langer, 2001), including four subscales: novelty seeking; novelty producing; flexibility and engagement.

In dating, romantic relationship-seekers need to try to determine whether people they meet could potentially be a future mate or someone they would like to start a relationship with; therefore, especially in online dating, being mindful should be of the utmost importance.

Mindfulness & dating II: Understanding the online dating experience

An examination of how mindfulness potentially impacts online dating success requires an understanding of the online dating experience, particularly how it compares to offline dating. Understanding the kinds of challenges faced by the average online dater helps elucidate areas where mindfulness could prove useful and instrumental in facilitating relationship formation (e.g., success).

In an attempt to differentiate the online dating process from more conventional (offline) forms of dating, Finkel et al. (2012) proposed that there are nine steps involved, with distinct milestones specific to online dating. First, romantic relationship-seekers must decide to start dating online. Second, they must identify which websites or services would be best suited for their goals. Third, they need to create a profile (or multiple profiles). Fourth is to begin browsing other people's profiles. Fifth is to initiate contact with prospective dates. Sixth is to receive communication from other users; seventh is to engage in computer-mediated interaction (e.g., messaging, flirting, winking or otherwise

indicating some interest); eighth is to establish an initial in-person meeting; and ninth is where the daters begin to develop a relationship offline (Finkel et al., 2012). Is being mindful during each of these steps likely to make online dating more successful?

There are two crucial milestones that differentiate the online dating process and have an impact on relationship formation. The first milestone is moving the conversation from online to offline, known as “modality switching” (e.g., Ramirez & Zhang, 2007; Ramirez & Wang, 2008; Sharabi & Caughlin, 2017). One key factor clearly distinguishing online dating is the integration of technology as a tool to progress from online to in-person relationships (e.g., Finkel et al., 2012). Research has emphasized that the significant turning point in the online dating process is when the decision is made to take the interaction offline, either to speak by telephone or to meet in person (e.g., Sharabi & Caughlin, 2017). The questions thus arise: how do users decide to make this transition? and what are the actions and characteristics of those who are successful at making the change?

Following the success of the first in-person meeting, the second milestone is a follow-up stage, whether there will be a second date and any consecutive meetings or interaction.

To date, no studies have been conducted to examine socio-cognitive mindfulness in individuals engaging in the early stages of romantic relationship formation, and no research has examined whether participating in the online dating process mindfully leads to enhancement of successful dating outcomes. This study attempted to contribute to the mindfulness literature on relationship development, close relationships, and relationships formed online. It aimed to provide a greater depth of understanding regarding

mindfulness-related mechanisms in forming romantic relationships initiated through the use of online dating websites. The results from the current study may have practical implications for individuals seeking romantic relationships both online and offline.

Chapter II

Method

The current study examined the role of mindfulness in the broader context of online dating, informed by prior research on mindfulness, romantic relationship formation and interpersonal functioning. Specifically, the study examined mindfulness in individuals engaging in the early stages of romantic relationship formation, to ask the question whether participating in the online dating process more mindfully leads to enhancement of dating outcomes.

Study hypotheses

Drawing from previous studies mentioned above, we predicted that trait mindful individuals would have a higher number of first meetings/dates. Mindfulness, as we refer to it here, has been found to be both a trait and a state (which can be experimentally introduced). We predicted that increased mindfulness would increase dating success whether conceptualized as a trait or as a state (Sutcliffe, Vogus & Dane, 2016). Part One looked at it as a trait; Part Two looked at it as a state.

We sought to examine, using the correlational method, whether there is a relationship between mindfulness and dating outcomes, whether individuals scoring higher on LMS14 would be more likely to meet more matches for a second date. We predicted that those who scored higher on the mindfulness scale would have a greater success rate in landing second dates.

Participants who were actively engaged in seeking partners when the initial interaction began online were asked to complete measures of mindfulness and report on their online dating behavior. This was accomplished using a web-based experimental design.

It is well documented; mindfulness has a positive effect on interpersonal effectiveness in other contexts (e.g., Burpee & Langer, 2005). This suggests that it could also promote positive outcomes within the online dating context. Therefore, we predicted that mindfulness would make it more likely that people would be attracted to someone during the first in-person date after meeting online. If developing a long-term relationship is the primary dating objective, mindfulness should increase the likelihood of a second date.

Data for the current study were collected as part of a larger intervention study. We assessed the degree to which trait socio-cognitive mindfulness predicted online dating behaviors and success.

Participants

Participants were recruited over a four-month period from November 22, 2019 through April 1, 2020, using a combination of two sample approaches, convenience and snowballing. Participants were predominantly recruited through the SONA systems portal provided by the Harvard University Decision Science lab, through face-to-face recruitment, as well as through advertisement posted on the social media forum Reddit (see Appendix A for an example of the advertisement placed in postings for participant recruitment). At the time of enrollment participants were informed that those who completed a series of five surveys would be entered into a raffle for a chance to receive

one of five \$100 Amazon gift cards. All study procedures were reviewed and approved by the Harvard University's Committee on the Use of Human Subjects (CUHS) prior to data collection.

All participants were voluntarily enrolled, and only individuals who met the inclusion criteria and provided their consent were included in the analysis. Inclusion criteria were as follows: participants must (a) have access to the internet; (b) have the ability to speak, read, and understand English; (c) be self-identifying heterosexual male adults between 25 and 44 years of age; (d) be willing to use online dating website(s); and (e) be willing to engage in face-to-face meeting(s) with prospective romantic relationship-seekers met online. In order to control for as many variables as possible, only self-identifying heterosexual male adults, ages 25 to 44 years old, currently living in the United States, who were either seeking a long-term relationship and/or actively engaging in the online dating search process were included in the study.

Of these participants, individuals who met the selection criteria upon completion of the prescreening phase in Part One were qualified for Part Two of the study, which is ongoing.

Materials and measures

Additionally, as the investigation was conducted online, participants were required to have access to the Internet in order to participate.

Demographics

All participants completed a brief self-report demographic form and related information questionnaire, which included the participant's age, self-identified sex, sexual orientation, race/ethnicity, level of education, current employment status and income. Additionally, participants were asked questions assessing relationship history, online dating experience, use of dating services and current relationship status. Participants were also asked questions to report the amount of time on average spent using online dating application(s) per week, the number of online dating sites used, and which sites they used (e.g., Tinder, OkCupid, PlentyOfFish, Match, eHarmony, Hinge, Bumble, The League, or other as specified by the participant). The questions were derived from prior online dating research (Sharabi & Caughlin, 2017), where participants were asked to best describe their attitudes toward seeking a relationship (Singles in America & Match.com, 2017), for example, "Have you ever created a profile on a dating site/app?", "Have you ever dated someone you met online?". The demographic data collected were used to identify the participant's dating behaviors and to identify participant's eligibility; some items were also used as dependent measures (See Appendix C).

Socio-cognitive mindfulness

The Langer Mindfulness Scale (LMS-14; Bodner & Langer, 2001; Pirson, Langer, & Zilcha, 2018; Appendix F) has been reported to be the most widely used measure of mindfulness which incorporates a socio-cognitive perspective. Evidence for the validity of this measure has been reported by Pirson, Langer, & Zilcha, 2018. The scale is a 14-item self-report measure, adapted from the original 21-point measure (LMS-21; Bodner & Langer, 2001), each item scored on a 7-point scale from 1 (strongly disagree) to 7 (strongly agree). The scale yields a primary measure of overall mindfulness score, and these scales were used in the data analysis.

