Let Me Introduce Myself: A Comparative Analysis of Onboarding Navigation in Online Dating Platforms

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Dating applications have become a highly popular means of socializing in recent years. Onboarding for these interfaces can be intimidating to new users, and many have concerns about presenting themselves accurately. Users also report feeling disorganized and overwhelmed by dating apps, which can lead them to misrepresent themselves, struggle to find compatible matches, and potentially abandon the platforms altogether. We attempt to add organization to dating app onboarding with the use of tabs, contrary to a uni-linear approach presented by popular dating apps. Two dating app prototypes, linear and tabbed, were tested with 10 participants to assess their impressions and performance. The results indicated that users find a linear approach more enjoyable and organized, suggesting that other areas of dating apps could benefit from increased organization and reduction of cognitive overwhelm.

1 INTRODUCTION

Widespread use of the internet and smartphones has transformed how people socialize and connect. With access to social media platforms and dating apps, meeting new people has become more convenient. While social media apps facilitate connections, online dating apps, like Tinder, Bumble, and Hinge are more popular for interaction. A study from Statista Market Forecast [5, 7] estimated that by the end of 2019, there were over 200 million active users of dating apps worldwide. Across different geographical and cultural settings, 40% of single adults are looking for partners through online mediums and 25% of new couples connect through dating platforms [6].

It is crucial to consider what motivates users and ensure their initial experience fosters engagement and continued interaction with a platform [1, 2]. Despite the significant increase in users, the retention rate of these apps is low [3]. Findings in Zytko et al. [2014] highlighted the initial hurdles users face in presenting themselves positively on dating apps during onboarding. This research aligns with Harding et al.'s [2024] findings, which recommended enhanced personalization features to cater to users' preferences in profile creation and filtering options. Harding et al. also demonstrated that users disliked apps that were cluttered and overwhelming. To ensure onboarding is completed in its entirety, it is important to make the process easy to complete while also allowing adequate personalization.

Our study aims to understand ideal navigation for an online dating app onboarding experience to improve organization and reduce feelings of cognitive overwhelm. We designed an experiment that tests the usability of two different structures of navigation. We took inspiration from current dating apps that use a linear navigation to sequentially guide the user. We also introduce an approach that arranges sections of onboarding into tabs. Linear navigation only moves forward, while tabbed navigation gives the user flexibility to jump between sections. Our goal is to understand user preferences and compare performance. We hypothesize that there is a significant difference in the perceived level of organization and cognitive overwhelm between a tabbed navigation and a linear navigation in an onboarding experience.

2 METHOD

2.1 Independent Variables

The dating app's navigation was presented in two formats: linear and tabbed. The interfaces used all the same typography, spacing, iconography, colors, components, and interactive elements. The linear interface directs users through the onboarding experience with a one-directional "Continue" button (Fig. 1). In the tabbed experience, users must click on the tabs (Account, Profile, Preferences) to proceed.

Figure 1: Linear button to continue onboarding (left) vs tabbed buttons to continue onboarding (right).

2.2 Dependent Variables

We collected several dependent variables that measured participants' performance and perceptions. These included the time taken to complete the onboarding experience, the participant's ability to recall features, and their Likert scale ratings of different aspects of the experience. A between-subject design also allowed for shorter testing, reducing the probability of fatigue and satisficing.

2.3 Between-subject Design

To test our hypothesis, we selected a between-subject experimental design, wherein a participant experiences a prototype selected at random. This design was selected to prevent the learning effect of testing both prototypes. This design also did not hint at the purpose of the study to users, thus preventing confirmation bias. A between-subject design also allowed for shorter testing, reducing the probability of fatigue and satisficing.

2.4 Operationalizing Hypothesis

Our hypothesis tests whether navigation influences users during their onboarding experience. We predict the following based on the data we collect in this experiment:

i. User's preference for tabbed navigation will differ from their preference for linear navigation.
ii. There will be differences in recalling the number of features between tabbed and linear designs.
iii. The amount of time taken to complete the experience will differ between a tabbed and linear design.

