Out of Their Control:
Investigating Privacy Attitudes and Behaviors Among Tinder Users

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Abstract

Online dating services have become an important part of how individuals form relationships. While providing clear benefits, these applications present inherent privacy risks, as they require users to provide a large amount of potentially sensitive information. In order to better understand users' privacy related perceptions and behaviors in online dating, we conducted a semi-structured interview study with 11 Tinder users. We focus particularly on the types of data users share in their profile and the types of privacy concerns they have. We specifically look at how participants view social versus institutional privacy issues and the steps they take to protect themselves. We found that participants generally view privacy as a secondary goal when using Tinder. We also found that, across social and institutional privacy scenarios, participants expressed resignation and a lack of control over their privacy. We conclude by discussing potential methods for addressing this issue by empowering users with more privacy control.

1   Introduction

Online dating has become an important part of how individuals form relationships in the past decade. 39% of respondents to a 2017 survey of heterosexual couples reported that they met online [7]. Services like EHarmony[1] and Tinder[2] allow individuals to meet others outside of their immediate social network and filter for particular characteristics in their significant other. To gain these benefits, these applications often

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[1] www.eharmony.com
[2] https://tinder.com

require the disclosure of a large amount of personal information, including name, age, gender, sexual orientation, and location. Thus, online dating presents inherent privacy risks.

We present notable results from a semi-structured interview study exploring how users approach privacy on one of the largest mobile dating applications, Tinder. We probe users' privacy related attitudes and behaviors, looking particularly at the types of data they share and their privacy concerns. We focus on the breakdown between social privacy—privacy as it relates to interpersonal relationships—and institutional privacy—privacy as it relates to how institutions like governmental agencies or corporations use user data. In our study, we address the following research questions:

1. What data do participants share on Tinder and why?

2. What privacy concerns do participants have in the context of Tinder? How do participants address these concerns?

3. Do participants feel more concern about institutional privacy or interpersonal/social privacy risks in the context of Tinder?

We conducted 11 interviews with a diverse set of participants in which we asked questions about participants privacy related behaviors on Tinder. Our results suggest that privacy is generally a secondary consideration in using Tinder, with profile data being selected to maximize attractiveness to other users. When presented with different institutional and social privacy related scenarios, our participants did not seem to feel more strongly about either set. Across all privacy related scenarios, participants frequently expressed resignation towards the events, suggesting that they do not feel that they have control over their privacy on the app. Ultimately, we make suggestions on how Tinder might improve its privacy practices based on these results.

2 Related Work

We build on Cobb et al.'s comprehensive study on data app users' privacy attitudes and behaviors by focusing on the behaviours users engage in to protect their social privacy [1]. We also investigate institutional privacy issues that are only lightly touched upon in this paper, but are expanded upon in Ostheimer et al. [5]. Stenson et al. [9] found that younger dating app users have an understanding of institutional privacy violations in the form of cross-app data sharing.

Our study builds on previous literature analyzing motivations behind providing information to dating apps, or to obscure or withhold information. Sannon et. al [8] explores the motivations and contexts for users to lie on dating applications. Our study builds upon this by asking not why users lie, but why they choose to reveal the truths they do. Ranzini et al. [6] explores how Tinder users present themselves and answers Gibbs et al. [2] by determining that users with high self-esteem tend to be more authentic online. Apart from seeking relationships, users now have new playful motivations (example: entertainment, travel) to participate in online dating, which could be attributed to the rise of mobile apps.

Finally, a body or work exists exploring security concerns on dating apps from imposters, blackmail, extortion, and robbery connected to dating apps [10] [4] and countermeasures [3]. We further this discussion by looking at perceptions of privacy concern that stem not only from other users but also from institutions – e.g., in-app purchase privacy and apps selling data to third parties.