Additionally, the scale yields a secondary measure, providing three subscales: novelty seeking; novelty producing; and engagement. Examples of items measuring these subscales include: novelty seeking: “I often generate novel ideas”, novelty producing: “I like to investigate things”, and engagement: “I ‘get involved’ in almost everything I do”. To control for the social desirability effect, the items negatively worded are reverse-scored (e.g., “I am not an original thinker”). Following this procedure, the scores on the 14 items were summed to yield the main overall mindfulness measure, yielding a range from 21 to 98, with higher scores indicating greater mindfulness. This measure was used as the primary outcome measure for this investigation and administered at the beginning and at the end of the study.

Dating success and single-item measures

Success was assessed using two indicators: the first index of success was operationalized as the occurrence of off-line meetings (i.e., number of in-person first

dates), and the second index of success assessed the movement from a first date to a second date (i.e., number of second dates). Both indicators were measured based on the reported frequency of the number of either first dates or second dates per participant. Participants were asked to report on “How many first dates have you gone on so far this year?” and “In the last year, how many second dates have you been on?”

Research design and procedures

All assessments and tasks were completed via Qualtrics, which were accessible online at individuals’ convenience outside of the laboratory setting. Each participant was assigned a unique numerical identifier (ID) to track survey responses. Participants’ unique IDs were not linked to their email addresses, and to keep the individual responses anonymous, personal information was not recorded in the survey results, and IP addresses were not collected. The numerical identifiers were used to verify the completion of the study and to determine which participant would receive a gift card. Participants were not asked to provide any unnecessary information, or information that might allow for precise individual identification, other than in awarding study incentives to the appropriate individuals and the distribution of subsequent surveys for Part Two.

All survey responses were exported manually from the password-protected Qualtrics account to the principal investigator’s personal password-protected laptop for analysis. Copies of the raw data were encrypted, and backed up to a password-protected external hard drive External Storage Encrypted USB as well as a Harvard Managed Google web-based Cloud backup system to ensure the data was accessible remotely.

SPSS syntax files were created to streamline the data analysis process and were used to repeat the analyses in order to verify the accuracy of the results.

Interested participants were invited to enroll in the study using the hyperlink to the online survey (Qualtrics) embedded in the study invitation, where brief descriptions of the study were provided. Only participants who provided informed consent electronically were included in the study. Individuals who were not accepted received a message thanking them for their consideration. See Appendix B for a sample of the informed consent form.

Consenting participants were directed to respond to the second self-report questionnaire. The questionnaires were estimated to take participants approximately 15-20 minutes to complete, comprised of the following: (a) Relationship History Questions (Appendix C); (b) Online Dating Behavior Characteristics Questions (Appendix D); and (c) Langer Mindfulness Scale (LMS-14; Bodner & Langer, 2001; Appendix E); and (d) Demographic Questionnaire (Appendix F). Please note, based on feedback received during the pilot testing of the prescreening and first survey, the order of the demographic questions were presented was changed to be placed at the end of the survey as opposed to in the beginning. After the responses were collected, participants were asked if they would like to participate in Part Two of the study, which has been paused due to the coronavirus pandemic.

Participants who consented to participate in Part Two of the study were then directed to a separate survey in Qualtrics, where they were asked to provide their email address. The mailing list was used to contact the appropriate individual to distribute

subsequent surveys, and once all data is collected the list will be immediately destroyed after the delivery of the compensation.

Pilot testing

The questionnaires for the current investigation were pilot tested twice, first with the research members in Professor Langer's Mindfulness and Decision-Making Lab at Harvard University and second with the research members of the Harvard University Decision Science lab. The objectives of the pilot study were to determine the following: (1) to receive feedback on the questions; (2) to check the flow of the survey questions; (3) to assess the suitability of the research design and wording of the questions.

Data cleaning

Prior to performing the preliminary analyses, the data were screened for duplicate participant identification numbers (Unique ID) to ensure that multiple submissions were not included in the analysis. Further, the data were screened for missing or erroneous responses. In addition, the LMS-14 were scored in accordance with the original authors' instructions. The scores were calculated for each of the LMS subscales: novelty seeking; novelty producing; and engagement.

Data screening

One hundred and twenty-five individuals completed the first online survey; however, participants missing any of the items in a scale were deleted. First, 22 participants were removed from the data set because they did not complete the survey in full.

Second, the individuals that did not meet prescreening criteria were removed. Demographic data were used to identify the participants' dating behavior, and participants who did not answer questions related to the inclusion criteria were removed (e.g., age, gender, attitude towards dating, and relationship status). Only participants who were male, heterosexual, between the age of 25 and 44 years old were included. Those who were already dating someone and not looking to date other people at the moment were excluded from the final sample. Participants who reported their sex as "Female", "Prefer to self-describe", or "Prefer not to answer" ($n = 4$) were removed. For the purpose of the analysis, participants that reported as being in either an open relationship, or casually dating (one or more partners) were not removed.

Third, 2 duplicate responses were identified using the unique identifier and were removed. A total of 69 participants were included in the analysis.

Prior to hypothesis testing, univariate and multivariate outliers were identified. First, in order to identify the univariate, we calculated the standardized or z-scores for the following 7 variables: age, mindfulness score, mindfulness subscales (novelty seeking, novelty producing and engagement), and the main dating outcome scores (number of first dates, number of second dates). Descriptive statistics were used to identify outliers in the dependent variables, as defined by observations falling greater than 3.29 standard deviations from the mean, or a standardized value of less than ± 3.29 (Keppel & Wickens, 2004). One participant was removed based on z-scores for the number of second dates being above the threshold.

Second, in order to identify possible multivariate outliers, we performed a Mahalanobis distance test on the same variables. For this study there were no participants

identified as multivariate outliers. Therefore, a total of 68 participants remained and were included in the final analysis.

Primary analyses

Prior to conducting the main analyses, correlation analysis to examine the associations between the trait socio-cognitive mindfulness (measured using the LMS-14) and participants' online dating behaviors and dating success were examined. The significance threshold was set at .05.

Participants' socio-cognitive mindfulness levels, as measured by total scores on the LMS-14, were correlated against measures assessing attitude toward seeking a relationship, relationship history, and measures assessing online dating experience, use of dating services, and current relationship status, amount of time on average spent using online dating application(s) per week, number of in-person first dates, number of second dates, which were used to determine the degree to which trait mindfulness predicts various aspects of dating behavior.

Mindfulness and dating outcomes

For the current study, the first index of dating success was operationalized as the transition from communicating online to meeting in-person (i.e., offline). The second index of success was operationalized as the percentage of first dates, which progressed to second dates. The moderating variables of interest for the proposed study were participants' relational goals and socio-cognitive mindfulness.

Chapter III

Results

The final sample included in this study consisted of 68 self-reported heterosexual male participants. The sample was comprised of men whose ages ranged from 25 to 43 years, with an overall mean age of 31.56 years ($SD = 5.244$), with close to two thirds of the sample (73.5%, $n = 50$) under 35 years of age. Forty-one percent of the participants were White ($n = 28$), 19.1% African-American ($n = 13$), Asian or Asian-American ($n = 12$), 17.6%, 7.4% Hispanic, Latino or Spanish ($n = 5$), 11.8% Multiple races ($n = 8$) and American Indian ($n = 1$) and Middle Eastern ($n = 1$). The majority of the participants were Massachusetts residents (51.5%, $n = 35$). Sample demographics are displayed in Table 1.

Participants were predominantly single (85.3%, $n = 58$) with 11.8% casually dating ($n = 8$) or in an open relationship (2.9%, $n = 2$). Of these 77.9% identified as having never married ($n = 53$). Participants mainly recruited through Harvard Decision Science Lab (50%, $n = 34$), with the remaining 47.1% ($n = 32$) via Reddit, and 2.9% through word of mouth ($n = 2$). Table 2 displays participants' relationship history in full.

Table 1.

