

VoiceMail: Deepening Relationships with Thoughtful Voice-Based Communication

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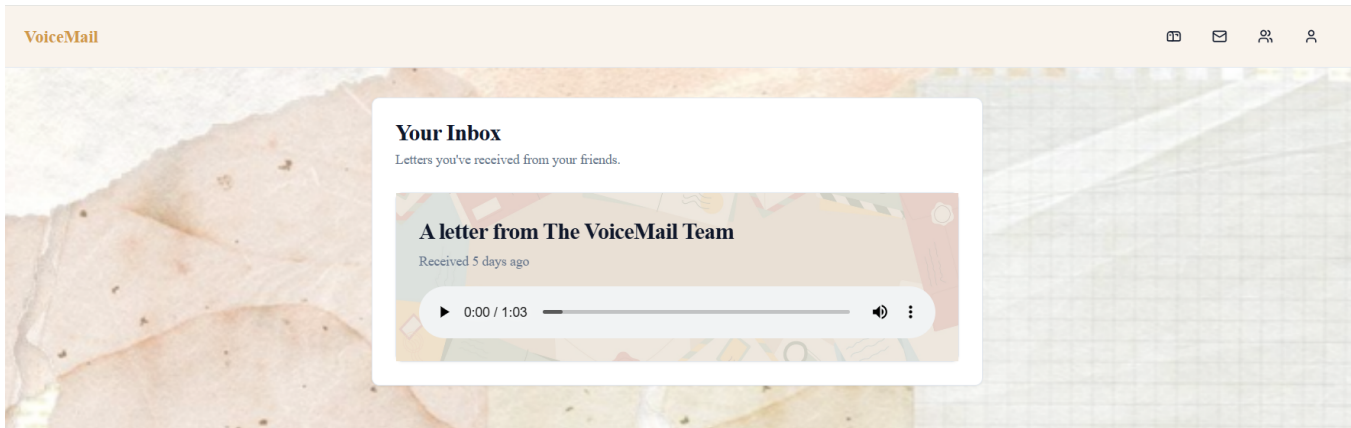


Figure 1: Inbox Page of VoiceMail

Abstract

Maintaining close relationships in the face of distance and busy schedules is challenging and digital messaging often lacks the emotional depth and nuance that voice-based communication holds. Existing social platforms encourage immediate replies and social comparison, increasing pressure and limiting authenticity. VoiceMail is a web platform for sending intentional audio letters, designed to support genuine connections with users' existing relationships. In a deployment with 9 users across several close-tie groups, participants sent 19 letters and reported positive experiences such as feeling appreciated, happy, and more personally connected through voice. The platform's focus on private, asynchronous voice exchange helped reduce response pressure and users appreciated its ease of use and ability to attach pictures. However, onboarding and friend-adding posed challenges. Some users additionally questioned

its differentiation from existing tools. Overall, VoiceMail demonstrated the potential of intentional audio messaging for deepening social connectedness and supporting authentic communication.

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1 Introduction

Whether it's family or friends, staying connected to the people we care about is important to us all. Beyond our emotional desire to hear from our loved ones, strong social support is critical to our physical health, mental health, and well-being [1, 11]. However, nurturing those bonds becomes deeply challenging when physical distance and demanding schedules get in the way [3, 7, 9, 10]. While current messaging and social media applications make communication instant and much more accessible, research shows these methods of communication often fall short in fostering the emotional depth needed to sustain meaningful relationships.

Voice conveys emotion, nuance, and presence that text cannot capture, and people feel significantly more connected and experience stronger bonding when they communicate through voice rather than text-based messaging [6, 12]. Even when the voice communication is not synchronous, research suggests voice messages

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help facilitate the maintenance of close relationships and help alleviate the challenge of simultaneous availability while still providing intimacy [5].

However, maintaining strong ties is not just about communication modality; it's also dependent on communication context. Broadcast-oriented social platforms such as Instagram and Facebook exacerbate social pressures and comparisons that erode authentic connection. Private, personalized communication from strong ties is far more beneficial to well-being than public posts or lightweight reactions [2]. Additionally, simply the act of crafting a digital experience for someone else builds emotional bonds and makes those involved feel closer [14]. The effort involved in creating something thoughtful becomes an expression of care. These works point toward the value of communication tools that encourage deliberate, one-to-one exchanges instead of rapid, low-effort messages. All together, research seems to indicate that asynchronous, voice-based communication offers a middle ground between the richness of in-person interaction and the convenience of digital mediums that could help people feel and stay connected to their strong ties.

We present VoiceMail, a platform created around these insights. VoiceMail is a website that enables users to craft and send asynchronous audio letters to their close connections. By focusing on one-to-one voice-based communication and eliminating public interaction, VoiceMail is designed to encourage intentional exchanges while reducing social and time-based pressures. We hypothesized that hosting groups of strong ties on VoiceMail would help people feel more emotionally connected to those they are connected with on the platform.

To evaluate VoiceMail, we conducted an 10-day field deployment with 9 users across several groups of close relationships. During this period, participants sent a total of 19 audio letters to their contacts with five including pictures. Survey responses and user interviews revealed that recipients experienced positive emotions such as excitement, appreciation, and warmth when receiving letters. Some additionally found the platform to be less overwhelming than other messaging apps. The deliberate, asynchronous format helped alleviate response pressure and supported more mindful communication while the inclusion of voice and pictures enhanced the sense of personal connection. However, users faced frustrations with onboarding with specific complaints with friend code exchange and contact creation. Some users also expressed uncertainty about how VoiceMail differs from existing tools. Ultimately, our study contributes insights into how designing for intentional, asynchronous voice messaging can promote genuine connection and emotional well-being while also highlighting areas for improvement in usability and onboarding.

2 Related Work

Research on strong ties consistently shows how these close relationships are directly linked to emotional well-being, especially as people age [1]. However, sustaining close relationships requires more effort as distance increases between people. Research on geographically dispersed relationships finds that long-distance connections rely heavily on pre-existing bonds, since it is hard to create close relationships without in-person contact. Additionally, they are more resource-intensive to maintain, and can often grow a natural

separation when communication becomes difficult to coordinate [10]. It has also been found that with geographically distant relationships, people are more likely to have less phone and in-person contact, but similar levels of email [3]. This literature shows strong ties are important for well-being, but can be hard to maintain with long distances, and that these geographically distant relations don't connect with voice-centered communication as much as they could be.