3 Methods

To address our research questions, we conducted 11[3] semi-structured interviews, each up to 30 minutes in length (average length: 21.5 minutes). Each interview focused on the participant's usage of Tinder, with the core of the interview discussing their perception of various potentially privacy violating scenarios on Tinder. Our research protocol was approved by our university's institutional review board.

3.1 Recruitment

We recruited interview participants using advertisements on the online classified service, Craigslist.[4] We posted 10 recruiting adds, each on a different local Criagslist page.[5] Potential participants were directed to complete a screening survey that included an informed consent disclosure, questions to verify participant eligibility, and general demographic questions. The survey concludes with four Likert scale, agree/disagree questions that describe scenarios discussed in our interview. The demographic questions and Likert scale privacy questions were used to purposively select a diverse sample with privacy concerns. We received 232 responses to our survey. To sample from this set, respondents were broken down into subsets based around demographic attributes that were hypothesized to affect Tinder usage (i.e. gender and sexual orientation). Table 1 in appendix A shows a breakdown of the demographics of our participants. We sought to capture a diversity of perspectives rather than the true proportion of certain views in the population. Additionally, people more concerned with privacy may have been more likely to sign up to participate in our study, as it was the clear focus of our research.

3.2 Interviews

The interview script was developed collaboratively by the authors. Two pilot interviews—not included in analysis—were conducted, and the results were used to improve the script. The complete script—located in appendix B—was used for all the interviews in the study. The exact questions asked in each interview varied slightly, as the interviewers were empowered to ask follow-up or clarification questions as needed.

After some initial questions to assess participant uses of Tinder (questions 1-4), we asked participants to directly refer to their Tinder profile in order to probe the data they use to construct their Tinder profile (questions 5-7). We also asked participants about their intended audience and motivations for sharing the information that they share. The next portion of the interview (questions 7-10) is addressed to participants' privacy concerns regarding Tinder. After asking broadly about any privacy concerns participants may have in order to get their unprimed perceptions, we presented participants with a variety of scenarios and asked how comfortable they would be with them. These scenarios involve either potential social/interpersonal privacy violations (scenarios a, c, e, f, g, and i) or potential institutional privacy violations (scenarios b, d, e, and h). For scenarios where participants express discomfort, we asked follow-up questions to better understand their reaction (e.g. what they would be concerned would happen, how bad it would be if this happened, etc.).

Each interviewee was paid $15 in the form of an Amazon gift card for their participation. A transcript of all interviews were taken using the integrated Zoom machine transcription service, Otter.ai.[6] This transcript was corrected for any errors and then used for the subsequent data analysis process.

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[3]Two other interviews were conducted but excluded from analysis. The first was excluded due to a procedural failure to collect informed consent. The second was excluded due to the participant lying about being a Tinder user. One more interview began but was ended early, as the interviewee was being told what to say by another person in the room.

[4]https://craigslist.org

[5]Six of the postings were made on randomly selected Craigslist pages. The other four postings were made on the pages of purposively selected, large cities: Atlanta, GA; New York, NY; Pittsburgh, PA; and Seattle, WA

[6]https://otter.ai/

3.3 Data Analysis

Once all interviews were complete, we performed data analysis via inductive coding. The corrected transcript for each interview was divided into segments based on the question asked. Coding was performed by a single author ("the coder") with input from other team members. For each question, the coder conducted a first pass of all relevant interview segments in order to identify themes and generate codes. The coder then assigned one or more codes to all the interview segments. For some parts of the interview (e.g. questions seven and eight), the same set of codes were used for multiple segments due to similar themes emerging in both portions. The results from this process are reported in the next section. It is important to note that our results are necessarily based on self-reported data which may not perfectly reflect participants' actual usage patterns.

4 Results

In this section, we describe selected results from our interview study, discussing each of our research questions in turn. Throughout this section, we include quotes representative of a code or that are particularly interesting.

