Moving Away and Keeping in Touch Through Multiple Communication Channels

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ABSTRACT

From phone calls to instant messaging, a myriad of channels exist for users to communicate with their social ties. While it is nice to have an array of options to choose from, maintaining several channels of communication can be overwhelming and hamper one's ability to manage them. This implores the question of how users cope with the vast number of ways to connect with others. To better understand the challenges associated with multiple communication channel use, this paper presents an investigation of how college graduates remain in touch with their college friends and acquaintances after relocating to a new place, and proposes design considerations to better facilitate the management of one's communications.

INTRODUCTION

Relationships are everything. They support people in times of distress [4], help them land gigs [11], expose them to new ideas [10], and according to Maslow, humans have a primal need to feel loved and cherished by others [16]. Clearly, social relationships are imperative to one's psychological and physiological well-being.

The recent proliferation of multiple means to communicate (SNS, IM, e-mail, phone, etc.) provides users with a wide variety of ways to connect with friends and kin, but comes with the caveat of making the management of one's communications much harder. This begs the question of how people cope with the deluge of ways to keep in touch. For instance, managing all of these channels may impart on one a sense of frustration, leading to users averting from some and forcing relationships that "could have been" to wither away. This problem has implored researchers to conjure new ways of redesigning such interfaces, predominantly by aggregating information across mediums into a single place [3,7,23]. Yet, users report that these interfaces are overwhelmed with information, bringing their usability and practicality into question. Other ideas may be worth exploring, and this venture should first begin with gaining a clearer understanding of our users' needs.

In support of this goal, our study seeks to present a mixedmethods investigation on how people manage multiple communication channels. We will focus on college graduates, for the reason that many of one's relationships are formed during college [12], and yet, these relationships are driven apart when students separate after graduation. Specifically, we will study college graduates who have relocated, for whom barriers to communication are especially salient due to a geographic separation from one's ties and having to juggle between old and new environments [22]. To compound the issues of relocating, depression, stress and the dissolution of relationships are common consequences of moving to a new place [15,20].

Drawing upon an analysis of participants' narratives on how they deal with multiple communication channels, we will reveal potential challenges faced when managing them, how they are assuaged, and how they might impact one's ability to keep in touch. More concretely, our study's design will be based on the overarching questions that follow:

- 1) Are there challenges associated with managing and staying active on one's communication channels? And if so, what are they and how do users overcome them?
- Users may avert from certain communication channels
 [2]. How do ties deal with situations where they don't use the same mediums to communicate?
- 3) How does the ability to manage one's communication channels impact one's social relationships?

The insights drawn from these narratives will better inform developers and designers how communication channels should be redesigned to facilitate a better management of them.

RELATED WORK

Previous work has investigated how users manage multiple digital artifacts [9,19], personal data [18,24], and e-mails [5]. While these studies shed light onto the difficulties of dealing with vast amounts of information, none have specifically looked at how people deal with multiple modes of communication nor how it might affect people's ability to keep in touch with their social ties.

To combat the issue of managing multiple communication channels, researchers have explored the idea of aggregating social data across platforms. Perhaps the closest work to our own is the study conducted by Juuso et al. [1], which inquired about people's thoughts on *mobile social phonebooks* (MSP); that is, contact lists in a mobile device, which in addition to being a contact list, contain data from the user's social media networks. For instance, an MSP may include a news feed or recent status updates appearing beside each contact. While most participants foresee themselves using MSPs in the future to better organize their contacts, they also brought up several concerns pertaining

Participant ID	Sex	Age	Race/ethnic group	Occupation	# of years since first relocation after college	# of times previously relocated	International(I)/ domestic (D)
P1	М	30	Asian	Graduate student	5	6	I
P2	М	24	Asian	Hardware Engineer	1	3	I
P3	F	22	Asian	Receptionist	<1	1	D
P4	F	22	White	Software Developer	<1	2	D
P5	М	23	White	Graduate student	~1	1	I
P6	Μ	27	White	Graduate student	<1	1	I
P7	Μ	24	White	Graduate student	1	1	I
P8	Μ	25	White	Graduate student	1	1	I
P9	Μ	26	White	Graduate student	1	2	I
P10	М	23	White	Graduate student	2	2	I
P11	М	27	White	Graduate student	<1	1	I
P12	М	26	White	Graduate student	<1	1	I

 Table 1. Demographic information of the twelve interviewees.

to how such interfaces might induce cognitive overload and cause security leaks from having all social data in a single place. Implementations of these interfaces elicited similar concerns [3,7,23].