2.5 Selecting Participants

We recruited 10 individuals via convenience sampling. Sampling was restricted to participants who had previously used dating apps, as an experimental control.

2.6 Developing Prototypes

Figma was used to create two medium-fidelity prototypes. The prototypes featured components for participants to interact with, but functionalities were restricted to preset values. This prohibited users from entering personalized text, like their names or biographies. Users were also unable to upload photos, videos, or voice recordings.

2.7 Interviews

Participants were interviewed on Zoom and given an identical introduction to the study (A.1) Display settings were controlled by requiring participants to use a desktop or laptop-sized device adjusted to 100% brightness and set to use in light mode. Screen and audio recordings captured interactions with various components of the user experience. Upon interview completion, users were prompted to participate in a survey that would evaluate their experience and suggest improvements.

2.8 Interviews and Survey

We collected demographic data including participant age, the type of device they used, their current relationship status, and which online dating apps they had previously used. Users were asked to recall which features they noticed during the onboarding process by selecting them from a list of 12. Participants then answered Likert scale questions about overall feelings, content organization, and overwhelm. Lastly, participants could state any changes they would make to the experience and share their thoughts on content design, the questionnaire, and the study as a whole.

2.9 Cleaning and Analyzing the Data

Data from individuals who had not used a dating app before was not used for analysis. Features that were remembered by participants were converted to the number of features that each participant remembered. Likert-scale data was given a value from 1 to 5, 1 being the lowest and 5 being the highest level of intensity as relevant to the question. Significant p-values were set to 0.05. R-studio was used to calculate central tendency, variation, and to perform t-tests. Despite non-normal distribution, we proceeded with using parametric testing.

3 RESULTS

3.1 Participant Data

Our participants ranged from 22 to 47 years old. Their previous experience with online dating apps varied, but all participants had previously used either Bumble, Hinge, or Tinder. These apps informed our independent variables' design choices between a linear and tabbed navigation. Despite having varied experience using online dating apps with varied onboarding structures, participants were randomly assigned to test either the linear or tabbed prototype. On average, participants who used the linear prototype did not complete the onboarding process more or less quickly than participants who used the tabbed prototype (0.17 mean difference, $t = 0.31$, $p < 0.76$, $df = 7.19$).

Table 1: Participant Data

Participant	Age	Device	App History	Relationship Status	Prototype	Time
P1	22	Desktop	Tinder	Single and not dating	Linear	00:03:30
P2	24	Laptop	Bumble	Single and not dating	Linear	00:02:07
P3	25	Laptop	Bumble, Tinder	Single and casually dating	Linear	00:02:40
P4	27	Laptop	Bumble, Hinge, Tinder	In a situationship	Linear	00:01:38
P5	47	Laptop	Bumble, eHarmony, Match	Single and not dating	Linear	00:03:52
P6	25	Laptop	Bumble, Tinder	Single and not dating	Tabbed	00:02:01
P7	22	Laptop	Bumble, Tinder	In a situationship	Tabbed	00:02:31
P8	23	Laptop	Bumble, Hinge, Plenty of Fish, Tinder	Single and not dating	Tabbed	00:02:11
P9	30	Laptop	Bumble, Hinge, Tinder, Raya	In a serious relationship	Tabbed	00:02:42
P10	29	Laptop	Bumble, OkCupid, Tinder	Single and not dating	Tabbed	00:04:31

3.2 User Preference Between Linear and Tabbed Experience

The histograms below represent data collected from responses to various Likert scale questions, intended to evaluate each participant's experiences using either prototype. (Figure 2) On average, participants who used the linear prototype found the overall experience more positive than participants who used the tabbed prototype (1.2 mean difference, t = 2.558, p<0.039, df=6.63). On average, participants who used the linear prototype also found the experience more organized than participants who used the tabbed prototype (1.8 mean difference, t = 3.087, p<0.037, df=4). Lastly, on average, participants who used the linear approach did not find the experience to be more or less overwhelming than participants who used the tabbed approach (0.6 mean difference, t = 0.973, p<0.376, df=4.928).