With VoiceMail, we acknowledge the importance of strong ties and of maintaining relationships that require more effort due to distance or other factors. Our system is built to focus on maintaining close relationships through communication with voice, focusing on the intimacy and stronger connection that could be had with voice. Voice communication can provide users with feelings of closer connection and intimacy with the respondent, though people usually underestimate it. People often think text is easier or calling or other voice communication will be awkward, but once they do it they appreciate the intimacy and communication style [6]. With VoiceMail we want to bring these positives to the forefront.

Additionally, With Voicemail we want to focus our voice communication on strong ties. Research shows online communication improves well-being when it involves direct communication with close ties, but the same levels of improved well-being did not come from weak tie communication or passive consumption of media [2]. It has also been shown that large, mixed audiences tied with public social displays online introduces context collapse, where people become unsure about how to self-express [8]. This research ties along with research that shows one-to-one communication is stronger for relationship maintenance than communication that is public. Additionally, frequent sharing is important to strong ties [13].

With VoiceMail, we focus on one-to-one communication to avoid context collapse and also to derive the most benefit possible from close tie relationships. This way people can feel the closest connection due to the layout of the platform, and also stay connected better thanks to the intimacy of voice. VoiceMail also has a priority to keep the interaction solely between a user and their connections, and making their activity on the platform private from others limits comparison and the feelings of uncertainty from public communication. Unlike other forms of social media or communication, VoiceMail limits any form of public activity, so other users cannot see when a user is active, has received their messages, is talking to other people, or when they are drafting a reply. Without these signals, VoiceMail reduces that pressure from the perceived view of others. Additionally, there is still the benefit of one-to-one communication and acknowledgement of each other without having the distractions and possibly not as positive interactions of weak tie communication or the consumption of media like on Instagram.

3 System Description

Our system is a voice-based web platform specifically designed to support and nurture strong social ties. VoiceMail's core mechanism is the audio letter, where users record thoughtful, intentional messages for one another. Users can record messages up to five minutes long, attach up to three photos, and choose from a selection of

decorative backgrounds, crafting a rich auditory and visual experience. This process echoes the slower, more deliberate cadence and emotional richness of traditional letter writing, rather than the immediacy and pressure characteristic of modern digital messaging. The spoken word, combined with the ability to personalize and enrich messages, provides emotional context that text alone often fails to convey. This approach directly advances our theory of change that intentional, emotionally expressive voice interactions foster deeper connections, particularly among close relationships with infrequent contact.

VoiceMail’s design centers on reducing both social and time pressures commonly experienced with modern-day digital communication, including messaging apps and social media. Instead of public feeds or group chats, VoiceMail removes social influence from outside of these relationships and prioritizes one-way, intentional messaging. Users can send letters to one person or select a list of individuals, but all letters are sent separately and received privately in an email inbox-like format. By excluding features such as social feeds, friend suggestions, public connection lists, and popularity metrics, the platform avoids encouraging social comparison or competition, guiding users to strictly focus on their one-on-one connections on this platform. Additionally, our team chose the message format to be audio without video accompaniment to lower any pressure or stress related to appearance curation, inspired by Goffman’s self-presentation concepts [4]. We felt simple voice messages without the option for editing, filters, or video make interaction less curated and more authentic, ultimately deepening these connections on interactions that feel candid and genuine.

In terms of time pressures, our system is designed for sending thoughtful updates rather than maintaining a live chat or excessively frequent communication. To encourage this slower, more thoughtful style of exchange, on the sender’s side, we made the 5-minute limit clear to encourage longer messages, included prompts in the letter creation page as a starting point to inspire thoughtful messages, and described these norms in an initial message sent to all users when they join the platform. As a safeguard, we also implemented a daily letter limit of two sent letters per connection per day to prevent users from using this as a conversation-style platform. On the recipient’s side, we chose not to have direct reply or reaction features on letters, removing the expectation of immediate replies and easing the pressure to respond quickly.

Other key features include:

- *Account Creation and Onboarding:* Standard login and signup workflows provide secure access. All users then receive an initial letter from our team describing the platform and intended usage, while also showing the user what receiving a letter looks like.
- *Friend Code System:* Friend relationships are deliberately formed through a mutual opt-in process. One user shares their unique friend code through any preferred method outside of the platform (for example, texting), which the other must input within VoiceMail to send a request. The request then needs to be accepted, ensuring both parties intentionally agree to connect. Users cannot search for other users by name or email.

- *Drafting Messages:* Users’ drafting step is entirely private. Users can focus on personalization and creativity through the letter design features.
- *Inbox Management:* Incoming letters appear as digital envelopes. Unseen letters are flipped over until the user actively opens them, creating anticipation analogous to physical mail.
- *Profile Customization:* Users can tailor their profile image, username, notification preferences, and in future iterations, enable transcript/translation support. Friend lists, requests, and history of sent letters are easily accessible, and the user’s friend code is available for sharing.
- *Friend Interaction and Privacy:* When visiting a friend’s page, users only see that friend’s profile image, username, and the letters that have been sent to them. Information about a friend’s other connections or their interaction with others is intentionally hidden. This minimizes social comparison and encourages users to focus on genuine connection rather than metrics.
- *Letter and Friend Management:* Friends and letters can be removed at any time, but sent messages cannot be revoked on both sides to reflect the permanence of traditional mailed letters.

Altogether, every aspect of the system is crafted to deepen close relationships by encouraging intentionality, emotional richness, and genuine communication, even in the face of time and distance difficulties. These key elements are often lost in traditional digital communication. Our design serves our theory of change by helping users connect meaningfully through this platform, ideally leading to feeling more connected to the important people in their lives.

4 Methods

To evaluate the design and impact of VoiceMail, we conducted a 10-day field study using a mixed-methods, pre-test post-test design. The evaluation was designed to assess the app’s usability and its effect on users’ feelings of connection and communication pressure.

4.1 Participants and Recruitment

Recruitment was conducted using a convenience sample, combined with a “bring-your-own-friend” approach. Initial participants were recruited from within the university community and were asked to invite at least one close friend or family member to join the study with them. This method was chosen to ensure that all participants would have a pre-existing, meaningful connection to interact with on the platform, which is central to VoiceMail’s design. All participants provided informed consent before the study began.

Participants were grouped into closed social networks on the platform; these networks defined the boundaries for the private, one-to-one communication among participants during the study period.

- **Registered Users:** A total of $N = 14$ users registered for the study.
- **Active Participants:** 9 participants actively engaged by sending at least one audio letter and completed both the pre- and post-surveys.
- **Study Networks:** Participants were organized into 5 separate, closed social networks on the VoiceMail platform.