Demographic characteristics of all participants

Characteristic	<i>n</i>	%
Age at the time of survey (years)		
25-29	29	42.6
30-34	21	30.9
35-39	9	13.2
40-43	9	13.2
Highest education level completed		
Less than high school degree	1	1.5
High school	9	13.2
Some college but no degree	8	11.8
Associate degree in college (2-year)	11	16.2
Bachelor's degree in college (4-year)	21	30.9
Master's degree	15	22.1
Doctoral degree	2	2.9
Professional degree (JD, MD)	1	1.5
Race/Ethnicity		
White	28	41.2
Hispanic, Latino, or Spanish origin	5	7.4
Black or African American	13	19.1
Asian	12	17.6
American Indian or Alaska Native	1	1.5
Middle Eastern or North African	1	1.5
Multiple races, ethnicities	8	11.8
Employment Status		
Employed full-time	31	45.6
Employed part-time	15	22.1
Self-employed	11	16.2
Out of work and looking for work	3	4.4
Student	6	8.8
Prefer not to answer	2	2.9

State		
Arizona	1	1.5
California	8	11.8
Colorado	3	4.4
Connecticut	3	4.4
Maine	1	1.5
Massachusetts	35	51.5
Nevada	4	5.9
New Jersey	1	1.5
New Mexico	3	4.4
New York	5	7.4
Texas	1	1.5
Washington	2	2.9
Preferred to not answer	1	1.5
Annual income (\$)		
Less than \$30,000	23	33.8
\$30,000 to \$49,999	22	32.4
\$50,000 to \$79,999	12	17.6
\$80,000 to \$99,999	1	1.5
\$100,000 to \$149,999	1	1.5
\$150,000 or more	1	1.5
Prefer not to answer or I do not know	9	13.2

Note. N = 68. All participants are male and heterosexual.

Relationship history

Less than half of the participants were actively seeking a committed relationship ($n = 29, 42.6\%$). About one quarter said that they were not actively looking but would be open to dating if the right person were to come around ($n = 19, 27.9\%$), or looking for someone to date casually ($19.1\%, n = 13$) while the rest were not looking for a relationship and preferred to remain unattached ($10.3\%, n = 7$). See Table 3. Participants also reported having created a profile on an online dating site ($85.3\%, n = 58$), while 14.7% ($n = 10$) had no history of using online dating sites. Of the participants who had experience with online dating, 86.2% ($n = 50$) reported having an active account. Seventy percent ($n = 48$) reported having previously dated someone met online. Table 2 displays the participants' relationship history.

Table 2.

Relationship history of all participants

Characteristic	<i>n</i>	%
Relationship Status		
Single	58	85.3
Casually dating (one or more partners)	8	11.8
In an open relationship	2	2.9
Marital Status		
Never married	53	77.9
Living with a partner	2	2.9
Divorced	8	11.8
Separated	4	5.9
Prefer not to answer	1	1.5
Duration since divorce/last relationship		
Less than 1 week	3	4.4
Less than 1 month	4	5.9
More than 1 month	7	10.3
3 - 6 months	12	17.6
6 - 12 months	16	23.5
More than 12 months	26	38.2
Length of most recent relationship		
Less than 1 week	13	19.1
More than 1 week	1	1.5
Less than 1 month	7	10.3
More than 1 month	8	11.8
3 - 6 months	14	20.6
6 - 12 months	7	10.3
More than 12 months	18	26.5

Note. *N* = 68.

Table 3.

Responses to survey question - Which of the following statements best describes your attitude toward seeking a relationship?

Characteristic	<i>n</i>	%
I don't want a relationship, I prefer to stay unattached	7	10.3
I am not actively looking, but I am open to dating if the right person comes along	19	27.9
Looking to date casually but not settle down	13	19.1
I am actively seeking a committed relationship	29	42.6

Note. $N = 68$.

Dating experience characteristics

In this sample 85.35% ($n = 58$) of the 68 participants reported use of online dating sites. Seventy-three percent reported as having an active online dating account ($n = 50$). Table 4 displays the dating experience characteristics of participants.

Table 5 displays the online dating usage for the participants having experience with online dating apps ($n = 58$).

The apps that were reportedly used the most by participants were Tinder (63.8%, $n = 37$), Bumble (41.4%, $n = 24$) and eHarmony (29.3%, $n = 17$). Table 6 displays the frequency of use for each online dating site. Although Match.com is the largest dating app, this was not reflected in this sample.

Table 4.

Dating experience characteristics of all participants

Characteristic	<i>n</i>	%
Hours allocated to dating this week (%)		
Less than 1 hour	25	36.8
2-4 hours	22	32.4
5-7 hours	11	16.2
8-10 hours	4	5.9
More than 10 hours	2	2.9
Don't want to answer	4	5.9
Hours willing to allocate to dating this week (%)		
Less than 1 hour	8	11.8
2-4 hours	27	39.7
5-7 hours	18	26.5
8-10 hours	8	11.8
More than 10 hours	4	5.9
Don't want to answer	3	4.4
Method used to meet most recent first date (%)		
Online dating site/app	18	26.5
Through a friend	19	27.9
Through family	2	2.9
At a bar/club	7	10.3
At a place of worship	1	1.5
At a volunteer activity	1	1.5
Social networking sites	5	7.4
By chance	5	7.4
At school	9	13.2
None of these	1	1.5

Note. *N* = 68.

Table 5.

Online Dating usage for participant having experience with online dating apps

Characteristic	<i>n</i>	%
Average time spent		
Once a week	7	10.3
2-3 times a week	15	22.1
4-6 times a week	18	26.5
Daily	16	23.5
Number of active online dating site/app profile(s) ^b		
1	10	14.7
2	15	22.1
3	18	26.5
4	5	7.4
5	1	1.5
More than 5	1	1.5

Note. *N* = 68.

a = Subset of total sample that reported as having experience with online dating apps (*n* = 58).

b = Subset of participants with online dating apps experience (*n* = 46).

Table 6.

Responses to survey question - Which online dating sites have you used? (Choose which one you have used)

Online dating sites	<i>n</i>	%
Tinder	37	63.8
Bumble	24	41.4
eHarmony	17	29.3
Match.com	16	27.6
OkCupid	14	24.1
Zoosk	13	22.4
Hinge	12	20.7
EliteSingles	9	15.5
Plenty of Fish	9	15.5
Coffee Meets Bagel	6	10.3
Happn	4	6.9
Badoo	1	1.7
Dil Mil	1	1.7
JDate, JSwipe	1	1.7
Raya	1	1.7
Tagged	1	1.7

Note. n = 58. Total of percentages is not 100 because the percentage of use for each site was calculated as a standalone measure, according to how many individuals had used that site, perhaps also using other sites.

Descriptive statistics

Mean scores and standard deviations for the continuous outcome variables (e.g., age, dating outcomes, and mindfulness scores) are presented in Table 7. Figures 1 and 2 shows the distribution of data for the two main dating outcome measures used (total number of first and second dates). In both figures, the data points cluster more toward one side of the histogram. This illustrates that data for both variables are positively skewed (right-skewed distribution), which indicates that both variables have a higher number of data points that have low values. In this case this is an indication that there are a large number of participants who reported as not having going on any first or second dates in the past year.

Table 7.

Means, standard deviations of the continuous outcome variables

Variable	M	SD	95% CL		Range	Skew	Kurtosis
			LL	UL			
Age	31.56	5.244	30.29	32.83	18	.719	-.493
Dating Outcomes							
Number of First Dates	2.50	3.991	1.53	3.47	15	1.821	2.146
Number of Second Dates	2.40	2.293	1.84	2.95	10	1.330	1.794
LMS Score	72.44	9.750	70.08	74.80	39	-.117	-.919
LMS Subscales							
Novelty Seeking	28.84	3.618	27.96	29.71	16	-.892	.765
Novelty Producing	25.21	3.760	24.30	26.12	18	-.544	-.204
Engagement	18.40	5.900	16.97	19.83	21	.698	-1.083

Note. N = 68. Note: CI = confidence interval; LL = lower limit, UL = upper limit; LMS= Langer Mindfulness Scale.

