Vintage Meets Modern: A Retro-Inspired Audio Guestbook for Event Communication

Vanessa Cesário
Interactive Technologies Institute
(ITI/LARSyS), IST University of
Lisbon
vanessa.cesario@tecnico.ulisboa.pt

ABSTRACT

For this Demos track, we created an audio guestbook using a repurposed 1970s telephone, which adds a nostalgic touch while providing a unique and interactive way for guests to leave recorded messages during an event. The use of a vintage telephone offers a contrast to modern recording devices, such as smartphones, and combines nostalgia with the convenience of technology. The audio guestbook allows guests to record short audio messages that can be played back later, providing a way for guests to express well wishes and share thoughts and memories. We believe this prototype has the potential to inspire the *Communities & Technology* community to think creatively about technology-mediated communication systems and provide valuable insights into social interactions and communication. Additionally, the design and usability of the audio guestbook, including the repurposed vintage telephone, can be evaluated to understand how to create an effective and user-friendly experience for guests.

CCS CONCEPTS

• Hardware – communication hardware interfaces and storage – sound-based input/output

KEYWORDS

audio guestbook, vintage telephone, technology-mediated communication, social interactions, voice-based interactions

1 The Potential of Audio Guestbooks

Audio guestbooks are a unique and interactive way to add a personal touch to any event, whether it be a wedding, birthday party or graduation. They enable guests to leave audio messages, which can be more expressive and personal than written messages, allowing guests to speak directly to the host or honoree in their own voice and with their own inflections, making the messages feel more genuine and heartfelt. With the widespread use of smartphones and the availability of audio recording apps, it has become increasingly easy to create your own audio guestbook for events. Audio guestbooks can be a valuable tool for researchers in the field of Human-Computer Interaction (HCI), offering a rich source of data on social interactions and communication. Research has shown that auditory stimuli, such as audio messages, can elicit stronger emotions than visual stimuli [9,26] and are effective at conveying tone, urgency, emotion, and purpose. Audio messages have also been found to contain high proportions of advertising, humor, drama, and political content [9]. In contrast, text and image messages may be more limited in their ability to fully capture the sender's intent and may be more prone to misinterpretation.

Audio messaging and voice-based interactions are gaining popularity and are being studied to understand how they differ from text communication [16]. The proliferation of audio-based interfaces may reduce the toxicity and negativity of technology-mediated interactions compared to text-based interfaces and may also lead to changes in the relative prevalence of different topics, such as an increase in the use of non-semantic or lyrical content in audio interactions. Audio messaging on social media platforms has also become more popular, with many users choosing to send voice messages instead of traditional text-based messages. A survey conducted in the United States found that 16% of participants sent voice messages at least once a day [9]. In addition to being a popular form of communication on social media, audio messaging can also promote greater intimacy and allows for more ambiguity than text communication [20,27]. Furthermore, a recent dataset of real-world audio tweets, as well as text and video/image tweets from the same user accounts, revealed that audio tweets were significantly less toxic and had a lower overall sentiment compared to both text tweets and the accompanying text for the audio tweet [16]. This finding suggests that audio tweets do not simply supplement the text, but rather serve as the primary content themselves. In contrast, previous research has shown that video/image tweets tend to play a subordinate role to text, which was also observed in the current dataset [14]. These results suggest that audio tweets

may be a particularly important form of media tweet, serving as the main rather than supplementary content. However, it is worth noting that audio messaging may present some drawbacks for those with low verbal language skills, who may prefer text-based communication [20].

2 The Role of Emotion in Audio Message

There has been a lot of research on the impact of media format on online content, particularly in the context of social media messages. Some studies have found that auditory stimuli, such as audio messages, can elicit stronger emotions than visual stimuli [9,26], and are effective at conveying tone, urgency, emotion, and purpose. Audio messages have also been found to contain high proportions of advertising, humor, drama, and political content [9]. In contrast, text and image messages may be more limited in their ability to fully capture the sender's intent and may be more prone to misinterpretation. There is a focus in the fields of HCI and Interaction Design on designing technology that can facilitate relatedness experiences over a distance or asynchronously (e.g. [12,15]). However, most of these ideas focus on functionality rather than the specific form of interaction. The way a message is prepared, sent, received, and consumed can have a significant impact on the resulting experience of relatedness [5].