Users who were unable to establish connections due to friction in the friend code system or technical issues were excluded from the analysis of usage and post-study data.

We recruited 9 active participants (aged 19 to 60; 6 identifying as female, 2 as male, and 1 as other/prefer not to say) for our study. Our target population was individuals with strong, pre-existing ties (e.g., close friends, family members). Although the study was designed to benefit connections facing challenges due to busy schedules or distance, the population of our actual participants included a mix of being geographically close and geographically distant.

4.2 System Deployment and Procedure

The VoiceMail platform was deployed as a web-only application for the duration of the ten-day study.

- (1) **Pre-Study Survey:** Upon recruitment, participants completed a pre-survey to establish baseline metrics. This survey collected demographic information and measured current communication habits, feelings of connection with their strong ties, and perceived pressure to respond quickly to messages (e.g., Likert scale item: “When I receive a personal message, I feel I should respond as soon as I can.”).
- (2) **Onboarding & Norm Setting:** Participants were given access to the VoiceMail application. They were required to use the friend-code approval system to establish connections with their partner(s). An introductory audio letter was sent to all participants by the research team to set the platform’s social norms. The message explicitly addressed expectations regarding response time and pressure and encouraged the use of the full 5-minute recording length for intentional content (e.g., “life updates, funny stories, crazy catchups”).
- (3) **Use Phase:** Participants used VoiceMail freely for **ten days** to exchange voice letters with their connected strong ties. The platform restricted communication to private, one-to-one audio letters, and participants experienced all of the app’s core features, including the 5-minute recording limit and the two letters per day sending limit.
- (4) **Post-Study Survey:** At the conclusion of the 10-day period, participants completed a post-survey. This survey re-asked the core Likert scale questions from the pre-survey to measure changes in perception. It also included open-ended questions to gather qualitative feedback on specific features (e.g., the daily sending limit) and quantitative ratings on the app’s usability.
- (5) **Semi-Structured Interviews:** Following the post-survey, participants were invited to sign up for an optional, semi-structured interview to provide richer, in-depth qualitative feedback. We conducted 5 interviews, each lasting approximately 15–20 minutes.

4.3 Data Collection

We collected three primary types of data: survey data, system usage logs, and interview transcripts.

4.3.1 Quantitative Data. System usage was summarized using descriptive statistics gathered from platform logs:

- **Usage Metrics:** Total letters sent (**19**), letter read rate (84%), number of active senders (**9**), use of optional features, and average letter duration (Mean: 64s, *SD* : 67s).
- **Survey Data:** We collected quantitative Likert scale responses for our core metrics (connection, response pressure, notification manageability) from both the pre- and post-surveys.

4.3.2 Qualitative Data.

- **Survey Data:** We collected qualitative data from open-ended survey questions (Pre- and Post-Study).
- **Interview Transcripts:** The semi-structured interviews were audio-recorded and transcribed for analysis. These interviews focused on the ‘why’ behind user behaviors, their emotional response to the ‘slow communication’ model, and detailed usability feedback.

4.4 Data Analysis

4.4.1 Quantitative Data. To analyze the non-parametric data from our within-subjects design ($N=9$), we planned to use the Wilcoxon Signed-Rank Test to assess the statistical significance of changes between pre- and post-study Likert scores for three key metrics: Communication Pressure, Connection, and Notification Manageability. Additionally, descriptive statistics (mean, median, standard deviation) were calculated to summarize usage patterns derived from app logs, including the average number of letters sent per participant, average message length, frequency of images shared, number of friends added, and usability ratings.

4.4.2 Qualitative Data. We used an inductive thematic analysis for all qualitative data, including open-ended survey responses and interview transcripts. Three researchers independently coded the data, identifying initial patterns and concepts. They then met to compare and refine these codes, grouping them into larger, overarching themes that captured the essence of the user experience (e.g., “Reduced Social Pressure,” “Perceived Intimacy of Voice”).

5 Results

5.1 Usage Summary

Looking at our 9 active users across the duration of the study, there were 19 total letters sent. This leads to an average of 2.1 letters sent per person. When taking a further look into the nature of these letters, we found that the average length of a letter was 64 seconds. The full distribution of the letters’ audio duration can be seen in Figure 2, with labeled statistics recorded in Table 1.

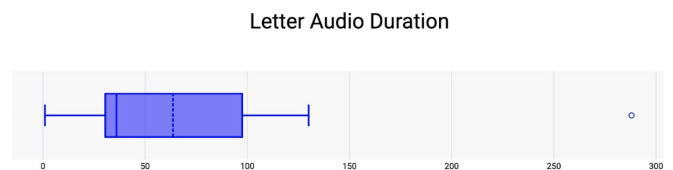


Figure 2: Distribution of audio message duration across all letters. Duration measured in seconds.

Table 1: Statistics of Letter Audio Duration

Metric	Value (s)
Minimum	1
Lower Quartile	31
Median	36
Upper Quartile	83
Maximum	288
Mean	64
Standard Deviation	67

Regarding the photo feature where users can include pictures in their letters, 26% of letters utilized that option. Finally, 89% of users viewed the initial message sent by the VoiceMail team on the platform.

5.2 Pre-Survey Baseline Attitudes

5.2.1 Feelings About Receiving Voice Memos. Prior to using VoiceMail, participants expressed a range of attitudes toward receiving voice memos in general. Many reported positive emotional responses, describing feelings such as excitement, happiness, and appreciation. For example, P2 shared that they were “excited, happy” while P8 expanded more stating, “I feel excited because I think it shows like friendship.” Similarly, P15 noted that voice memos are sometimes received as “an exciting story that couldn’t be communicated over text.”

However, not all participants regularly engaged with voice memos. Several described their relationship with them as neutral, primarily due to infrequent usage. As P4 explained, “No feeling, since I rarely receive voice memo[s],” and P6 stated that they “don’t typically receive voice memos.”

Others reported negative associations, mainly linked to practical challenges or discomfort with unsolicited audio communication. P1 commented, “I can’t listen [when] I’m at work,” highlighting situational barriers. P7 recalled thinking, “Why didn’t they just call me” and P16 mentioned being “nervous because you don’t know what they’re saying until you open it” as well as often being in environments where “listening to audio isn’t an option.”