Figure 1.

Histogram of frequency of distribution for the total number of first dates

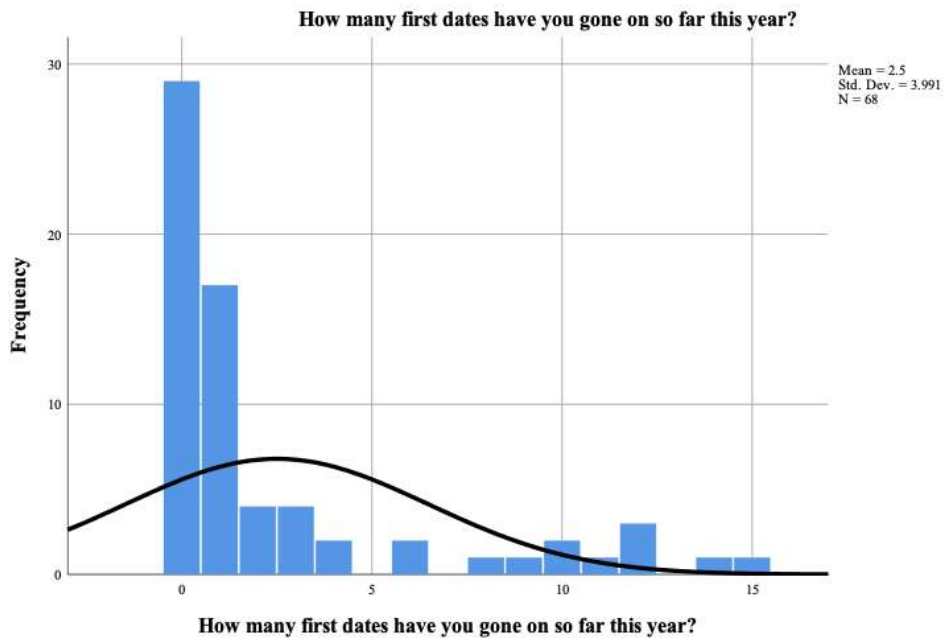


Figure. 1. Histogram with distribution curve overlay showing a positively skewed distribution for the total number of first dates for the year.

Figure 2.

Histogram of frequency of distribution for the total number of second dates

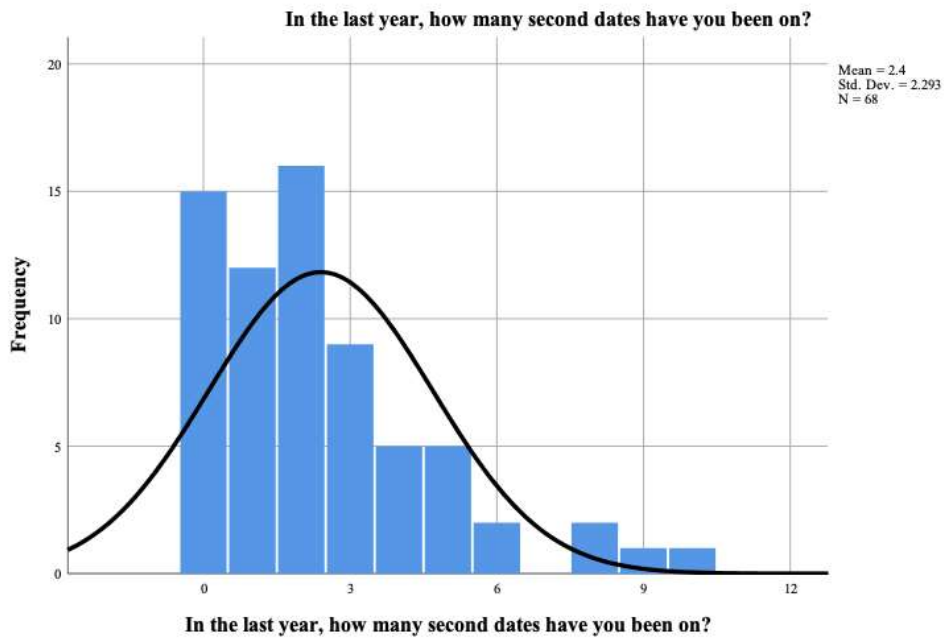


Figure. 2. Histogram with distribution curve overlay showing a positively skewed distribution for the total number of second dates for the year

Mindfulness and dating and relationship history

Bivariate analysis correlation coefficients were examined to determine if relationships existed between the main study variables and the demographic variables of age, length of relationship, relationship status, level of education, employment status and income. The main variables were: attitude toward seeking a relationship, relationship history, and measures assessing online dating experience, use of dating services, and current relationship status, amount of time on average spent using online dating application(s) per week, number of in-person first dates in the past year, number of second dates in the past year. These final two variables (number of in-person first dates in the past year, number of second dates in the past year) were used to determine the degree to which trait mindfulness predicts various aspects of dating behavior. The matrix of correlations of all predictor variables is presented in Table 8.

Table 8.

Correlations between main variables and demographic variables

Variable	1	2	3	4	5	6	7	8	9	10	11	12
1. Number of First Dates in the past year	—											
2. Number of Second Dates in the past year	.581**	—										
3. Age	-.083	-.050	—									
4. Race	.220	.117	-.140	—								
5. State	.007	.083	.028	-.022	—							
6. Education	.238	.165	-.231	-.007	-.090	—						
7. Employment status	.105	.287*	.026	.186	.073	.121	—					
8. Income	.252*	.347**	.110	.400**	.066	.136	.127	—				
9. Relationship status	.083	.049	.301*	-.078	-.074	-.111	.100	-.040	—			
10. Marital status	-.283*	-.300*	.341*	-.202	-.036	.006	-.012	-.155	.175	—		
11. Duration since divorce/last relationship	-.198	-.233	-.038	.062	-.130	-.014	.052	-.041	.025	.251*	—	
12. Duration of most recent relationship	.005	-.161	.295*	.155	.058	-.018	.296*	.006	.152	.086	-.094	—

Note. $N = 68$. * $p < .05$. ** $p < .01$, two-tailed tests.

Mindfulness and dating outcomes

The primary purpose of this study was to examine the relationship between mindfulness and dating outcomes. It was expected that higher mindfulness scores would be associated with better dating outcomes. Thus, we expected socio-cognitive mindfulness to positively relate to higher numbers of first and second dates. Pearson product-moment correlations between the total mindfulness, as measured by the LMS-14, and dating outcomes were evaluated. The matrix of correlations of variables is presented in Table 9.

Pearson's correlation method

Using Method A, we performed four analyses, examining correlations between first dates and (1) mindfulness (2) novelty seeking (3) novelty producing and (4) engagement. Then we repeated the process for second dates.

A significant relationship could not be supported between the number of first dates and (1) the overall mindfulness score ($r = .157, p = .201$).

In a similar trend, no significant relationships were found between number of first dates and the three mindfulness subscales: (2) novelty seeking ($r = .202, p = .098$); (3) novelty producing ($r = .008, p = .949$); or (4) engagement ($r = .130, p = .290$).

Correlations between the number of second dates in the past year and (1) overall mindfulness scores were also weak but in the expected direction ($r = .027, p = .824$).

Correlations between the three mindfulness subscales and the number of in-person second dates in the past year were also weak: (2) novelty seeking ($r = .042, p = .734$); (3)

novelty producing ($r = .020, p = .873$); and (4) engagement ($r = .007, p = .955$) were all positive but not significant.

Discussion of these findings is presented in the next chapter.

Table 9.

Pearson's product moment correlations for mindfulness scales and dating outcome scores for all participants.