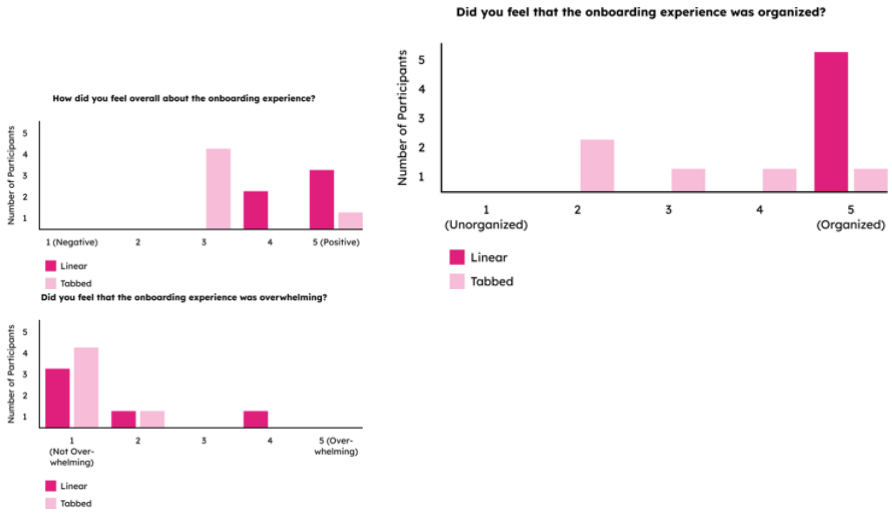


Figure 2. Histograms representing Likert scale data.

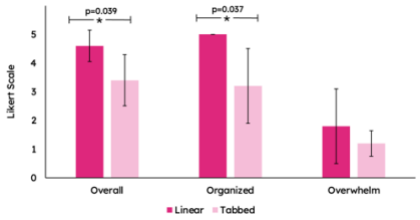


Figure 3. Average Likert scale values for questions about the overall experience, whether the experience was organized, and if the experience was overwhelming. Error bars represent SD.

3.3 Features Recalled Between Linear and Tabbed Designs

To understand how the navigation may have affected the participant's ability to recall specific features from the onboarding experience, we asked them to select the ones they remembered having noticed from a list of 12 features. While the data varied (linear SD = 3.9, tabbed = 2.2), participants who used the linear prototype, did not recall more or fewer features on average than participants who used the tabbed approach (1.0 mean difference, t = 0.501, p<0.633, df=6.258). Outside of this insignificance, we feel it is still valuable to note that the median number of features recalled in the linear prototype did measure 12, compared to just 9 in the tabbed prototype.

Table 2. How many participants recalled features, within each prototype?

Feature	Linear	Tabbed	Total
Option to add a preferred name to your profile	5	4	9
Option to add preferred pronouns to your profile	5	4	9
Option to add your sexual orientation to your profile	4	4	8
Option to add photos to your profile	4	5	9
Option to add videos to your profile	3	1	4
Option to add voice recordings to your profile	4	4	8
Option to add hobbies or interests to your profile	4	4	8
Option to add your zodiac signs to your profile	4	5	9
Option to filter users profiles by their gender identity	3	3	6
Option to filter users profiles by their relationship goals	5	1	6
Option to filter users profiles by their age	4	4	8
Option to filter users by profiles their distance	4	5	9

3.4 Participant Feedback

At the end of the questionnaire, participants were asked to answer a few open-ended questions regarding their experience using the prototype, and their participation in the experiment. Their responses were intended to provide further insight into how these designs could be improved in future work. When asked if the participants felt anything was missing from the app experience, P2, P3, P5, and P8 responded stating “No”. While P1 and P4 elaborated further, stating that the linear experience felt comparable to other onboarding experiences from dating apps they used in the past.

By contrast, P9 said they would have liked having more options to personalize their profile, such as more “hobbies, music interests, [and] recent travels”. Additionally, P10 felt that there should have been additional navigational icons included in the design of the tabbed experience. Similarly, when asked if there was anything the participants would have changed about the design of the prototype, P1 said a “progress bar” would have helped to “know how much info [they’re] supposed to [input] before getting to [the] main screen”.