4.1 RQ1: Profile Data

Participants reported using a variety of data to build their profiles. The most common information which participants stated that they included in their profiles were pictures and information on their interests or hobbies (seven participants). Most (six) participants also reported that they included their age. Only five participants mentioned that they shared their name on their profile. One of our participants, P4, shared only the first letter of their first name on their profile. They stated that "I don't feel like everybody needs to know that much about me on a dating site. And if, if I do like the person, then I'll give them my personal information. I think enough can be told by looking at the picture." Only one participant mentioned their workplace on their profile. This stands in contrast to the nearly half (five) of our participants who disclosed their current or former educational institution on their profile.

In discussing how they craft their profiles, the vast majority of participants (ten) focused on reasoning related to their attractiveness to others on the platform. For example, P12 stated that they change the photos on their profile once or twice a year, explaining that "if I feel like I'm not getting enough matches, that's what I'll do." Five participants discussed that their concern for privacy impacts their profile design, with one participant focusing solely on this motivation. These results demonstrate that, for most of our participants, privacy is a secondary goal in crafting their profile.

4.2 RQ2: Privacy Concern

In order to gauge participants' unprimed privacy concerns, we asked participants if they had any privacy related concerns about using Tinder before discussing any scenarios. The answers were almost evenly split, with six of the participants responding "yes" and five responding "no." Of those who answered in the affirmative, half of them expressed non-specific or vague concerns that were difficult to categorize. For example, P1 explained their concern by stating "Well, it's just like anything else about the internet? You want to kind of keep your basic private information quiet." Two of the remaining participants discussed a fear that their profile or chats might be shared outside of Tinder.

For the scenarios *A co-worker viewing your profile*, *Your Tinder profile being used to target or personalize advertisement*, and *Non-Tinder dating websites purchasing your profile information from Tinder* at least five participants expressed discomfort. Participants worried about co-worker crossing perceived interpersonal privacy boundaries. For example, P2 stated ".... it may make my coworker like cross boundaries..." P9 expressed a more complicated perspective, stating "... I wouldn't want some of the co workers to view my profile. But still, there are others who are very close to me... I wouldn't have any issue with them." Several participants said their comfort level would depend upon their personal relationship with their co-worker.

Participants had generally negative feelings about their data being purchased by non-Tinder dating websites. Some of our participants felt it was weird. For example, P1 stated "...you're gonna be hit up with a lot of different offers or whatnot." When asked how they would feel if the non-Tinder dating website was owned by Tinder's parent company, they expressed resignation, stating that "...there's not much you can do about that. Because obviously, when you sign the consent, you sign it to you send it to Tinder." Only two of our participants felt that they would be comfortable if another dating website purchased their information. P4 stated "...I'm on a dating site because I, you know, I want to find, I want to find a match. So, the more the merrier...."

Most participants did not discuss using any form of privacy protecting behavior on Tinder. The most common behavior, which was mentioned four times across all interviews, was some form of information limitation. Interestingly, two participants described using Tinder's location settings to try to meet their privacy needs. In discussing the coworker scenario, P2 described how they used the location setting to avoid people in their local area: "...I expanded my location. So I rarely get matched with people from who I am around."

4.3 RQ3: Social versus Institutional Privacy Concern

We asked participants to rate their discomfort with each scenario on a Likert scale from one to five. For each participant, we explained that a rating of one represented a life altering event while a rating of five represented a minor inconvenience. Overall, participants frequently expressed resignation in both the social and institutional privacy scenarios regardless of their comfort. This indicates that participants felt a lack of control over their privacy. Social privacy concerns, such as co workers or future employers viewing a profile, seem to predominantly cause concern due to fear of subsequent social repercussions. Institutional privacy concerns were more general, although the importance of consent to sharing was a consistent trend across these scenarios.