Variable	1	2	3	4	5	6
1. Number of Dates in the past year	—					
2. Number of Second Dates in the past year	.581**	—				
3. Total	.157	.027	—			
4. NS	.202	.042	.776**	—		
5. NP	.008	.020	.631**	.496**	—	
6. E	.130	.007	.775**	.353**	.101	—

Note. $N = 68$ * $p < .05$. ** $p < .01$, two-tailed tests. Total = Overall mindfulness as measured by the Langer Mindfulness Scale, NS = Novelty Seeking, NP = Novelty Producing, E = Engagement.

In addition, to further test the hypothesis, we repeated the analyses using Spearman's correlational method, as this method is robust to outliers as compared to Pearson's correlation (Field, 2009). Using Spearman's correlational method, we performed four analyses, examining correlations between first dates and (1) mindfulness (2) novelty seeking (3) novelty producing and (4) engagement. Then we repeated the process for second dates. The matrix of correlations of variables is presented in Table 10.

Using this method, contrary to our expectations, no significant positive association was found between the total number of in-person first dates in the past year and the participants' (1) total mindfulness scores ($r_s = .156, p = .205$).

Looking at the three mindfulness subscales and number of in-person first dates in the past year, no significant correlations were found. We found that the number of in-person first dates in the past year and (2) novelty seeking were weak, but not significantly, correlated ($r_s = .162, p = .187$), (3) novelty producing ($r_s = .056, p = .651$), and (4) engagement ($r_s = .148, p = .227$).

The subsequent correlational analysis was between mindfulness and the number of second dates in the past year. Contrary to our expectations, no significant positive association between the total number of second dates the past year and (1) total mindfulness was observed ($r_s = -.116, p = .348$).

No significant correlations were found between the three mindfulness subscales and the number of in-person second dates in the past year. We found an inverse relationship between the total number of in-person second dates in the past year and the three subscales; (2) novelty seeking was weakly, but not significantly, negatively

correlated ($r_s = -.033, p = .789$), (3) novelty producing ($r_s = .018, p = .881$), and (4) engagement ($r_s = -.173, p = .157$).

Contrary to our prediction, based on the sample tested, no significant correlations were found between the LMS and dating outcomes.

Discussion of these findings is presented in the next chapter.

Table 10.

Spearman correlations between mindfulness and dating outcome scores

Variable	1	2	3	4	5	6
1. Number of Dates in the past year	—					
2. Number of Second Dates in the past year	.634**	—				
3. LMS	.156	-.116	—			
4. NS	.162	-.033	.772**	—		
5. NP	.056	.018	.572**	.381**	—	
6. E	.148	-.173	.796**	.439**	.104	—

Note. $N = 68$ * $p < .05$. ** $p < .01$, two-tailed tests. Total = Overall mindfulness as measured by the Langer Mindfulness Scale, NS = Novelty Seeking, NP = Novelty Producing, E = Engagement.

An additional analysis was conducted to examine whether the results for the main hypothesis would change by excluding the participants ($n = 7$, 10% of the sample) who had reported their attitude towards seeking a relationship as not looking for a relationship and preferred to remain unattached. Using the smaller sample ($n = 61$) we conducted a series of Pearson's correlations to examine the relationship between overall mindfulness and first and second dates when individuals not seeking a relationship were considered as potential outliers. Based on the additional analysis, we saw an increase in the strength of the relationship between trait mindfulness and dating outcomes. Despite the lack of statistical significance, we found that the correlation there was a shift in expected direction. Table 11 provides a matrix of correlations coefficients between mindfulness and dating outcomes for the smaller sample.

Further, for a comparison of the Pearson's correlation coefficients between the number of first dates and mindfulness the two samples are presented in Table 12. Table 13 shows how Pearson's correlation coefficients between the number of second dates and mindfulness change when the seven participants were not looking for a relationship and preferred to remain unattached have been excluded.

Discussion of these findings is presented in the next chapter.

Table 11.

Pearson's product moment correlations for mindfulness scores and dating outcome scores for participants when potential outliers were excluded

Variable	1	2	3	4	5	6
1. Number of Dates in the past year	—					
2. Number of Second Dates in the past year	.602**	—				
3. Total	.149	.099	—			
4. NS	.194	.140	.774**	—		
5. NP	-.005	.057	.603**	.480**	—	
6. E	.135	.046	.792**	.392**	.072	—

*Note. N = 61 *p < .05. **p < .01, two-tailed tests. Total = Overall mindfulness as measured by the Langer Mindfulness Scale, NS = Novelty Seeking, NP = Novelty Producing, E = Engagement.*

Table 12.

Comparison of Pearson's product moment correlations for overall mindfulness scores and number of first dates between two samples

Statistical method	<i>Potential Outliers Included</i>		<i>Potential Outliers Excluded</i>	
	n	r	n	r
Pearson's	68	.157	61	.149

*Note. *p < .05. **p < .01, two-tailed tests.*

Table 13.

Comparison of Pearson's product moment correlations for overall mindfulness scores and number of second dates between two samples

Statistical method	<i>Potential Outliers Included</i>		<i>Potential Outliers Excluded</i>	
	n	r	n	r
Pearson's	68	.027	61	.099

*Note. *p < .05. **p < .01, two-tailed tests.*

Chapter IV

Discussion

The purpose of this study was to investigate the relationships between socio-cognitive mindfulness and dating outcomes in a sample of U.S. adult males. Contrary to our primary hypothesis, the study found no significant correlations between mindfulness, as measured by the LMS, and dating outcomes.

Interpretation of the findings

The quantitative findings using Pearson correlation analysis showed that there was a very weak, positive correlation between overall mindfulness score and number of first dates. The sample data failed to provide sufficient evidence to support the prediction that the relationship between mindfulness and number of first dates. Similar results were also found when the analysis was conducted using the Spearman correlation method.

It should be noted that we also found a low non-significant relationship between mindfulness and the number of second dates. The sample data failed to provide sufficient evidence to support that those who scored higher on the mindfulness scale would have a greater success rate in landing second dates. A possible explanation is that the sample contained an insufficient amount of evidence to conclude that a relationship between mindfulness and the number of second dates exists.

A potential explanation for these findings is there were characteristics of the sample that caused the results to turn out differently than expected.

A potential explanation for these findings is perhaps the variables are not adequately measuring the dating outcomes. It is important to note that only 42.6% ($n = 29$) of participants reported as activity looking for a committed relationship (see Table 3). Given that more than half the sample was not looking for a relationship, this raises that question why they are online? Additionally, the sample included participants that reported as having no experience with using online dating sites. Although the majority (85.3 %, $n = 58$) of participants reported as having online dating experience, of these, only 86.2% ($n = 50$) reported having an active account. A small number of non-online users (14.7%, $n = 10$) were included in the sample. This is a limitation in that it is not clear whether different patterns would be found with an equal number of active online dating users and non-online users.

Research limitations and weaknesses

Although this is one of the first studies to investigate the link between socio-cognitive mindfulness and its potential role in dating outcomes, the main hypotheses were not supported. Because the correlations were consistently in the expected direction, although too weak to yield statistical significance, we turn our attention to the methodological limitations that may help to understand these findings. There were several limitations that should be taken into consideration when interpreting the results. First, as with all research, there are limitations concerning the generalizability of the sample used. Participants included in the study were voluntarily enrolled. Due to the small sample size, ($N = 68$) male adult singles residing in the United States, the ability to

generalize to the population at large is limited. For instance, the inclusion criteria used in the study does not account for men outside of the age range 25 - 43 years old. In addition, the sample selected did not include women. Men and women may use online dating sites differently, with men going online for 'entertainment' and women more likely to be looking for love.

This research also excluded individuals seeking same-sex partners, which is another area for future research. The decision to limit the sample to heterosexual males was made based on prior studies (e.g., Gibbs et al., 2006) in an effort to eliminate the possible creation of confounding variables in a limited size sample. Future studies should broaden this age range, examine different sexual orientations and include women.