4 DISCUSSION

4.1 Assessing Our Hypothesis

We hypothesized that there would be a significant difference in the perceived level of organization and cognitive overwhelm between a linear and a tabbed navigation in an onboarding experience. Using Likert scales we asked participants how they felt overall about their onboarding experience, whether or not they felt that the onboarding experience was organized, and whether or not they felt that the onboarding experience was overwhelming. We found significant results suggesting that on average, participants found the linear prototype to create an overall more positive, and more organized experience than the tabbed approach. However, we did not find significant results to suggest that on average, participants found one prototype more or less overwhelming than the other.

We also did not find a significant difference in the number of features recalled by participants in one prototype or the other. Additionally, we found that it did not take long for P6, P7, P8, or P9, to learn how to move forward in the tabbed experience. We interpret this result to further suggest that participants may not have found one prototype more or less overwhelming than the other.

Lastly, we did not find a significant difference in the amount of time taken to complete one prototype over the other. Despite our finding, we decided that this measurement cannot be used to inform our hypothesis, because it was not effective

for comparing the participant's experiences using each prototype. We elaborate further on the limitations of this measurement below.

4.2 Limitations

We found that the time taken to complete the onboarding experience did not help to produce an accurate measurement for exploring our hypothesis. The medium-fidelity prototypes, while interactive, were limited to preset values. While some participants completed steps within the onboarding process quickly, selecting options and clicking to fill text fields, others, including P5 and 10, explored the functionalities and interactions supported for each feature more intentionally. These participants selected and deselected options, asked the researcher questions about the prototype, and seemed to consider each feature and prompt very carefully.

Additionally, because the prototype was limited to preset values, some participants found parts of the onboarding experience confusing which delayed their progression through the prototype. The introductory script presented to each participant by the researcher explained that the interactions for some features including text fields and sliders were limited, and each participant confirmed that they understood the instructions before beginning the onboarding experience. However, all the participants may not have had the same experience using Figma prototypes. This variability may have affected their equal comprehension of the introductory information. For example, P1, P5, P8, and P10, attempted several times to change the slider values for preferred age and distance, outside of their limited capacities.

Another limitation of our study was that due to the nature of the question, users may have reported noticing features they did not recall. After the study, P5 casually mentioned feeling self-conscious when he did not recall the option to upload videos to their profile. While P5 did not select the feature, he did infer that it was probably included, because he recalled seeing all of the other listed features. From this feedback, it is important to consider that other participants may have reported seeing features they did not recall noticing. Similarly, we think it is possible that due to the wording of the question: What features did you notice during the onboarding process? Participants may not have selected features they recalled, because they did not interpret them as noticeable. Of note, P4 only reported noticing 3 features.

5 CONCLUSION AND FUTURE WORK

Our research indicates that participants were more satisfied overall with the linear onboarding experience and found it more organized, but there was no significant difference in their experiences with cognitive overwhelm. There was no significant difference in the number of features recalled by the participants in the two types of navigation, suggesting that both navigation types might have allowed participants to discover important features. Additionally, the time to complete the experience did not vary significantly between experiences, indicating further that cognitive overwhelm did not influence the experience of participants. While linear navigation resulted in a more positive perception of information organization and overall experience, further research is needed to confirm these findings and explore how best to structure the onboarding process to optimize the user experience and user retention for dating apps. If further research suggests that users continue to prefer a linear onboarding experience, research should attempt to pinpoint other sources of cognitive overwhelm outside of the onboarding experience.

5.1 Future Work

While our research explores how user experience differs for tabbed and linear navigation, future work could explore a hybrid approach. Hybrid navigation could combine elements of both linear and tabbed interfaces depending on the information being presented. For example, important information could be collected from the user in a linear sequence,

followed by a tabbed interface for preferences or optional information. Additionally, the onboarding process has many micro-interactions with animations, sounds, and visuals. Future studies could analyze further to evaluate how these micro-interactions affect user engagement and overall experience during onboarding. Another future area of exploration is the use of Artificial Intelligence (AI) to help create user profiles. AI could analyze user photos, social media profiles (with user consent), and interests to suggest profile details. There is also potential for AI to learn user preferences for UI (User Interface) to create adaptable UI. Lastly, our study was limited to people living in the US. In the future, the study should include users from diverse backgrounds to understand if architectural preference or the onboarding experience differs across cultures.