5.2.2 Initial Impressions of VoiceMail. Upon introduction to the VoiceMail platform, most participants responded with positive or curious attitudes. Several voiced enthusiasm for the concept, associating it with genuineness and emotional resonance. For instance, P1 noted, “It sounds like a nice genuine idea. I love sending letters, so it’s nice to imagine sending one more easily and digitally.” P2 described themselves as “curious to learn more.” Other participants, like P4 (“I am interested in trying the system. It could be good.”) and P6 (“Interesting, I’ve never been a voice memo person, but I think it’ll be nice! Sometimes texts are really hard to decipher”) expressed an openness to the concept despite potentially limited prior experience with voice-based communication platforms.

Participants also highlighted features they found appealing, including the potential for digital keepsakes (P7: “That’s nice, would be a nice keepsake from older family members.”), ease of attaching photos (P5: “[I] like the idea of ease of attaching photos”), and the

perceived uniqueness and emotional touch of the platform (P15: “It sounds unique and touching”).

Nevertheless, a minority expressed skepticism, particularly regarding VoiceMail’s distinctiveness relative to existing communication tools and concerns about usability. As P1 questioned, “It also sounds very similar to existing tools – voice memos, photos, etc. what is stopping me from doing this anyway? How is the letter different?” P5 also commented, “5 minutes is a long time. Would like to receive shorter messages” in response to the letter time limit presented. During interviews, participant 5 further elaborated that they were “curious about why a voicemail platform when you can record on your phone.”

5.3 General Usage and Motivations

5.3.1 Motivations for Sending Letters. Participants cited a variety of reasons for sending voice letters on the platform with practical considerations often guiding their usage. Several users sent a voice note when they had planned to call but were unable to do so due to availability issues, treating the audio letter as a close substitute for a phone conversation. P6 explained, “I tried to build it into my schedule so that I can complete on at least once a day.” P15 indicated that timing was a factor, stating, “It was kind of like the end of the day when we were talking,” suggesting limited availability during daytime hours. For P8, the platform provided a solution when calls didn’t go through: “Whenever she didn’t pick up [a phone call], but I actually had something I wanted to tell her, I would send her the voice note.”

Motivations weren’t solely practical with some participants viewing voice messaging as an opportunity for novel exchanges. P15 commented, “I thought it was like it would be funny for us to [send,” while P8 used the platform for stories that didn’t warrant a phone call or text: “If I had, like, a funny story that, like, wasn’t worth, like, a phone call or a text, but just something interesting.”

Several participants indicated that their primary reason for sending letters was participation in the study, rather than personal motivation. For instance, P5 explained they were mainly prompted by the research team’s request, and P2 put it plainly: “You asked me to.”

5.3.2 Intended Audience. Decisions about whom to send letters to were also influenced both by the requirements of the study and by the likelihood of timely responses. P6 explained, “I talked to close friends who I thought might have been interested in it... and then they said yes.” In their interview, P5 cited selecting “people that I know that will use it.” P2 pointed to feasibility over preference: “The people who I actually really wanted to use it with, I just didn’t know if I could expect a timely response for them to be able to use it. So, the people I chose were more, like, who I know who can set this up really quickly.”

When it comes to who was invited to the platform, participants tended to engage with close friends and family. P15 shared, “I invited all friends from home, so all my friends that are from colleges,” and P8 explored differences in communication practices: “I invited my friend from home, who I do communicate a lot over the phone and then one my friend from college who I just see in person a lot, so I thought it would be interesting to see the difference between those two.”

The approach to tailoring messages varied among participants. Some crafted their audio letters specifically for individual recipients, as P6 described, “I make [a voice letter] for one person.” Others opted for more general updates that were not personalized to the recipient’s context. For example, P5 shared, “It was the same because it was mostly about reflection of my day that I wanted to share. Not a specific ask or... looking for something from them.” P2 noted that they initially sent identical letters to everyone, but reflected that, “I think, if I had more friends on the platform, it would look very different—the update that I’m sending to, like, my parents versus my friends,” suggesting both an awareness of “context collapse” and the desire for differentiated communication if the platform were used more broadly.

5.3.3 Letter Content. The content of audio letters varied widely, often including daily recaps, personal reflections, and updates about life events. Interview P6 shared, “I just talked about my day, and I was like, I hope your day’s going well. Um, just general exchanges.” Interview P2 described messages focused on reflection and milestones, such as a new job or future plans: “A lot of it was reflection and what I’m excited about, plus my new job.” Others received letters about work experiences or retirement, opening up conversations on topics not typically discussed. As P15 noted, these exchanges felt “more personal than a text,” adding, “It was cute. It was funny.”

5.3.4 Initial Message from the VoiceMail Team. The initial onboarding message from the VoiceMail team had limited impact on user experience. Even though 89% of users listened to this introductory message, most reported that it did not influence their usage or engagement with the platform. P2 and P6 specifically mentioned their usage not being impacted by the letter even though they did listen to it.

5.4 Connectedness and Motivations

5.4.1 Feelings When Receiving Letters. Participants’ experiences of receiving audio letters through VoiceMail were overwhelmingly positive with many reports of enhanced emotional connectedness. Feelings of happiness and appreciation were common. P8 expressed, “It made me feel good that someone was thinking about me and had something to share” and P15 reflected, “I felt touched.” Interview participants reinforced these sentiments with P2 describing, “It was cute! It made me happy, even though I see these people every day.” Such reactions indicate that the intentional audio messaging through the platform fostered a sense of being cared for and valued.

The positive effects were particularly evident among participants seeking to maintain relationships despite limited face-to-face contact. P6 shared, “I was very excited to hear from my friend that I rarely get to see,” while P7 valued the ability to connect without the need for real-time communication: “It was nice to be able to check in with my friend, especially when I wasn’t available to call.” For P15, VoiceMail helped overcome the challenges posed specifically by physical distance: “It felt most valuable with my friends from home because I don’t typically speak to them.”

5.4.2 The Role of Voice. Participants emphasized that the use of voice specifically added warmth and personalization to their interactions. P16 said, “It was fun to hear the sender’s voice. The

message felt more personal that way,” and further noted, “I felt like it was positive/more meaningful hearing the voice of the sender.” P5 succinctly stated, “Voice is always more warm,” while P5 elaborated in their interview, “I like hearing audio...there’s more emotion to it.” In their interview, P2 gave additional context about their appreciation for voice: “I don’t hear their voices and they don’t hear my voice is what I mean. So like, we will text but vocal communication was different and it was more personal and I enjoyed it.” These comments collectively demonstrate that this audio-based messaging reinforced emotional nuance, facilitating more intimate connections between users.