Technology-mediated relatedness can be particularly important for people in long-distance relationships or those with different daily routines [5], as it allows them to maintain a sense of connection and emotional expression with their loved ones. Expression of affection is crucial for people's well-being [6] and fulfills a basic psychological need for relatedness [19,25]. However, it is important to note that technology cannot fully replace in-person interactions and that a balance between the two is necessary for healthy relationships.

The impact of media format on online content can be understood by comparing the lexical features of audio and text social media messages. Gabriel Haas and colleagues [9] conducted a survey and a field study and found that people use voice messages to convey complex ideas, accurately express emotions, and add humor or drama to their messages. Alexandre Marros and colleagues [18] found that audio messages in WhatsApp groups often contained political content and had different language attributes depending on whether they were popular or only shared once.

Shared activities can improve social outcomes from communication, especially for intergenerational communication [2]. However, most prior research on technology systems that support shared context and activities has focused on functionality rather than form and interaction [13,17,21]. Snapchat, an instant messaging system that deletes messages after they are viewed, can only be fully understood from an experiential perspective. Strong social connections and inter-personal support have been shown to have a positive impact on people's health and well-being by mitigating the risk of social isolation [11]. There is a need for research that considers the subtle differences in functionality, form, and interaction that can impact the resulting experiences in technology-mediated communication.

3 Audio Messaging vs. Video Messaging

While video messaging can provide an even richer form of communication, audio messaging offers certain advantages that make it a more suitable choice for an event guestbook.

Emotional connection: Audio messages can provide a more intimate and personal form of communication, allowing guests to convey emotions, tone, and inflections more effectively than written messages. Video messaging, on the other hand, may make some guests feel self-conscious or camera-shy, which could limit their willingness to participate.

Simplicity and focus: Audio messaging focuses solely on the guest's voice, eliminating the need for them to worry about their appearance or the visual background. This allows guests to concentrate on the content of their message, which can lead to more genuine and heartfelt expressions.

Lower barrier to participation: Video messaging often requires a more sophisticated setup, including lighting and camera equipment, which can be time-consuming and expensive. Audio messaging, on the other hand, has fewer logistical constraints, making it more accessible and easier to implement at various events.

4 Vintage and Antique Objects in HCI

Vintage and antique objects are those that have achieved a certain age and are often valued for their historical or aesthetic qualities [7]. Despite this, the relationship between vintage and modern in the field of HCI has received relatively little attention. Previous research on vintage themes in HCI has frequently focused on secondhand shopping and exploring the reasons behind decisions to acquire, preserve, or dispose of vintage objects [8,22]. One example of vintage themes being integrated into HCI is the work of Hopmann and colleagues [10], who drew inspiration from old analog radios to design a vintage-themed graphical interface for a digital music collection. The intention was to create a device that was both familiar and pleasing to use, as well as practical. Bowser and colleagues [4] also investigated the motivations and practices of secondhand shoppers, particularly those driven by style, playfulness, and the enjoyment of treasure hunting. In general, vintage themes can provide an abundant source of inspiration for HCI designers and researchers, and present opportunities to consider sustainability and the reuse of older objects in new contexts. The intersection of vintage and modern in HCI can provide a unique opportunity to blend the nostalgia and charm of older objects with the convenience and functionality of modern technology. For example, designers and researchers may consider how to incorporate vintage aesthetics into the

design of digital devices, such as smartphones or laptops, to create a sense of nostalgia and connection with the past. Incorporating vintage themes into HCI can also raise important questions about sustainability and the reuse of older objects. Many vintage objects are still functional and can be repurposed for new uses, rather than being discarded in favor of newer, more technologically advanced options. This not only reduces waste and conserves resources, but also allows for the preservation of historical and cultural artifacts. Additionally, research on vintage trends can provide valuable insights into consumer behavior and the motivations behind the acquisition and disposal of vintage objects. This can inform the design of digital platforms and interfaces for vintage or secondhand retail, as well as the development of sustainable design practices. Overall, the incorporation of vintage themes into HCI offers the opportunity to create aesthetically pleasing and functional designs while also considering the broader impacts on society and the environment.