REFERENCES

[1] Marina Cascaes Cardoso. 2017. The Onboarding Effect: Leveraging User Engagement and Retention in Crowdsourcing Platforms. In Proceedings of the 2017 CHI Conference Extended Abstracts on Human Factors in Computing Systems (CHI EA '17). Association for Computing Machinery, New York, NY, USA, 263–267. https://doi.org/10.1145/3027063.302712

[2] Michael Froehlich, Charlotte Kobiella, Albrecht Schmidt, and Florian Alt. 2021. Is it Better With Onboarding? Improving First-Time Cryptocurrency App Experiences. In Proceedings of the 2021 ACM Designing Interactive Systems Conference (DIS '21). Association for Computing Machinery, New York, NY, USA, 78–89. https://doi.org/10.1145/3461778.3462047

[3] Andrew T. Fiore and Judith S. Donath. 2005. Homophily in online dating: when do you like someone like yourself? In CHI '05 Extended Abstracts on Human Factors in Computing Systems (Portland, OR, USA) (CHI EA '05). Association for Computing Machinery, New York, NY, USA, 1371–1374. https://doi.org/10.1145/1056808.1056919

[4] Julia Harding, Prajyot Meshram, and Shafizur Rahman Seeam. 2024. Features from Online Dating Apps that Impact User Engagement and Satisfaction. Rochester Institute of Technology, Rochester, NY, USA.

[5] https://www.statista.com/study/40456/dating-services-report/

[6] https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7557852/

[7] Ángel Castro and Juan Ramón Barrada. 2020. Dating Apps and Their Sociodemographic and Psychosocial Correlates: International Journal of Environmental Research and Public Health 17,18 (Sept. 2020), Article 6500. https://doi.org/10.3390/ijerph17186500.

[8] Douglas Zytko, Sukeshini A. Grandhi, and Quentin Jones. 2014. Impression Management Struggles in Online Dating. In Proceedings of the 2014 ACM International Conference on Supporting Group Work (GROUP '14). Association for Computing Machinery, New York, NY, USA, 53–62. https://doi.org/10.1145/2660398.