5.4.3 Specific Moments Facilitated by the Platform. VoiceMail also enabled the sharing of expanded talking points and conversations not typically addressed in everyday interactions. For instance, P2 recounted, “Hearing a reflection about retirement from my mother who is yet to retire and we don’t usually talk about that even though I live with her and see her everyday!” This case illustrated how the format encouraged reflection and sharing of meaningful topics, even among individuals with regular in-person contact.

5.5 Reduced Pressures and Cross Platform Comparisons

5.5.1 Changes in Hesitancy Around Voice Messaging. Participants reported varied shifts in their hesitancy toward using voice messaging. For some, their reluctance remained unchanged. P15 explained, “[I] was hesitant before because it is more inconvenient than texting. VoiceMail didn’t necessarily change that.” Similarly, P5 said, “I think the idea is great but I am hesitant using another app...”

However, several participants experienced a positive shift, noting an increased comfort with creating voice memos through the VoiceMail platform. P8 appreciated the slower, more relaxed pace: “I liked this form of voice memos because it was slower and I felt less of a need to listen to them right away or reply right away. I think the part of voice memos I never liked is sometimes when my friend would send me one I felt obligated to listen right away even if I was busy.” P7 reported a notable change in perspective: “I liked it and [it] made me change my opinion on how I will use voice memos or voicemail in the future.” P1 reflected on the value of separating VoiceMail from other messaging apps: “I was a bit hesitant, because it feels like something I can already do with text voice memos. But having it here in VoiceMail as a separate app keeps it in a kind of nice, sentimental, no pressure to look at, separate location.”

5.5.2 Reduced Pressure and Comparison to Other Platforms. Quantitative findings show that VoiceMail users experienced less urgency to respond right away compared to typical personal messaging. As illustrated in Figure 3, participants reported feeling more pressure to reply immediately to personal messages in general than when they were using VoiceMail specifically. Reflecting this shift, P6 noted, “I didn’t really do responses. I would just send a letter whenever I was available,” underscoring the platform’s ability to reduce expectations of instant reciprocation common in other forms of messaging. To further investigate this change in attitude, we performed a Wilcoxon Signed Rank test using the pre- and post-survey responses to the question about response pressure indicated in Figure 3, which returned a p-value of 0.2284. Consequently, we

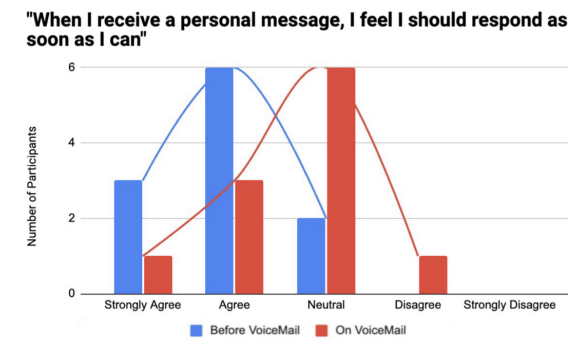


Figure 3: Participant agreement with the statement, "When I receive a personal message, I feel I should respond as soon as I can," comparing responses taken before VoiceMail and on VoiceMail

are not able to claim statistical significance with this shift. However, we believe this result can be partially attributed to our small sample size.

Participants further compared VoiceMail favorably against broader social media platforms, noting that it was less overwhelming and burdensome. P6 commented in their interview simply, "It's not overwhelming." P2 further elaborated: "I think [VoiceMail] was very intentional about what it wanted to be, and, like, very limited in scope, and I like that it was focused. I know I'm here to connect with family and friends. I'm not seeing ads. I'm not seeing promotions. ... It just felt old school, but in a good way. I was not overwhelmed. I didn't feel like I was trapped on the platform." When asked about other social media platforms, P2 confirmed that the feeling of being overwhelmed was present elsewhere but not with VoiceMail.

In their interview, P5 highlighted the lighter emotional burden of VoiceMail compared to other platforms like Facebook, stating, "I think [VoiceMail] is a lighter burden. Like, Facebook... seems like a bigger deal to tell yourself to everybody you're connected to, versus this is a very targeted voicemail."

These findings suggest that VoiceMail's design helped alleviate common pressures associated with social communication platforms, fostering a more intentional, relaxed, and personalized environment for users.

5.6 Overall User Experience and Interface (UX/UI)

5.6.1 Simplicity. Participants consistently praised VoiceMail's simple and intuitive design. Many found the platform easy to navigate, with P1 noting, "[I can] click through links easily... it's so easy to navigate." The focused nature of the platform that was free from distractions was also appreciated with P2 describing it to have a "very focused use... (no distractions/ads)." P7 succinctly stated, "It was user friendly." Interview responses mirrored these sentiments with P6 expressing, "I liked how easy it was. Like, how easy it was to access, like, and to navigate the website," and P2 stating, "It just felt old school, but in a good way." P15 further added, "It was pretty easy to get around once on it."

5.6.2 Visual Appeal and Personalization. The platform's interface was frequently described as visually pleasing and inviting. As P8 shared, "I liked the UI," and P15 echoed, "The UI is also cute." P15 expanded on this in their interview stating, "I think the interface was nice and it was cute."

VoiceMail's ability to personalize letters was another key point of user satisfaction. P15 appreciated being able to "send pictures," and P6 highlighted "the ability to personalize messages!" P16 found that these features set VoiceMail apart from other messaging apps, noting, "I liked how it was different than other messaging apps and made the experience more personal."

5.7 Platform Issues and Suggestions

5.7.1 Desktop vs Mobile Access. A recurring concern among participants was the lack of a dedicated mobile app for VoiceMail which impacted both usage and convenience. Several users found accessing the platform via a web browser on their laptops to be cumbersome and less intuitive for regular engagement. P1 remarked, "Idk if there is an actual app but having it on a browser is kind of annoying." P6 shared, "It was difficult to remember to do it on my laptop. It's not as easy to access on a phone," while P7 noted, "I wish it was an app, rather than a website. It might have made it more easy to access for me."

Interview responses reinforced these statements with P6 commenting, "I think I didn't use it as much because I had it on my laptop... if it was an app on my phone I probably would have used it more frequently." Similarly, Interview P5 explained, "[Not having a mobile version] was the biggest hurdle for me. I can't see myself sitting down to do that," and P15 added, "I think it was difficult for me to send anymore because... pulling it out on my computer... it's more inconvenient than just doing it on my phone."