Of the scenarios, *How comfortable would you be with Non-Tinder dating websites purchasing your profile information from Tinder* was the most consistently uncomfortable for participants, with three quarters of participants ranking it worse than three, and half ranking it as a life altering event. In a similar trend to other questions, some participants approached this scenario with the expectation that they should benefit from any data exchange. For example, P4 stated, "I guess it would depend on for what reason but I mean... I don't know that that would really bother me. But if I started to get excessive calls or emails or you know mail or propaganda or something, I would not be comfortable but if they just purchased my data and linked me to, you know, possible matches or possible things I might be interested in and that's fine for me."

Participants had differing comfort levels with someone sharing images of Tinder conversations online. One third of participants ranked this as a life altering event. This is noteworthy because among participants there was division among whether sharing images from profiles online was socially permissible, and opinions on sharing images differed from sharing conversations. P3 went as far as to state that sharing images of conversations online was "...a crime" and that "someone should be reported for that. I don't expect somebody to be taking conversations at all and sharing it." No participants were uncomfortable with the scenario *How comfortable would you be with Tinder using your profile, matches, and dislikes to "infer" the type of people you're looking for on the app?* They commonly cited the desire for Tinder to help them find matches and this sharing being within the expected boundaries of their relationship with the app. The willingness to share information for perceived tangible benefit was a common theme across questions and subjects. For example, in response to this question, P8 responded, "...that's perfectly fine. That's why I put the information there." P12, who rated this scenario a 5, stated, "They'll [Tinder] take some of the work out for me, maybe?" Two participants expressed that they doubted the feasibility of Tinder doing this.

One of the largest differences in how participants discussed social privacy scenarios versus institutional privacy scenarios was in their sense of consequences. Participants who were uncomfortable with social scenarios tended to express a more clear view of what could happen. By contrast, participants often struggled to concretely describe what they feared happening in institutional privacy scenarios. For example, P1's initial explanation for why they were uncomfortable with the idea of Tinder selling their profile data to other dating websites was "That seems a little weird." This difficult in identifying consequences with regards to institutional privacy violations is understandable, as those scenarios were more abstract.

5 Conclusion

We have presented the results from an 11 person, semi-structured interview study on users' privacy perceptions and behaviors regarding Tinder. Across our interviews, we found that participants were primarily motivated to select profile data based on what they felt would be attractive to others. Privacy was a secondary concern for the vast majority of interviewees. Few of our participants described employing privacy protecting behaviors on Tinder and many expressed resignation towards violations of their privacy. From these results we conclude that Tinder should do more to help users meet their privacy needs.

One area for improvement is in profile access controls. While Tinder allows for some access control by letting users block contacts from seeing their profile, none of our participants seemed to be aware of the feature. A valuable area of further research would be to explore improvements to access control in the dating context. Our participants cited specific social groups that they would not want to see their profile (e.g. coworkers). Tinder could alleviate this issue by allowing users to block users based around social circles identified through the information shared with Tinder like school and employer. This would be challenging to implement, as it would require users to share this information with Tinder and for it to be accurate. Otherwise, users may over estimate the level of protection provided to them by social circle based access controls.

Other avenues for future work could include investigation of the unique needs of marginalized gender and sexual identifies, a more direct exploration of users' privacy protection strategies, or a wider investigation which encompasses more than a single online dating platform. As online dating continues to be a growing part of everyday life, it is essential that we improve users' ability to control their privacy.

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A Participant Demographics

Table 1: Participant demographics

Participant	Age	Gender	Race/Ethnic Identity	Sexual Orientation
P1	51-70	Male	White	Heterosexual
P2	18-30	Non-binary	Black	Bisexual
P3	18-30	Male	Black	Heterosexual
P4	31-50	Female	White	Homosexual
P5	31-50	Male	White/ Hispanic	Heterosexual
P6	18-30	Female	Black	Heterosexual
P7	18-30	Female	Black	Heterosexual
P8	18-30	Male	Black	Heterosexual
P9	18-30	Female	Black	Heterosexual
P10	18-30	Male	American Indian or Alaska Native	Bisexual
P12	18-30	Male	Asian	Heterosexual

B Interview Script

Introduction: Introduce yourself e.g.: "Good afternoon! Thank you for coming and participating in our interview study. I am... from Carnegie Mellon University"

Overview: Describe study and procedure, e.g.: "We're going to be asking you some questions today about your experiences on Tinder."