5   Description of the System

Imagine a vintage 1970's rotary telephone repurposed into a one-of-a-kind audio guestbook. The aim of this system was to provide a unique and interactive way for guests to leave recorded messages. Firstly, an old rotary telephone was acquired and opened (Figure 1). All components were removed except for the hook switch and wires that were connected to the headphone. A 3.1 mono jack was then wired in for microphone and speaker functionality. As the control unit for the guestbook, a Raspberry Pi 3 (RP3) was utilised. This device was chosen as it is small enough to fit within the telephone and also has wifi capabilities. An USB audio adaptor was connected between the RP3 and the headphone to ensure high-quality sound recordings. In order to provide an interactive aspect to the guestbook, a python script was programmed. This script runs on startup and detects when the headphone is lifted, playing a pre-recorded message followed by a tone indicating the start of the recording. The message is recorded when the headphone is replaced or if it exceeds three minutes (indicated by a beep and an occupied sound). In order to facilitate easy access to the recorded messages without having to open the telephone, the RP3 was configured as a wireless hotspot, allowing for the sharing of the recordings folder via various smartphone apps (Figure 2).

6   The Appeal of Audio Messaging through a Rotary Telephone

The vintage aspect of the rotary telephone creates a sense of charm and warmth, setting it apart from modern devices. This nostalgic touch can engage guests and encourage them to participate in the audio guestbook. The physical act of picking up the rotary telephone and dialling promotes a more

deliberate and thoughtful form of communication. This tangible interaction with the device can lead to more meaningful and heartfelt messages, as opposed to the casual nature of using a smartphone. A rotary telephone offers a simple and intuitive user experience that can be easily understood by guests of all ages, including those who may not be as familiar with modern technology. This makes it more inclusive, allowing a broader range of guests to participate in the audio guestbook.

Figure 1: The left side illustrates the repurposed 1970's rotary telephone that was acquired and disassembled for our audio guestbook system, highlighting its vintage aesthetic. The right side of the image shows the inner workings of this old rotary telephone.

Figure 2: The left side shows the interior of our prototype with Raspberry Pi 3 and USB audio adapter. The right side shows the retro-inspired audio guestbook prototype with wireless hotspot for easy access to recorded messages folder via one smartphone app.

7   Playfulness, Discovery and Learning

By using a vintage rotary telephone as a medium for audio messaging, we invite guests to explore new ways of engaging with audio, vintage objects, and each other. This section will delve into the potential for learning and uncovering new use cases through playfulness and discovery.

Encouraging creativity: The novelty of the rotary telephone encourages guests to think creatively about how they interact with the device and leave messages. This playful engagement can lead to unique and memorable messages, ranging from improvised songs and poems to shared stories and inside jokes. These creative expressions can provide deeper insights into the personalities of guests and foster a sense of community among event attendees.

Exploring the past: The vintage nature of the rotary telephone can spark curiosity about the history of communication technology and how it has evolved over time. This can lead to discussions and shared experiences among guests, bridging generational gaps and encouraging a greater appreciation for the technological advancements that have shaped our modern world.

Reimagining audio communication: By focusing on audio messaging, the retro-inspired audio guestbook challenges the dominance of text-based and visual communication in today's digital age. This opens up opportunities for guests to discover new ways of engaging with audio, such as experimenting with different vocal tones, accents, and storytelling techniques. This playful exploration can reveal the unique qualities of audio communication and encourage a renewed appreciation for the spoken word.

Rediscovering the value of vintage objects: The rotary telephone, as a symbol of a bygone era, serves as a reminder that vintage objects can still hold value and relevance in our lives. By repurposing this old technology for a modern purpose, the audio guestbook encourages guests to consider the potential of other vintage objects and how they might be integrated into contemporary experiences. This can inspire more sustainable practices, as well as a greater appreciation for the craftsmanship and design of the past.

8 The Audio Guestbook's Potential for Community Building and Cultural Exchange

The potential of the audio guestbook, particularly when paired with a vintage rotary telephone, aligns well with the themes and values of the *Communities & Technology* conference. This approach to communication and connection contributes to the development of effective communities by fostering collaboration, promoting cultural diversity, and encouraging creative exploration.

Strengthening social connections: It encourages guests to engage with one another in a more personal and meaningful manner than traditional text-based guestbooks. By leaving audio messages, guests can convey their emotions, stories, and experiences in a richer and more authentic way. This can lead to stronger social bonds among community members, promoting a sense of belonging and unity.