5.7.2 Friend Adding and Onboarding. Participants also experienced challenges with onboarding and connecting with friends on the platform. P8 suggested it could be improved by "making it easier to find friends," while P15 found the process of exchanging friend codes frustrating. P2 echoed these issues, identifying onboarding as a barrier: "adding friend without having to do back and forth of a code." P4 struggled with the initial contact setup: "Lack of understanding how to create a contact for the first time."

During interviews, P2 described the setup as unintuitive: "I got on the page and it wasn't super intuitive about how do I set it up so that I can connect the two people that I invited?" P2 also emphasized in their interview the need for a smoother onboarding process, especially for adding friends who are typically harder to reach: "it needs to be an extremely low barrier with the friends that it's hard to get a hold of." P15 also elaborated in their interview, "The fact that I had to make friends... I had to send them a specific code and it required me, like, leaving the interface to make friends with them... it's more steps than just... clicking."

5.8 Uniqueness – What Makes VoiceMail Different?

5.8.1 Perceived Uniqueness. Some participants identified features that they felt set VoiceMail apart from other messaging platforms. The intentionality and slower pace were especially valued, as P8 explained, "I liked this form of voice memos because it was slower and

I felt less of a need to listen to them right away or reply right away.” P1 emphasized the separation from everyday messaging apps: “having it here in VoiceMail as a separate app keeps it in a kind of nice, sentimental, no pressure to look at, separate location.” P16 further noted, “I liked how it was different than other messaging apps and made the experience more personal.” These responses suggest that for some, VoiceMail’s design facilitated more thoughtful and less pressured communication, setting it apart from other platforms.

5.8.2 Continued Skepticism and Overlap with Existing Tools. Despite these positive impressions, skepticism remained among users about what truly differentiates VoiceMail from established platforms. This echoes the doubts expressed in the pre-survey where participants questioned the added value compared to tools like iMessage or WhatsApp that already support voice messaging. In their interview, P15 recognized some unique features, such as sending pictures alongside voice letters, but commented, “it doesn’t exist on imessage apps like WhatsApp, but the actual voice feature does exist on these apps that are used to communicate with my friends. So I don’t know if I would replace them since they also have voice.”

6 Discussion

Our system yielded multiple of our expected outcomes based on our theory of change and design. To start off, participants showed an overall sense of reduced social pressures to react or be active, and had more focused communication. This is present in our major theme 3 in our results, reduced social pressures and cross-platform comparisons. We chose to remove public-facing features on VoiceMail, such as what letters users sent or received to other people, when users were online, when they were drafting letters, if they had viewed a letter, and who their friends were. We also did not allow replies to letters. These decisions were focused on simplifying the experience to be purely one-to-one communication through letter sending only. Results showed our design worked successfully, with participants describing feeling less pressure to reply to a voice message than on typical social media platforms. Additionally, users reported feeling less overwhelmed than on other social media sites, thanks to no ads or other stimulation meant to distract and keep them on the platform for other reasons, as is common on Facebook. VoiceMail is a focused platform that makes voice messaging its central and only goal, and users mentioned noticing this intentionality and appreciating it. This positive user feedback showed that the consistent design of VoiceMail was able to accurately push users to the right mindset and to reduce their felt social pressure. In a broad sense, this shows there is a balance that must be struck between designing for profit and designing for the user, and especially for social computing systems that have a very specific goal, designs must be very intentional. Like with VoiceMail, systems with a clear, specific goal must intentionally design all aspects of their systems to remind a user of the intended purpose and to push them towards it. Having other distractions could dilute the main purpose of the platform.

Additionally, one of our expected outcomes was to strengthen users’ feelings of connection with strong ties due to the benefits of voice communication. This was implemented into VoiceMail by only allowing communication through voice messages, as well as the chance to supplement the message with a few photos and

an artistic background to the voice letters. This design kept the focus on the message and created themes of uniqueness and of connectedness. Users expressed significant positive emotional impact, with a majority of participants reporting feeling more connected to friends and family while using VoiceMail. Users also said they felt they got benefits from voice that they could not get with other forms of online communication, stating messages felt warmer and more animated than they could in other mediums. This shows users appreciated the closer intimacy that was possible with voice communication.

By making voice communication central to VoiceMail, we highlight its power, and by creating a platform that has defined goals and design, it makes it easier for users to get the most out of the platform as fits their needs. It was found that the benefits of increased connection were reported by the users who put more thought into their letters. The platform is built to enhance intentionality, so if it were present on the user’s end, the experience is heightened. Additionally, it was a positive surprise to notice that users with both geographically distant and geographically close relationships found benefits from using the platform. Those who lived close together and saw each other often still found ways to talk about new things through the platform, or send messages that were intentional and opened up new avenues of communication. This was a surprise since the intimacy of voice is seen to mostly benefit geographically distant relationships that cannot get that intimacy otherwise, but results showed us VoiceMail could provide users with whatever connection they were looking for, as long as the user was intentional as well.

Besides general positives in VoiceMail’s overall goal and theory of change, there was some friction upon onboarding for users that caused a slight disconnect with expected output. To start, the study was only 10 days due to time constraints, and it was difficult to capture true long-term use of the platform as was intended. Due to this, we recommend a much longer study time to allow users to interact on the platform naturally at a slower pace, and to allow time between letter sending and receiving. Additionally, upon onboarding, users were sent an introduction voice letter by the VoiceMail team, setting the norms of the platform and providing some prompting ideas on what could be included in a letter. 89% of users listened to the initial letter by the VoiceMail team. However, users mentioned the initial message did not provide them with much use, and was not very significant in their understanding of the platform. The ineffectiveness of the introduction message may have contributed to the possible frictions present on the platform that users experienced. For example, this misalignment in expectations and understanding of the platform may have led to user frustration with the friend feature. Users were unsure about how to add friends and where to find their personal friend code. This was coupled with frustrations about having to leave the platform to add their friends. Due to the norms being ineffectively set, users were confused about their friend code, but also were not on board with the increased friction meant to enforce a strong tie connection.

This speaks to the importance of setting the norms of a platform, especially for a system such as VoiceMail that is focused on a theory of change away from norms present on other popular platforms, such as voice messages on WhatsApp. On WhatsApp, friends can be added by searching for anyone from just their phone number,

providing a much lower barrier to connecting. However, VoiceMail was specifically trying to make the addition of friends more direct and off the platform in order to filter for strong ties only. Clearly defined norms to explain this increased friction could lower user frustrations since they would understand why the design is not what they are accustomed to, and they would understand how to use it better.

7 Limitations and Future Work

7.0.1 Limitations. Our study and system evaluation had several limitations that should be addressed in future work to strengthen the findings and improve the platform.