Consent: Reference the consent form. Remind the participant of confidentiality and opt-out e.g.: "When taking our survey you signed a consent form, I just wanted to emphasize that what you say to us during the interview will be kept confidential, and you can stop participating at any time, just let us know."

Consent to record: Ask "Do you consent to this interview being recorded for our internal use?" Once the participant confirms, begin the recording and ask them again to confirm that they have seen the consent form and consent to being recorded. This can be a little awkward because you are asking the same questions back to back, but it is an important part of the process.

Interview: Ask all top level interview questions. Italicized questions are recommended follow ups. As these are semi-structured interviews, feel empowered to add new follow up questions as relevant.

1. How long have you used Tinder? How often do you use Tinder?

2. Have you used other dating apps in the past? Which ones?

3. What are your goals in using tinder?

   (a) *If they do not know what is meant by goals, you may prompt with examples like "Meeting friends" or "Finding a long term relationship"*

4. Do you use Tinder's paid features? For example, you may have paid for "super likes" or subscribed to "Tinder Gold."

(a) *Why? Why not?*

[Ask participants to pull up their dating profile, if possible. Tell participants not to show the profile to the interviewer but rather to just refer to it in forming their answers]

5. What types of information do you include on your profile?

   (a) *If they do not understand what is meant by "information," give examples: "Do you include physical attributes like height? Do you include your employer?"*

6. How do you decide what to incorporate into your profile?

   (a) *Have you ever changed your profile? If so, why?*

   (b) *When you are building your profile, who do you consider as the audience?*

   [Tell participants they may put away their dating app profile]

7. Do you ever share information you see on Tinder outside of the application? *(For example by taking a screenshot of a profile)*

   (a) *When? Why?*

8. Are there any privacy related concerns you have about using Tinder?

   (a) *What do you worry about happening?*

   (b) *Why are you concerned?*

   (c) *How bad would it be if that happened? Scale from 1 to 5, with 1 being the worst (life altering event) and 5 being the least negative (e.g. minor inconvenience)*

   (d) *Is there anything you do to try to prevent this from happening?*

We're now going to ask questions about specific scenarios. For each of these, imagine your Tinder profile is the subject. *If the participant is not comfortable:*

   (a) *What do you worry about happening?*

   (b) *Why are you concerned?*

(c) *How bad would it be if that happened? Scale from 1 to 5, with 1 being the worst (life altering event) and 5 being the least negative (e.g. minor inconvenience)*

(d) *Is there anything you do to try to prevent this from happening?*

9. How comfortable would you be with…..
   (a) A co-worker viewing your profile?

   (b) Your Tinder profile being used to target or personalize advertisements?

   (c) Someone sharing images of your profile with their friends? With their family?

   (d) Tinder using your profile, matches, and dislikes to "infer" the type of people you're looking for on the app?

   (e) A prospective employer viewing your profile?

   (f) Someone from another country viewing your Tinder profile?

   (g) Someone from another state….

   (h) Non-Tinder dating websites purchasing your profile information from Tinder?

   (i) Someone sharing images of Tinder conversations you had online?

10. Have you ever felt like your privacy was violated while using Tinder?

   (a) *When? Why? What were the consequences?*

11. Do you have any other thoughts you would like to share about Tinder?

Conclusion: When all the questions are complete or 30 minutes have elapsed, conclude the interview. End the recording of the interview. Thank the participants for their time. Check if the participant has any questions before ending the Zoom meeting. We will send you an Amazon gift card code through email over the next week, if you have trouble or do not receive payment please contact us and we will solve the issue. You can use the email of the principal investigator included in the consent form.