A APPENDICES

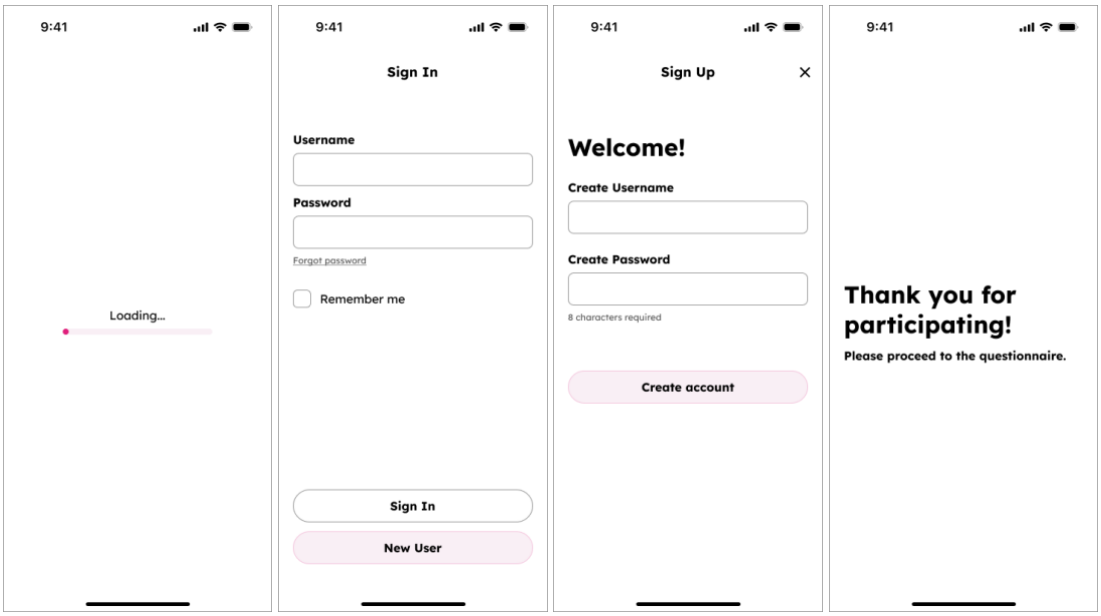
A.1 Introduction to Prototypes

1. Today you will be testing an early prototype for the onboarding process of a new online dating app.
2. The prototype's features are interactive however parts of the app including text fields and voice recordings are limited to preset values.
3. We encourage you to explore this onboarding process similarly to how you would a real online dating app.
4. After you are done exploring the prototype we ask you to please fill in a questionnaire about your experience.
5. If you have any questions during the process please ask, we are happy to guide you through the technical experience of using the prototype.
6. Your screen and audio will be recorded throughout your use of the prototype so that we can review all of the participant data later during our research. However, we can assure you that all of your data will be recorded anonymously in our study.
7. If at any point you do not wish to continue with the study you are welcome to withdraw your participation, and we will not use your data in our research.