- **Small Sample Size and Short Study Duration:** The small number of participants ($N = 14$ registered users, 9 active) and the short 10-day study period significantly limited our ability to achieve statistical significance and observe long-term usage patterns. The infrequent nature of the intended 'audio letter' communication on VoiceMail requires a much longer observation window to capture consistent, non-project-driven engagement and genuine impact on sustained feelings of connection. Our findings on increased connection are promising, but are based on self-reported perception after limited use.
- **Web-Only Platform:** Operating solely as a website was a major limitation cited by participants, who consistently requested mobile access. This lack of a dedicated mobile app likely reduced user engagement and convenience, as the strong ties people seek to maintain are often accessed on mobile devices.
- **Study-Driven Participation:** Participants were recruited for an academic study, meaning their motivation for use was, in part, external. Future deployments should focus on organic adoption to better gauge the platform's intrinsic appeal and long-term viability for maintaining strong ties outside of a research context. The short duration and external motivation may have influenced the observed low letter volume (average 2.1 letters/person) compared to the intended, intentional use.
- **Onboarding Friction:** The friend code system for adding contacts was a consistent point of frustration, making the initial setup difficult for users. This onboarding friction may have discouraged use and limited the size of participants' social networks on the platform.

7.0.2 Future Work. Based on our findings and limitations, future work should focus on three main areas: platform development, refined evaluation, and comparative studies.

Platform Development and Usability.

- **Develop a Native Mobile Application:** The most critical next step is developing a native mobile application to improve accessibility and user experience, which would better align with how people communicate with strong ties in their daily lives.
- **Streamline Onboarding:** While the current deliberate friction in the friend-adding process is intended to support the platform's focus on strong ties only, the process must be streamlined to reduce user frustration when connecting with

known close contacts. Future work should explore less cumbersome connection methods, such as unique, time-limited invitation links or simplified code entry, while maintaining a required level of intentionality that prevents casual, weak-tie additions. Additionally, clearer introductory messaging (norm setting) is needed to explain *why* the process is designed this way, ensuring users understand and accept the platform's strong-tie philosophy.

- **Introduce Accessibility Features:** Adding transcription or translation capabilities to the audio letters, as planned, would enhance accessibility and utility, especially for users with hearing impairments or for geographically dispersed relationships speaking different languages.

Refined and Long-Term Evaluation.

- **Conduct a Longitudinal Study:** A study spanning several months is necessary to observe non-prompted, habitual use and to more accurately assess VoiceMail's causal impact on long-term feelings of emotional connection, social support, and relationship maintenance among strong ties.
- **Isolate Causal Variables:** Future experiments should incorporate a control group or comparison condition to more robustly test the effects of the specific design choices, such as the absence of public metrics or the asynchronous nature of the voice communication.

Comparative Research.

- **System Comparison:** A direct comparison study is needed to benchmark VoiceMail against existing communication tools that offer voice features, such as WhatsApp Voice Messages or iMessage audio clips. This would help to more clearly identify if the benefits observed are due to the voice modality itself or the intentional, private, and asynchronous context VoiceMail provides.
- **Explore Different Relationship Types:** While our study showed value regardless of geographical distance, future work could explore the platform's effectiveness for other challenging strong tie scenarios, such as relationships under high time constraint (e.g., parents with young children) or within specific demographic groups (e.g., older adults).

8 Conclusion

Physical distance and busy schedules pose significant challenges to maintaining meaningful relationships, and most existing digital platforms fall short of supporting intimate, authentic exchanges for strong ties. In response, we introduced VoiceMail, a web-based platform for asynchronous, private audio letters designed to nurture close relationships through intentional and personalized voice-based communication. Our deployment study indicated that participants felt happier, appreciated, and more emotionally connected through the use of VoiceMail while also experiencing less pressure compared to standard social platforms.

Alongside the promising trends we observed, our evaluation revealed important areas where further progress is needed. Small sample size, short study duration, and reliance on web-only access constrained our ability to assess long-term engagement and organic adoption. Onboarding friction and skepticism about VoiceMail's

uniqueness relative to existing voice messaging tools also emerged as key areas for improvement.

Despite these challenges, our work demonstrated the potential of intentional, voice-driven communication for fostering genuine social connectedness. Looking ahead, advancing the platform with a dedicated mobile app, enhanced onboarding clarity, and accessibility features will be critical for broader adoption. Longer-term, comparative studies and research with a more diverse user base are also needed to robustly evaluate VoiceMail's impact and clarify its unique advantages.

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A Pre-Survey Questions

VoiceMail Pre-Survey

Thank you for participating in this brief survey! It should take approximately 3–5 minutes to complete. We are developing a new communication app called VoiceMail and want to understand your current habits and feelings about staying in touch with close friends and family.

* Indicates required question

Email (the one you will be using for VoiceMail) *

Your answer

Gender Identity *

☐ Male

☐ Female

☐ Prefer not to say

☐ Other: _____

Age *

Your answer

Figure 4

Think of one close friend or family member (a "strong tie") you communicate with * most frequently that you don't see in person often. How often do you interact?

☐ Daily

☐ A few times a week

☐ Once a week

☐ A few times a month

☐ Rarely

Now, think of other strong ties you wish you could connect with more, but interact with less often. What is your typical frequency of interaction with them? *

☐ Daily

☐ A few times a week

☐ Once a week

☐ A few times a month

☐ Rarely

☐ N/A

Figure 5

Rank which methods you use most often to have personal conversations with these close friends/family? *

	1	2	3	4	5	Don't use
Texting	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Social Media	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Email	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Phone Calls	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Video Calls	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

How often do you send voice memos for personal communication? *

☐ Daily

☐ A few times a week

☐ Once a week

☐ A few times a month

☐ Rarely

☐ Never

Figure 6

When I receive a personal message, I feel I should respond as soon as I can. *

☐ Strongly Agree

☐ Agree

☐ Neutral

☐ Disagree

☐ Strongly Disagree

The volume of notifications I receive in a typical day is manageable. *

☐ Strongly agree

☐ Agree

☐ Neutral

☐ Disagree

☐ Strongly disagree

Figure 8

If you rarely or never use voice memos, what are the main reasons you choose not to use them? (respond with N/A if this doesn't apply to you) *

Your answer _____

When you do send a voice memo, what are your main reasons? (select all that apply) *

☐ I'm in a hurry and it's faster than typing

☐ I'm telling a long story or explaining something

☐ I want to show my emotion/tone

☐ I'm multitasking and can't use my hands

☐ I want to send a sound from my environment (e.g. music, a party)

☐ I just don't feel like typing

☐ I don't send voice memos

☐ Other: _____

How do you generally feel when you receive a voice memo? *

Your answer _____

Figure 7

VoiceMail Description

VoiceMail is a modern application designed for sending personal, heartfelt "voice letters" to your friends and loved ones. It helps foster deeper connections by moving beyond simple text and embracing the warmth of the human voice.