Further, the nature of the correlational design presents an additional study weakness. While correlational research can demonstrate a relationship between variables, causality cannot be inferred from these results. To determine why the relationship exists an experimental study investigating whether implicitly priming mindfulness would facilitate online dating success should be conducted.

Due to the time constraints (i.e., short time-span of the data collection period), the current study relied only on self-reports and did not include observation techniques, such as interviewing the participants to validate their responses. It was not possible to observe the participants' actual behavior online or offline. Furthermore, the study did not review participants' online profiles, nor did it look at the profiles of the people with whom they have interacted. Thus, this research was a limited snapshot of online dating, from one person's perspective on what is, of course, a dyadic process.

There are limits in all studies that use self-report surveys to collect data. Although it is a convenient method to collect data, it is not without issues. For example, self-report surveys introduce potential threats to the reliability and validity of the data. For example, some of the participants might struggle to understand the questions. For instance, there may have been confusion over what the term ‘date’. Further, participants’ responses may not be entirely truthful due to demand characteristics or the sensitive nature of the topic.

While the LMS-14 scale has been validated (Pirson, Langer, & Zilcha, 2018) and has been widely used in a variety of contexts. The scale has not been used in the context of online dating, so there may be concerns with design and validity. There may have been misunderstanding or particular questions. Therefore, re-testing is necessary to verify the reliability and validity of the scale in the context of dating.

There may be other reasons for the seemingly unexpected results. It could be that there are more important factors in dating success than mindfulness.

The method of recruitment and sampling provided for additional limitations in the study, which may have contributed to the limitation of a lack of generalizability within the sample. First, the sample was recruited using a combination of two sample approaches, convenience and snowballing to optimize recruitment necessary to ensure a broad mix of eligible participants were included, and to recruit the desired numbers in the allocated time. The majority of participants were recruited Harvard Decision Science Lab (50%, $n = 34$), with the remaining 47.1% ($n = 32$) were recruited through Reddit, an online social media forum and 2.9% through word of mouth ($n = 2$). This is a limitation in that a more centralized recruitment approach may influence the validity of the inference about the generalizability of the sample.

It is important to emphasize that this study did not evaluate the effectiveness of the various online dating services. In addition, this study also did not differentiate among various online dating sites used by participants (Sharabi & Caughlin, 2017). Participants were simply asked to indicate which websites they have used (see Table 6). We did not have access to each sites' data. Controlling for which sites they used or how many active accounts the participants had may have been a factor influencing outcomes. For instance, the contextual characteristics of the online dating sites used may have some influence on the results. Previous studies have demonstrated that there is some consensus, although little data, to suggest that some online sites are more geared toward looking for long term partners while others are equally geared to looking for company for an evening or a single meeting or date. For instance, individuals' responses to may vary depending on which online dating sites used. Further, the study did not measure individual preferences such as particular aspects participants were looking for in a partner or their dating motivations.

Another limitation of the study is that the coronavirus pandemic overlapped with the data collection period, and while not all regions issued lockdown orders for their residents' majority of places for people to go on dates have been closed. If we were to repeat the study, modifications to the questions asked should be considered to assess how dating behaviors would most likely have changed because there has been an increase in virtual first dates via video. It would be very interesting to see if mindfulness has a stronger or a weaker affect when the movement is not from online to offline but from the platform to a more prolonged online interaction in another format. Anecdotally, some

dating consultants and matchmakers are reporting very clever ways for potential couples to connect that goes beyond the texting and messaging seen in online dating apps.

Recommendations for future research

Despite these limitations, the results from the study may have practical implications for individuals seeking romantic relationships both online and offline. However, more research would be necessary to fully understand socio-mindfulness as a construct and if and how it can facilitate the process of seeking prospective romantic partners. As previously mentioned, the current study is a part of a larger longitudinal study designed to examine whether participating in the online dating process mindfully leads to enhancement of successful dating outcomes. While progress has been made, at this time not enough data has been collected in order to conduct a thorough analysis. Further, in light of the current COVID-19 pandemic the data collection has been suspended until further notice.

Future studies may benefit from following participants for a longer follow-up of at least one year, using more objective measures of outcomes or at least allowing more time to see if those who had no face-to-face meetings eventually managed to do so. We should examine whether higher mindfulness is associated with second meetings with specific contacts rather than just whether our participants had multiple dates. It may be useful to investigate what differentiates a first date and a second date and what factors contribute to the decision-making process when a person asks someone on a date, rather than simply quantifying the number of dates. Further research may benefit from analyzing whether there were single meetings with more than one person or multiple dates with the same person.

Conclusion

In conclusion, this study advances the literature on mobile dating applications by being the first to investigate associations between trait mindfulness and dating outcomes, in an attempt to extend the literature on the general benefits of mindfulness and contribute to the literature on relationship development, close relationships and relationships formed online.

Additional Sections (Appendices)

The materials to be included in the appendices: recruitment flyer (study invitation), consent form, letter of acceptance, instructions to participants, questionnaires and survey forms, copies of instruments used and letters of access and permission.

Appendix A

Recruitment Material

Below is the sample of the recruitment flyer.

Seeking volunteers to participate in a research study about Online Dating!

We are conducting a research study to better understand the largely unexplored effects of online dating on the relationship forming process. Please note that the following study does not provide general instructions on how to date, however questions asked will be tailored to capture your usage of online dating apps to understand baseline behavior in the online dating process.

We are seeking participants who are U.S. residents between ages 25 and 44, male, seeking a committed relationship with opposite sex and own a mobile device. Study participation takes a total of 1 hour over the course of 4 weeks. Individuals who complete the study will be given a chance to win one of five \$100 Amazon gift cards. Link to [Online Dating Study Survey - Part 1](#)



Appendix B

Letter of Informed Consent

Study Title: Tinderly Seeking Love: Online Dating Characteristics Study

Researcher: Josephine Maya Tateyama

Faculty Advisor: Professor Dante Spetter

Version Date: 007

Key Information

The following is a short summary of this study to help you decide whether or not to be a part of this study. More detailed information is listed later on in this form.

1. Why am I being invited to take part in a research study?

You are invited to take part in a research study because you are a heterosexual male adult, between the age of 25 to 44 years and indicated that you an active online dating account or willing to create an account.

2. What should I know about a research study?

Whether or not you take part is up to you. Your participation is completely voluntary.

You can choose not to take part. You can agree to take part and later change your mind.

Your decision will not be held against you. Your refusal to participate will not result in any consequences or any loss of benefits that you are otherwise entitled to receive. You can ask all the questions you want before you decide.

3. Why is this research being done?

This study is designed to better understand the largely unexplored effects of online dating on the relationship forming process. Please note that the following study does not provide general instructions on how to date, however questions asked will be tailored to capture your usage of online dating apps to understand baseline behavior in the online dating process.

4. How long will the research last and what will I need to do?

The research will be conducted online using a survey platform called Qualtrics, where you will be asked to complete a series of questionnaires each week (5 in total). This study is expected to take approximately 4 weeks, approximately 60 to 70 minutes.

5. What questions will I be asked?

We want to find out how you spend time on the Internet, and if you find dates to meet with in person. Questions will be tailored to capture participants' usage of online dating apps throughout the week and framed to understand baseline behavior in the online dating process.

6. What will I have to do if I agree to take part in this research study?

In this study, should you agree to participate, you will be required to have an active online dating account or willing to create an account. Additionally, as the study will be conducted online, you will need to have access to the Internet in order to participate, where you will be asked to fill out a series of questionnaires (5 in total) over the span of 4 weeks.