Celebrating cultural diversity: Its focus on audio communication highlights the importance of preserving and celebrating various forms of cultural expression. Audio messages can capture the nuances of different languages, accents, and storytelling traditions, allowing for a more inclusive representation of the community's diverse backgrounds and experiences. By celebrating these unique forms of expression, the audio guestbook fosters an environment that values cultural diversity and encourages mutual understanding.

Encouraging collaborative exploration: Its nostalgic nature invites guests to experiment with creative ways to engage with the device and each other. This shared experience can lead to collaborative problem-solving, storytelling, and discussions, fostering a sense of camaraderie and teamwork within the community.

Bridging generational gaps: The use of vintage technology creates opportunities for intergenerational connections and conversations. Older community members can share their experiences and memories of using such devices, while younger members can learn about the history and evolution of communication technology. These interactions can help bridge generational gaps, promoting greater understanding and empathy among community members.

Fostering eco-friendliness and conservation: The audio guestbook supports sustainable habits and highlights the significance of safeguarding our cultural legacy by giving new life to classic items for contemporary uses. This approach can motivate community members to reflect on their role in cultivating a greener future and appreciate the artistry and design of bygone eras.

9 Research to Conduct

Researchers in the field of HIC and *Communities & Technologies* could investigate the popularity and effectiveness of audio guestbooks compared to traditional written guestbooks for events such as weddings, birthdays and corporate events.

Areas of inquiry could include the content of audio messages recorded in audio guestbooks and the types of comments and well-wishes that are most commonly shared, the impact of audio guestbooks on the host or honoree's perception of the event, and the role of audio guestbooks in facilitating social interactions at events. The design and usability of audio guestbook systems, including hardware and software components, could also be explored.

One area of inquiry could be the examination of how the use of a vintage telephone, as opposed to modern recording devices, affects the user experience of recording and listening to audio messages. Factors such as ease of use, perceived authenticity, and overall satisfaction could be evaluated. Additionally, it would be worthwhile to examine the impact of the design of the telephone on the content and tone of the audio messages recorded by guests.

Another important area of research could be investigating how guests perceive the audio guestbook in relation to other forms of communication, such as written guestbooks or face-to-face

conversations. Investigating how to design and use audio guestbooks in a way that promotes guest interaction and engagement at events is also worth considering.

10   Limitations and Ethical Issues

When using audio guestbooks in the field of HCI and *Communities & Technologies*, there are several limitations and ethical issues to consider, particularly related to privacy. Some potential limitations include that (i) Audio guestbooks may not be suitable for all types of events or audiences: some guests may not be comfortable with recording audio messages, or may not have access to the necessary recording devices; (ii) Audio guestbooks may require additional resources and logistical considerations: setting up and managing an audio guestbook can be more complex and time-consuming than a written guestbook, as it involves setting up recording equipment; (iii) Audio guestbooks may raise privacy concerns: some guests may not want their voices to be recorded and played back, or may have concerns about the recordings being shared with others; (iv) Transcribing and analyzing audio messages can be time-consuming and labor-intensive: depending on the size and scope of the study, transcribing and coding a large number of audio messages can be a challenging and time-consuming task; (v) Audio guestbooks may not provide a representative sample of guests: some guests may be more likely to participate in the audio guestbook than others, which could bias the results of the study. It is crucial for researchers to take into account the potential impact of these issues when interpreting their findings. To ensure the validity and reliability of the study, researchers should proactively address these concerns in the design and execution of their research.

Acknowledgements

REFERENCES

[1]   Thomas Adelaar, Susan Chang, Karen M. Lancendorfer, Byoungkwan Lee, and Mariko Morimoto. 2003. Effects of Media Formats on Emotions and Impulse Buying Intent. *Journal of Information Technology* 18, 4 (December 2003), 247–266. DOI:https://doi.org/10.1080/0268396032000150799

[2]   Rafael Ballagas, Joseph "Jofish" Kaye, Morgan Ames, Janet Go, and Hayes Raffle. 2009. Family communication: phone conversations with children. In *Proceedings of the 8th International Conference on Interaction Design and Children* (IDC '09), Association for Computing Machinery, New York, NY, USA, 321–324. DOI:https://doi.org/10.1145/1551788.1551874

[3]   Arnout B. Boot, Erik Tjong Kim Sang, Katinka Dijkstra, and Rolf A. Zwaan. 2019. How character limit affects language usage in tweets. *Palgrave Communications* 5, 1 (2019), 1–13.