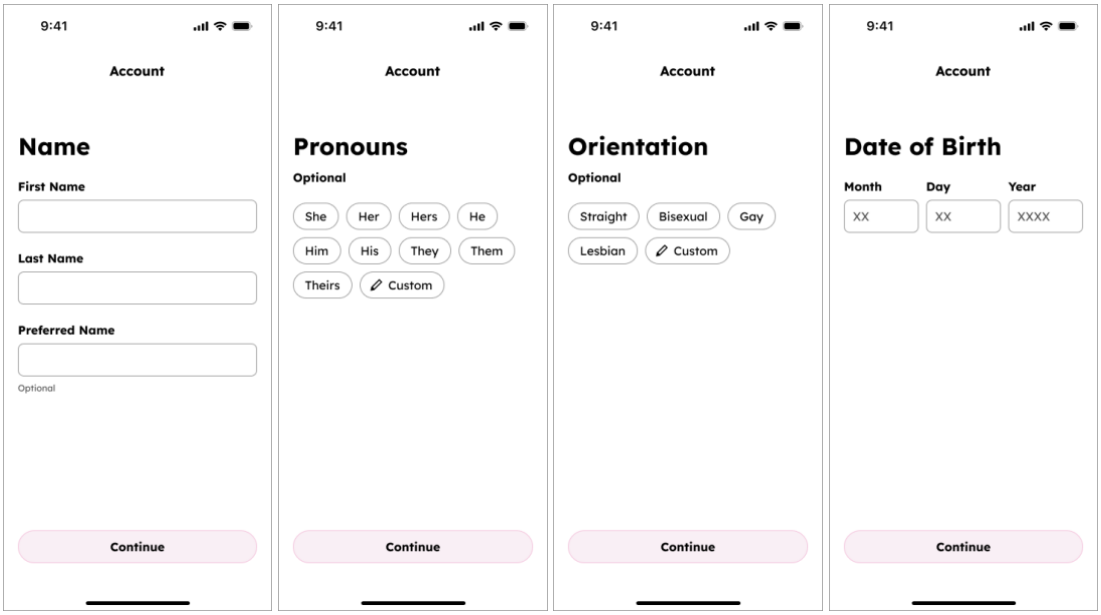
A.2 Prototypes

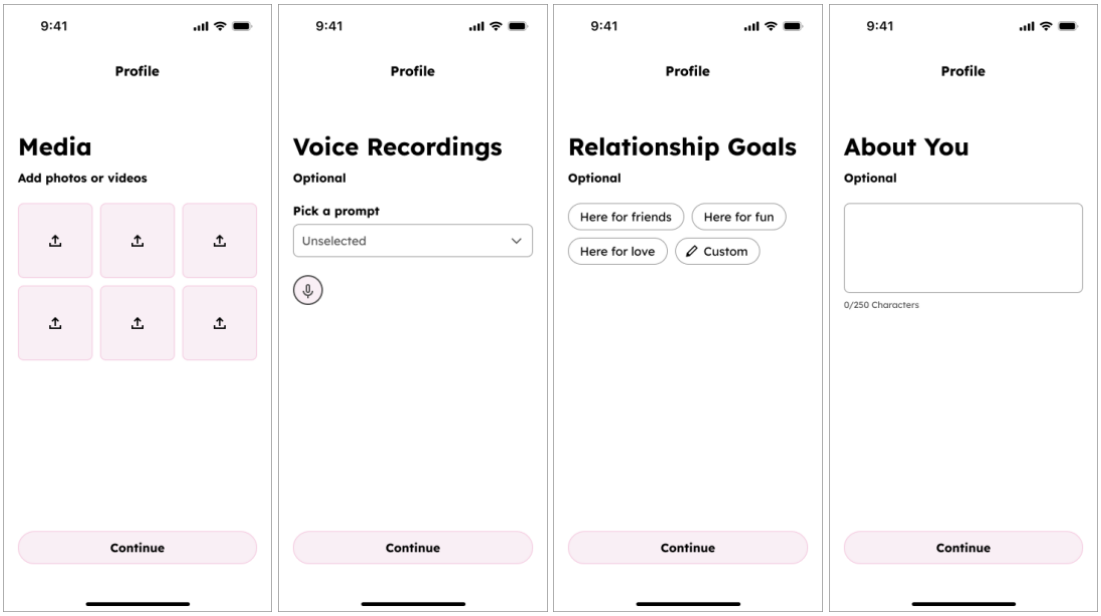
Scroll to page 12 to view all prototype screens.

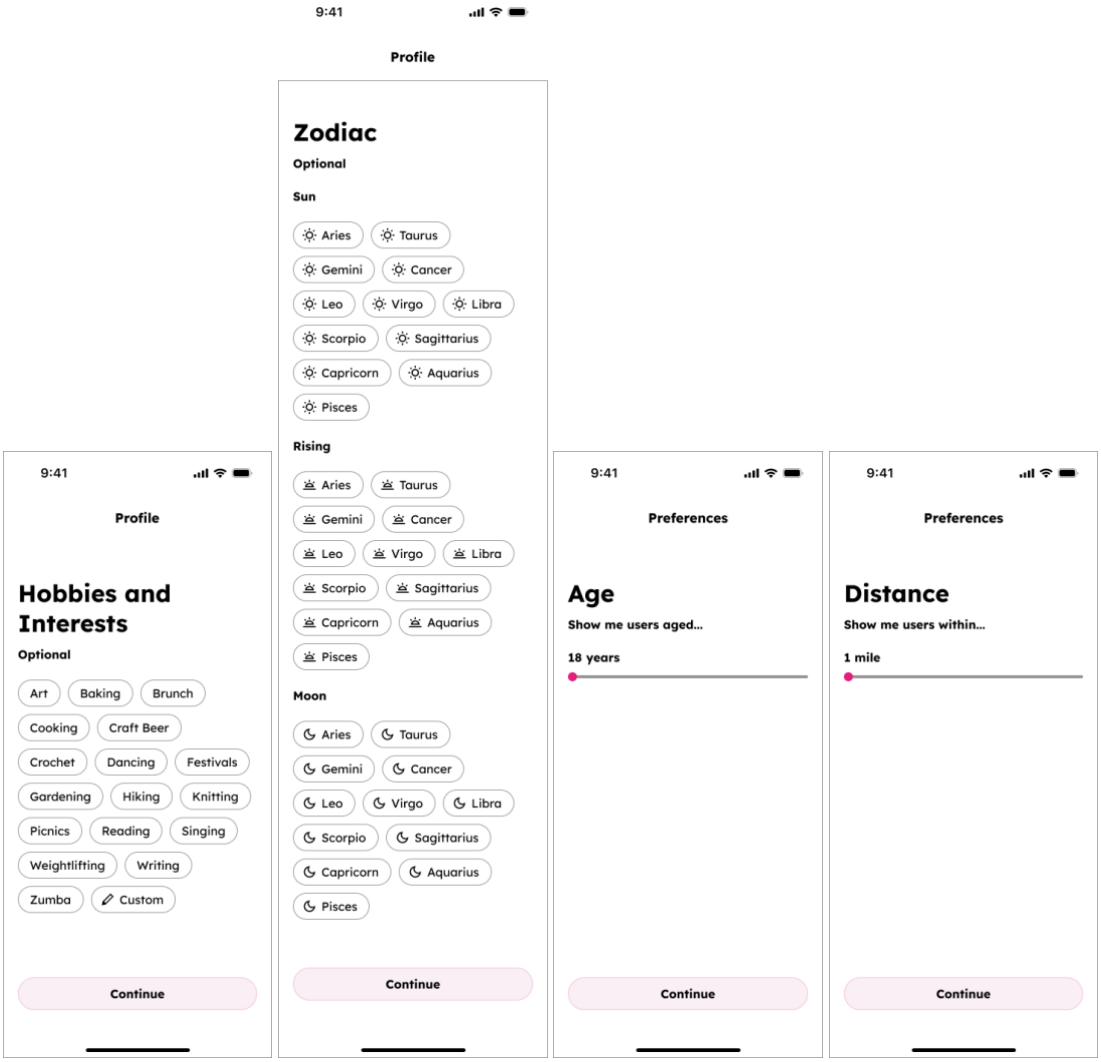
These are the Loading, Sign in, Sign up, and Thank you for participating screens, shown in both prototypes.