Pre-screen: You will be asked to take an initial survey, which comprises of brief self-report demographic and related information questionnaire questions tailored to understand baseline behavior in the online dating process. This is expected to require 10 -

15 minutes of participation. If you meet the selection criteria upon completion of the prescreening phase in Part 1 you will continue into Part 2. You will be contacted once a week via text message or e-mail, where you will be directed to a Qualtrics survey and asked a series of questions to gain an understanding of the online dating experience. Completing the survey should take about 3 to 5 minutes. After 28 days, you will be asked to fill out questionnaires similar to those completed in the first part of the study about your current online dating experience. This should take a total of 15 minutes.

As a result of the activities, you will have a chance to reflect on their current online dating experience, gaining a degree of insight about the current approach to dating.

7. Is there any way being in this study could be bad for me?

We don't believe there are any risks from participating in this research.

8. Will being in this study help me in any way?

We cannot promise any benefits for taking part in the study; however, you may possibly benefit from learning new information from the process.

Detailed Information

The following is more detailed information about this study in addition to the information listed above.

1. If you participate in this study you will participate in the following research activities:

You will be asked to take an initial survey, which comprises of brief self-report demographic and related information questionnaire questions tailored to understand baseline behavior in the online dating process. This is expected to require 10 -15 minutes of participation. If you meet the selection criteria upon completion of the prescreening phase in Part 1 will qualify for Part 2. You will be contacted once a week via e-mail,

where you will be directed to a Qualtrics survey and asked a series of questions to gain an understanding of the online dating experience. Completing the survey should take about 3 to 5 minutes.

After 28 days, you will be asked to fill out questionnaires similar to those completed in the first part of the study about your current online dating experience. This should take a total of 15 minutes.

You will need access to a smartphone or a cell phone as participation in this study involves receiving e-mail messages on your phone once a week over a four-week period.

2. Are there any risks or possible benefits for taking part in this research study?

It is not anticipated that your participation will pose any potential physical, economic, or confidentiality risks. We cannot promise any benefits for taking part in the study;

however, you may possibly benefit from learning new information from the process. If you find any of the tasks too stressful, you should withdraw from the study immediately.

At the end of the experiment, we will provide a thorough explanation of the experiment and of our hypotheses. We will also describe the potential implications of the results in the study.

3. Are there any costs to me by taking part in this research study?

The only cost to take part in this study is what you usually pay for Internet access.

4. Compensation

Yes, you will be compensated for your participation in this research. Upon your completion of the study, (28 days after you enrolled) after all the data has been collected during the four-week intervention, you will be given the opportunity to be entered into a

lottery where you will have the chance to receive one of five Amazon gift cards (valued at \$100 each) for your participation.

5. Will my personal information be kept private?

Your participation in this study will remain confidential, and your identity will not be stored with your data. Your responses will be assigned a code number, and the list connecting your name with this number will be kept in a secure location and will be destroyed once all the data have been collected and analyzed. Efforts will be made to limit the use and disclosure of your Personal Information, including research study, to people who have a need to review this information. We cannot promise complete secrecy. Organizations that may inspect and copy your information include the IRB and other representatives of this organization.

If identifiers are removed from your identifiable private information or identifiable samples that are collected during this research, that information or those samples could be used for future research studies or distributed to another investigator for future research studies without your additional informed consent.

6. Taking part is voluntary:

Please remember that participation in this project is completely voluntary, and you have the right to terminate your participation at any time without penalty. You may withdraw by informing the researcher that you no longer wish to participate (no questions will be asked). Your decision will not affect your relationship with Harvard University in any way.

7. If you have any questions or concerns, or if any problems arise:

If you have questions, concerns, or complaints, or think the research has hurt you, please contact the research team at jmt204@g.harvard.edu.

This research has been reviewed and approved by the Harvard University Area Institutional Review Board (“IRB”). You may talk to them at (617) 496-2847, 1414 Massachusetts Avenue, Second Floor, Cambridge, MA 02138, or cuhs@harvard.edu if:

- Your questions, concerns, or complaints are not being answered by the research team.
- You cannot reach the research team.
- You want to talk to someone besides the research team.
- You have questions about your rights as a research subject.
- You want to get information or provide input about this research.

ELECTRONIC CONSENT: Please select your choice below.

Clicking on the “I have read this consent form and consent to my participation in the research described above” button below indicates that:

The nature and purpose of this research has been sufficiently explained:

- You voluntarily agree to participate
- You understand that you are free to withdraw at any time
- You are 25 - 44 years of age

If you do not wish to participate in the research study, please decline participation by clicking on the "I do not want to participate" button or closing the browser.

- I have read this consent form and consent to my participation in the research described above.
- I have read this consent form. I do not want to participate.

Appendix C

Relationship History Questions

The questions were derived from prior online dating research (Sharabi & Caughlin, 2017), where participants were asked to best describes their attitude toward seeking a relationship (Singles in America & Match.com, 2017).

Appropriate modifications were made in order to achieve the research objectives. The questionnaire was designed such a way that the statements are not too long and contain simple words to enhance response rate.

Instructions: In this section, you will be asked a series of questions tailored to understand current relationship history and baseline behavior in the online dating process.

1. What is your present relationship status?; Single (1); Casually dating (one or more partners) (2); In a committed monogamous relationship (3); In an open relationship (4); Engaged (5); Married (6); Prefer not to answer (0).
2. What is your marital status?; Never married (1); Married or in a domestic partnership (2); Living with a partner (3); Divorced (4); Separated (5); Widowed (6); Prefer not to answer (0).
3. How long since divorce/last relationship?; Less than 1 week (1); More than 1 week (2); Less than 1 month (3); More than 1 month (4); 3 - 6 months (5); 6 - 12 months (6); More than 12 months (7).
4. What is the length of your most recent relationship (in years)? Less than 1 week (1); More than 1 week (2); Less than 1 month (3); More than 1 month (4); 3 - 6 months (5); 6 - 12 months (6); More than 12 months (7).
5. How often do you date multiple people at the same time?; Just once (1); A few times (2); Regularly (3).
6. Which of the following statements best describes your attitude toward seeking a relationship?; I don't want a relationship, I prefer to stay unattached (1); I am not actively looking, but I am open to dating if the right person comes along (2); Looking to date casually but not settle down (3); I am actively seeking a committed relationship (4); I am already dating someone and not looking to date other people at the moment (5).

Appendix D

Online Dating Behavior Characteristics Questions

The questions were derived from prior online dating research (Sharabi & Caughlin, 2017), where participants were asked to best describes their attitude toward seeking a relationship (Singles in America & Match.com, 2017).

Appropriate modifications were made in order to achieve the research objectives. The questionnaire was designed such a way that the statements are not too long and contain simple words to enhance response rate. The questionnaire is divided into two sections and consists of 24 questions;

Instructions: In this section, you will be asked a series of questions to gain an understanding of your current dating behavior.

Use of dating services (10 Questions)

1. Have you ever used dating services? For example, a professional matchmaker or dating coach.; Yes (1); No (0).
2. Have you ever created a profile on a dating site/app?; Yes (1); No (0). (If no, skip to Q9)
3. Have you ever dated someone you met online? (This includes social networks, dating sites/apps, etc.); Yes (1); No (0).
4. Have you ever purchased a subscription to a dating site or app? Yes, I have a current subscription (1); Yes, I had a subscription in the past but not currently (2); No, but I have purchased premium features (3); No, never (4).
5. Do you have an active account? (If no, skip to Q9)
6. How many online dating platforms are you actively on currently?: 0 (1); 1 (2); 2 (3); more than 3 (4).
7. How long have you been using online dating sites as a tool? Less than 1week (1); 2-4 weeks (2); 5-7 weeks (3); 8-10 weeks (4); More than 12 months (5); Don't want to answer (6).
8. Dating sites: Which online dating sites have you used?: Tinder (1); OkCupid (2); PlentyOfFish (3); Match (4); eHarmony (5); Hinge (6); Bumble (7); The League (8); Other (9) as specified by the participant). (If no, skip to Q3.8)
9. Are you willing to use online dating website(s)?; Yes (1); No (0).
10. Are you willing to engage in face-to-face meeting(s) with prospective romantic relationship-seekers met online?; Yes (1); No (0).