To create a voice letter, you can record an audio message up to five minutes long. You can also attach up to three photos and choose a beautiful background to create a unique and meaningful digital message.

Based on this description, what are your initial thoughts on the application? *

Your answer _____

How often, if at all, would you see yourself sending messages using this application? *

☐ Daily

☐ A few times a week

☐ Once a week

☐ A few times a month

☐ Rarely

☐ Never

Figure 9

If you used this application, who would you send messages to? *(select all that apply)* *

- ☐ Close friends
- ☐ Family members
- ☐ A significant other
- ☐ Friends I haven't talked to in a long time
- ☐ Acquaintances
- ☐ Not sure
- ☐ I would not use this application

How many close friends or family members (strong ties) do you plan to send a voice letter to if you begin using VoiceMail? *

- ☐ 1
- ☐ 2
- ☐ 3
- ☐ 4
- ☐ 5
- ☐ Other: _____

Figure 10

Now, think of another friend/family member you listed in the previous section that you interact with the least often. What is your typical frequency of interaction with them? *

- ☐ Daily
- ☐ A few times a week
- ☐ Once a week
- ☐ A few times a month
- ☐ Rarely
- ☐ I only listed one

By checking this box, I confirm that my participation in this survey is voluntary * and I consent to allow my responses and usage data to be collected and used confidentially for data analysis for a college class project.

☐ I consent

Any final thoughts or questions?

Your answer _____

Figure 12

B Post-Survey Questions

Please list the emails of those people below. If there is more than one, separate with a comma (i.e., staceyh@umich.edu, camrynt@umich.edu, anaronqu@umich.edu, ksmcl@umich.edu) *

Your answer _____

Think of one of your close friends/family members you mentioned in the pervious * section that you communicate with the most. How often do you interact with them in any manner (in person, phone call, text message, etc.)?

- ☐ Daily
- ☐ A few times a week
- ☐ Once a week
- ☐ A few times a month
- ☐ Rarely

Figure 11

VoiceMail Post-Survey

* Indicates required question

Email *

Your answer _____

On average, how often did you send a VoiceMail letter during the study? *

- ☐ Daily
- ☐ A few times a week
- ☐ Once a week
- ☐ A few times over the whole study
- ☐ I did not send any

Figure 13

How many close friends or family members (strong ties) did you send letters to using VoiceMail? *

☐ 1

☐ 2

☐ 3

☐ 4

☐ 5

☐ Other:

When I received a VoiceMail letter, I felt I should respond as soon as I can. *

☐ Strongly Agree

☐ Agree

☐ Neutral

☐ Disagree

☐ Strongly Disagree

How did you generally feel when you received a VoiceMail letter? *

Figure 14

Please describe a specific time during the study (if any) when you felt VoiceMail provided a positive or meaningful connection. *

Please rate your overall experience using the VoiceMail app. *

12345

Very Poor☐☐☐☐☐Excellent

Figure 16

Using VoiceMail helped me feel more connected to the friends/family I used it with. *

☐ Strongly Agree

☐ Agree

☐ Neutral

☐ Disagree

☐ Strongly Disagree

The slower pace of VoiceMail felt more meaningful than my usual texting or social media interactions. *

☐ Strongly Agree

☐ Agree

☐ Neutral

☐ Disagree

☐ Strongly Disagree

If you were hesitant to use voice memos before this study, did VoiceMail change your feelings about sending or receiving them? Why or why not? *

Figure 15

How easy or difficult was it to use the following features? *

	Very Easy	Easy	Neutral	Difficult	Very Difficult	N/A
Finding and adding a friend (with the friend code)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Recording your voice letter	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Adding photos to a letter	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Listening to a received letter	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

We implemented a daily limit of 2 letters per day to a single person. How did this feature feel? *

☐ It felt too restrictive

☐ It felt just right and encouraged me to be more thoughtful.

☐ I didn't notice this limit.

☐ Other:

Figure 17

What did you like most about the VoiceMail app? *

Your answer

What did you find most frustrating or difficult? What would you change? *

Your answer

Did you encounter any bugs or technical issues? If so, please describe them. *

Your answer

Will you continue to use VoiceMail now that the study is over? *

☐ Yes

☐ No

☐ Maybe

Why or why not? *

Your answer

Figure 18

Any final thoughts or feedback about your experience with VoiceMail?

Your answer

Figure 19

C Interview Questions

Background Information

Question	Follow-ups
With people you are close to in your life, how do you guys usually communicate (text, call, in person, etc.), and at what frequency?	Is that any different with the people you invited onto the platform?
Are you satisfied with how you stay in touch with those people?	Did that impact your desire to use VoiceMail with that person? What do you find difficult about keeping in touch with people you are close to?
How did you decide which people to invite to VoiceMail?	Geographically, how far away are you from those people?

VoiceMail Usage

Question	Follow-ups
Whenever you decided to send a letter, what inspired you to do so?	What types of things did you share in your voice letters? Did you usually curate it for one person in particular, or send a general letter to multiple people? How did you feel about the 5-minute limit?
How did you feel when you received a letter?	How did you feel when listening to the voice messages? What was your thought process in responding to them? Did you ever communicate about the app or the letters outside of the VoiceMail platform? What was the nature of those conversations?
Did you listen to the first letter you received from the VoiceMail team?	Did hearing that change your idea of how you would use the platform from before you listened to the message? In what way(s)?
How was your experience using the app?	What are your thoughts on the design? Were there any parts that ever caused you frustration or annoyance in using them? Did you use the "Sent Letters" page on the profile? Were you aware that there was a daily letter limit? Did you ever encounter that error?

Reflective Questions

Question	Follow-ups
In relationships where you felt you got more value out of being connected on VoiceMail, why do you think that was?	What about for connections where you didn't feel as much value added through this platform?
This study's timeframe was pretty short. Could you see yourself using this app for longer in the future? Why?	
What did you like about VoiceMail? Is there anything you didn't like or would change about this platform?	How did this platform feel compared to other social platforms designed to keep people in touch? Has VoiceMail impacted your view of online communication or communication in other formats? And in what way?