A. 2. 1. Linear Approach Screens






9:41
Profile
Hobbies and Interests
Optional
Art
Baking
Brunch
Cooking
Craft Beer
Crochet
Dancing
Festivals
Gardening
Hiking
Knitting
Picnics
Reading
Singing
Weightlifting
Writing
Zumba
Custom
Continue
9:41
Profile
Zodiac
Optional
Sun
Aries
Taurus
Gemini
Cancer
Leo
Virgo
Libra
Scorpio
Sagittarius
Capricorn
Aquarius
Pisces
Rising
Aries
Taurus
Gemini
Cancer
Leo
Virgo
Libra
Scorpio
Sagittarius
Capricorn
Aquarius
Pisces
Moon
Aries
Taurus
Gemini
Cancer
Leo
Virgo
Libra
Scorpio
Sagittarius
Capricorn
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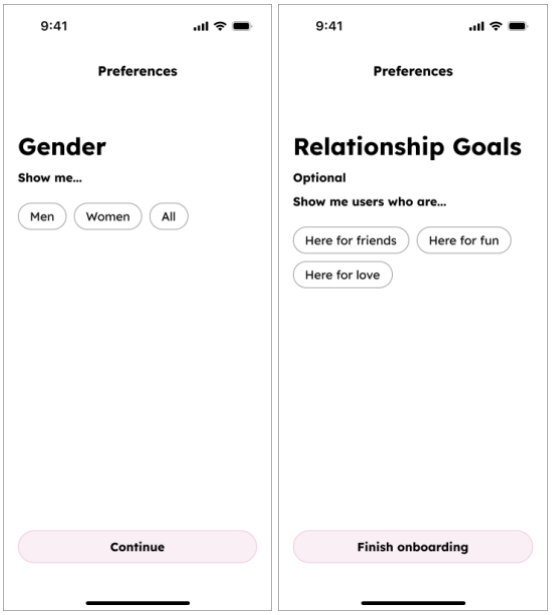
Preferences
Distance
Show me users within...
1 mile
Continue


9:41
Preferences
Gender
Show me...
Men
Women
All
Continue
9:41
Preferences
Relationship Goals
Optional
Show me users who are...
Here for friends
Here for fun
Here for love
Finish onboarding

A. 2. 2. Tabbed Approach Screens

The Profile screen is split between two images, to fit within the page height.