Dating Behavior (12 Questions)

1. How did you meet the person with whom you went on your most recent first date?; Online dating site/app (1); Through a friend (2); An offline matchmaking service (3); Through family (4); At a bar/club (5); At a place of worship (6); At a volunteer activity (7); Social networking sites (Facebook, Instagram, Snapchat, LinkedIn, etc.) (8); By chance (in a coffee shop, on the bus/train/flight, etc.) (9); At school (10); None of these (11).
2. On average, when logged on, how many hours per day do you spend using online dating applications (in hours)?; Less than 1 hour (1); 2-4 hours (2); 5-7 hours (3); 8-10 hours (4); More than 10 hours (5); Don't want to answer (6).
3. In the past week, did you have any success with online dating?; Yes (1); No (2).
4. Did you go on any dates this week?; Yes (1); No (0).
5. How much time (hours) have you allocated to dating this week? (in hours)?; Less than 1 hour (1); 2-4 hours (2); 5-7 hours (3); 8-10 hours (4); More than 10 hours (5); Don't want to answer (6).
6. How much time (hours) are you willing to allocate to dating this week? (in hours)?; Less than 1 hour (1); 2-4 hours (2); 5-7 hours (3); 8-10 hours (4); More than 10 hours (5); Don't want to answer (6).
7. How many days per week on average do you log on to the Internet?; Daily (1); 4-6 times a week (2); 2-3 times a week (3); Once a week (4); Never (5).
8. How many first dates have you gone on so far this year?;
9. In the last year, how many second dates have you been on?

Display This Question:

If Have you ever created a profile on a dating site/app? Yes Is Selected

10. On average, when logged on, how many hours per day do you spend using online dating applications (in hours)? Daily (5) 4-6 times a week (4) 2-3 times a week (3) Once a week (2); Never (1).
11. Did you go on any dates this week? Yes (1); No (0).
12. How much time (hours) have you allocated to dating this week? (in hours)?
13. How much time (hours) are you willing to allocate to dating this week? (in hours)?
14. In the last year, how many second dates have you been on?

Appendix E

The Langer Mindfulness Scale (LMS14)

The following is an example of the LMS14 questionnaire (Pirson, Langer, Bodner, & Zilcha, 2012).

Instructions: In the next section, you will be presented with a number of statements that refer to your personal outlook. Using the scale between strongly disagree and strongly agree, please rate the extent to which you agree with each of these statements.

If you are confused by the wording of an item, have no opinion, or neither agree nor disagree, use the “NEUTRAL” rating.

- 1) I like to investigate things. (NS)_[SEP]^[L]
- 2) I generate few novel ideas. (NP)_[SEP]^[L]
- 3) I make many novel contributions. (NP)_[SEP]^[L]
- 4) I seldom notice what other people are up to. (E)_[SEP]^[L](R)
- 5) I avoid thought provoking conversations. (E) (R)
- 6) I am very creative. (NP)_[SEP]^[L]
- 7) I am very curious. (NS)_[SEP]^[L]
- 8) I try to think of new ways of doing things. (NS)_[SEP]^[L]
- 9) I am rarely aware of changes. (E)_[SEP]^[L](R)
- 10) I like to be challenged intellectually. (NS)_[SEP]^[L]
- 11) I find it easy to create new and effective ideas. (NP)
- 12) I am rarely alert to new developments. (E) (R)
- 13) I like to figure out how things work. (NS)
- 14) I am not an original thinker. (NP) (R)

Scoring Instructions

Reverse score the following items: _[SEP]^[L]4, 5, 9, 12, and 14.

Overall mindfulness score: Add all scores on items 1 to 14.

Novelty seeking subscale score: Add all scores on items 1, 7, 8, 10 and 13.

Novelty producing subscale score: Add all scores on items 2, 3, 6, 11, and 14.

Engagement subscale score: Add all scores on items 4, 5, 9 and 12.

Appendix F

Demographic Questions

Instructions: In this final section, we would like to ask you a few demographic questions. Please note you do NOT have to respond.

Please note we do not plan to store any information that will enable us to identify individual subjects. Each participant will be assigned a unique randomly generated Identification Number. Your email address will be collected in a separate survey separate from the responses to the surveys. A contact list will be created in Qualtrics for the participants who are eligible and opt-in for the second part of the study. Once the distribution of the compensation has been conducted, this contact list will be destroyed.

1. What is your age?

2. What is your gender? Male (1); Female (2); Prefer to self-describe (3); Prefer not to answer (4).

If you selected “prefer to self-describe” above, please enter a description below.

3. Sexual Orientation: Which sexual orientation do you most identify with? Heterosexual or straight (1); Homosexual (2); Bisexual (3); Prefer not to answer (4).

If you selected “prefer to self-describe” above, please enter a description below.

4. Race: Which category best describes you? White (1); Hispanic, Latino, or Spanish origin (2); Black or African American (3); Asian (4); American Indian or Alaska Native (5); Middle Eastern or North African (6); Native Hawaiian or Other Pacific Islander (7); Some other race, ethnicity, or origin (8); Multiple races, ethnicities, or origins listed above (9); Prefer not to answer (10).

5. State: What state do you live in? Alabama (1); Alaska (2); American Samoa (3); Arizona (4); Arkansas (5); California (6); Colorado (7); Connecticut (8); Delaware (9); District of Columbia (10); Federated States of Micronesia (11); Florida (12); Georgia (13); Guam (14); Hawaii (15); Idaho (16); Illinois (17); Indiana (18); Iowa (19); Kansas (20); Kentucky (21); Louisiana (22); Maine (23); Marshall Islands (24); Maryland (25); Massachusetts (26); Michigan (27); Minnesota (28); Mississippi (29); Missouri (30); Montana (31); Nebraska (32); Nevada (33); New Hampshire (34); New Jersey (35); New Mexico (36); New York (37); North Carolina (38); North Dakota (39); Northern Mariana Islands (40); Oklahoma (41); Ohio (42); Oregon (43); Palau (44); Pennsylvania (45); Puerto Rico (46); Rhode Island (47); South Carolina (48); South Dakota (49); Tennessee (50); Texas (51); Utah (52); Vermont (53); Virgin Islands (54); Virginia (55); Washington (56); West Virginia (57); Wisconsin (58); Wyoming (59).

6. Education: What is the highest degree or level of education that you have completed? If currently enrolled, mark the previous grade or highest degree received. Less than high school (1); High school graduate (high school diploma or equivalent including GED) (2); Some college but no degree (3); Associate degree in college (2-year) (4); Bachelor's degree in college (4-year) (5); Master's degree (6); Doctoral degree (7); Professional degree (JD, MD) (8).

7. Employment: What is your current employment status? Employed Full-time (1); Employed Part-time (2); Self-employed (3); Out of work and looking for work (4); Out of work but NOT currently looking for work (5); A homemaker/on maternity leave (6); A student (7); Military (8) Retired (9); Unable to work (10); Prefer not to answer (11).

8. Income: What is your annual household income? Less than \$10,000 (1); \$10,000-19,999 (2); \$20,000-29,999 (3); \$30,000-39,999 (4); \$40,000-49,999 (5); \$50,000-59,999 (6); \$60,000-69,999 (7); \$70,000-79,999 (8); \$80,000-89,999 (9); \$90,000-99,999 (10); \$100,000-149,999 (11); More than \$150,000 (12); I do not know (13); Prefer not to answer (14).

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