[4]   Anne E. Bowser, Oliver L. Haimson, Edward F. Melcer, and Elizabeth F. Churchill. 2015. On Vintage Values: The Experience of Secondhand Fashion Reacquisition. In *Proceedings of the 33rd Annual ACM Conference on Human Factors in Computing Systems* (CHI '15), Association for Computing Machinery, New York, NY, USA, 897–906. DOI:https://doi.org/10.1145/2702123.2702394

[5]   Wei-Chi Chien, Sarah Diefenbach, and Marc Hassenzahl. 2013. The whisper pillow: a study of technology-mediated emotional expression in close relationships. In *Proceedings of the 6th International Conference on Designing Pleasurable Products and Interfaces* (DPPI '13), Association for Computing Machinery, New York, NY, USA, 51–59. DOI:https://doi.org/10.1145/2513506.2513512

[6]   Margaret S. Clark, Julie Fitness, and Ian Brissette. 2001. Understanding people's perceptions of relationships is crucial to understanding their emotional lives. In *Blackwell handbook of social psychology*, Garth Fletcher and Margaret Clark (eds.). Blackwell, Massachusetts, USA, 253–278. DOI:https://doi.org/10.1002/9780470998557.ch10

[7]   K. Duffy, P. Hewer, and Juliette Wilson. 2013. "Granny would be proud": on the labours of doing vintage, practices and emergent socialities. Retrieved January 9, 2023 from https://www.semanticscholar.org/paper/%27Granny-would-be-proud%27%3A-on-the-labours-of-doing-Duffy-Hewer/34f3327ba9a38c1fbbf02bfdec2c0e47fe73bf39

[8]   Silke Gegenbauer and Elaine M. Huang. 2012. iPods, Ataris, and Polaroids: a personal inventories study of out-of-use electronics in Swiss households. In *Proceedings of the 2012 ACM Conference on Ubiquitous Computing* (UbiComp '12), Association for Computing Machinery, New York, NY, USA, 531–535. DOI:https://doi.org/10.1145/2370216.2370294

[9]   Gabriel Haas, Jan Gugenheimer, Jan Ole Rixen, Florian Schaub, and Enrico Rukzio. 2020. "They Like to Hear My Voice": Exploring Usage Behavior in Speech-Based Mobile Instant Messaging. In *22nd International Conference on Human-Computer Interaction with Mobile Devices and Services* (MobileHCI '20), Association for Computing Machinery, New York, NY, USA, 1–10. DOI:https://doi.org/10.1145/3379503.3403561

[10] Mathieu Hopmann, Mario Gutierrez, Frédéric Vexo, and Daniel Thalmann. 2012. Vintage radio interface: analog control for digital collections. In *CHI '12 Extended Abstracts on Human Factors in Computing Systems* (CHI EA '12), Association for Computing Machinery, New York, NY, USA, 649–660. DOI:https://doi.org/10.1145/2212776.2212837

[11] James S. House, Karl R. Landis, and Debra Umberson. 1988. Social Relationships and Health. *Science* 241, 4865 (July 1988), 540–545. DOI:https://doi.org/10.1126/science.3399889

[12] S. Howard, F. Vetere, M. Gibbs, J. Kjeldskov, S. Pedell, Karen Mecoles, and Marcus Bunyan. 2004. Mediating Intimacy: Digital Kisses and Cut and Paste Hugs. Retrieved January 9, 2023 from https://www.semanticscholar.org/paper/Mediating-Intimacy%3A-Digital-Kisses-and-Cut-and-Hugs-Howard-Vetere/84dc3248e5c3f9d42fb35b06b93e737f86091476

[13] Lee Humphreys. 2010. Mobile social networks and urban public space. *New Media & Society* 12, 5 (August 2010), 763–778. DOI:https://doi.org/10.1177/1461444809349578

[14] Indratmo, Michael Zhao, and Karen Buro. 2020. Comparisons Between Text-Only and Multimedia Tweets on User Engagement. In *2020 IEEE International Conference on Systems, Man, and Cybernetics (SMC)*, IEEE Press, Toronto, ON, 3825–3831. DOI:https://doi.org/10.1109/SMC42975.2020.9283438

[15] Joseph "Jofish" Kaye and Liz Goulding. 2004. Intimate objects. In *Proceedings of the 5th conference on Designing interactive systems: processes, practices, methods, and techniques*, ACM, Cambridge MA USA, 341–344. DOI:https://doi.org/10.1145/1013115.1013175

[16] Jamy Li and Karen Penaranda Valdivia. 2022. Does Media Format Matter? Investigating the Toxicity, Sentiment and Topic of Audio Versus Text Social Media Messages. In *Proceedings of the 10th International Conference on Human-Agent Interaction* (HAI '22), Association for Computing Machinery, New York, NY, USA, 13–22. DOI:https://doi.org/10.1145/3527188.3561927

[17] Silvia Lindtner, Judy Chen, Gillian R. Hayes, and Paul Dourish. 2011. Towards a framework of publics: Re-encountering media sharing and its user. *ACM Trans. Comput.-Hum. Interact.* 18, 2 (July 2011), 5:1-5:23. DOI:https://doi.org/10.1145/1970378.1970379

[18] Alexandre Maros, Jussara Almeida, Fabrício Benevenuto, and Marisa Vasconcelos. 2020. Analyzing the Use of Audio Messages in WhatsApp Groups. In *Proceedings of The Web Conference 2020* (WWW '20), Association for Computing Machinery, New York, NY, USA, 3005–3011. DOI:https://doi.org/10.1145/3366423.3380070

[19] A. H. Maslow. 1954. *Motivation and Personality* (1st edition ed.). Harper & Brothers.

[20] Tuomas Niinimaki, Arttu Piri, and Casper Lassenius. 2009. Factors Affecting Audio and Text-Based Communication Media Choice in Global Software Development Projects. In *Proceedings of the 2009 Fourth IEEE International Conference on Global Software Engineering* (ICGSE '09), IEEE Computer Society, USA, 153–162. DOI:https://doi.org/10.1109/ICGSE.2009.23

[21] 1615 L. St NW, Suite 800 Washington, and DC 20036 USA202-419-4300 | Main202-857-8562 | Fax202-419-4372 | Media Inquiries. 2009. Social Isolation and New Technology. *Pew Research Center: Internet, Science & Tech*. Retrieved January 9, 2023 from https://www.pewresearch.org/internet/2009/11/04/social-isolation-and-new-technology/

[22] William Odom, James Pierce, Erik Stolterman, and Eli Blevis. 2009. Understanding why we preserve some things and discard others in the context of interaction design. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems* (CHI '09), Association for Computing Machinery, New York, NY, USA, 1053–1062. DOI:https://doi.org/10.1145/1518701.1518862

[23] Soujanya Poria, Erik Cambria, Newton Howard, Guang-Bin Huang, and Amir Hussain. 2016. Fusing audio, visual and textual clues for sentiment analysis from multimodal content. *Neurocomputing* 174, (January 2016), 50–59. DOI:https://doi.org/10.1016/j.neucom.2015.01.095

[24] Ashwini Rao, Akriti Ahuja, Shyam Kansara, and Vrunda Patel. 2021. Sentiment Analysis on User-generated Video, Audio and Text. In *2021 International Conference on Computing, Communication, and Intelligent Systems (ICCCIS)*, 24–28. DOI:https://doi.org/10.1109/ICCCIS51004.2021.9397147

[25] Richard M. Ryan and Edward L. Deci. 2000. Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist* 55, (2000), 68–78. DOI:https://doi.org/10.1037/0003-066X.55.1.68

[26] Thomas Schmidt, M. Burghardt, and Christian Wolff. 2019. Toward Multimodal Sentiment Analysis of Historic Plays: A Case Study with Text and Audio for Lessing's Emilia Galotti. Retrieved January 9, 2023 from https://www.semanticscholar.org/paper/Toward-Multimodal-Sentiment-Analysis-of-Historic-A-Schmidt-Burghardt/ffe532a044e0ffa59d85bf574dc785c6f2e19864

[27] Lauren E. Sherman, Minas Michikyan, and Patricia M. Greenfield. 2013. The effects of text, audio, video, and in-person communication on bonding between friends. *Cyberpsychology* 7, 2 (July 2013). DOI:https://doi.org/10.5817/CP2013-2-3