This may suggest that aggregating social data is not a feasible direction. Further justification against adopting such interfaces can be found in the reasons why users prefer certain communication channels over others. For instance, Facebook is often viewed as a "bulletin board" of trivial, impersonal matters, while texting is seen as more intimate [25], and seemingly similar channels are still perceived differently depending on the social circle that one associates it with [17]. Not only are channels perceived in different lights, but the simple act of switching between channels seems to convey a sense of meaning and importance that people leverage in their social exchanges [6,21]. This implies that people cherish the idiosyncrasies that each channel has to offer; combining them may be detrimental to the user's experience, and worsen what we sought to improve.

That is not to say things should remain as they are. Aggregating channels is just one design choice out of a plethora. Other ideas are worth exploring, and understanding our users' needs will provide better grounds for conceiving them. Our study hopes to accomplish this goal.

METHOD

To understand how relocated college graduates manage communication with their college ties, we combined a broad-based survey with an interview study. The interview study served to enrich our understanding of each participant's needs, while the broad-based survey provided a sense of how well these needs generalized to others [14].

Admittedly, one shortcoming of this approach is that it could be difficult for participants to reflect on their communication practices in hindsight. In light of this, we considered asking participants to note their communications as part of a diary study, but decided against the idea for the reason that it may cause participants to be more mindful of their communications, and actually be less reflective of their usual practices.

Procedure

The broad-based survey was deployed first to allow us to refine the interview questions for gaining a deeper understanding of how people manage their communications. Participants signed a consent form before engaging in the study.

A physical co-located interview, seen as the "goldstandard" of qualitative research [8], has advantages such as enabling experimenters to read into the participant's nonverbal cues, building stronger rapport between interviewer and interviewee, and enhancing communication efficiency. Given these benefits, all interviews were conducted in-person (or video conferencing if necessary). The interviews were semi-structured to flesh out themes that we did not foresee, while still allowing for some consistency.

To mitigate hand-wavy and inaccurate reflections when asking subjects how well they manage their communication channels, participants were asked to spend the first five minutes of the interview reviewing the communication history on their mobile devices. We recognize that participants may not communicate entirely on their phone; however, we did not ask them to bring all their devices to the interview, since this is not feasible especially if some of their communication channels are on a desktop machine. Nonetheless, going through a partial part of one's communications should still aid in reconciling one's memories.

The interview began by asking participants simple questions to ease them into the more difficult ones, such as which communication channels they use to connect with college ties. Shortly thereafter, the interviewer inquired about the six questions from Appendix B, and probed further into the responses to those questions. Each interview was intended to be 30 minutes to an hour in length, as we hoped to spend about five to ten minutes on each question.

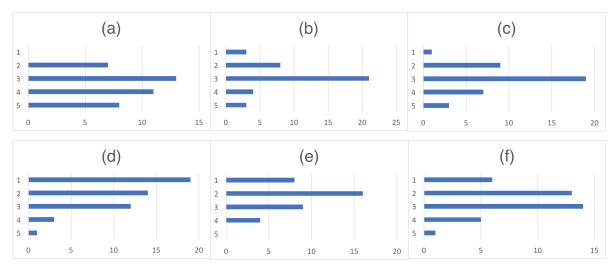


Figure 1. Likert-scale responses to the broad-based survey questions regarding people's desire and ability to remain in touch with their college ties. The y-axis denotes the Likert-scale rating (please refer to Appendix A for the scale) and the x-axis denotes the response count. (a) Desire to remain in touch with close friends from college; (b) ability to remain in touch with close college friends; (c) ability to manage one's communication channels to remain in touch with close college friends; (d-e) same as (a-c), but in regards to acquaintances rather than close friends.

We expected the broad-based survey to take about five minutes to complete. We did not ask respondents of the broad-based survey to review their communication history, as it is not something that we can enforce. The questions comprised of those related demographics, such as the respondent's gender, occupation, ethnic background, citizenship, current location, and the number of times the respondent had previously relocated (Appendix A). We also asked about their communication practices with college ties, such as roughly how many friends and acquaintances they made in college, how many of those ties they still communicate with, a rating of how personally relevant is keeping in touch with their college ties, and a rating of how well they manage their communication channels. Given that having to fill out long responses in surveys is generally disliked, only close-ended questions were included.

Participants

Subjects were recruited through Facebook social groups, Reddit, word of mouth, and listservs provided by our institution. 39 participants (23m, 16f) volunteered to take part in the survey. Respondents relocated an average of 3.59 times (min=1, max=9, SD=1.96). The average number of years since their first relocation after college graduation was 4.89 (min=1, max=10+, SD=3.93). 16 participants were international, and 23 participants were domestic. Participants ranged from 18 to 66 years old, and had varied socio-economic backgrounds.

Twelve respondents (10m, 2f) who completed the broadbased survey were recruited for the interview (Table 1). The age of the interviewees ranged from 22-30 years old (M=24.92, SD= 2.39). Interviewees were entered into a draw for a \$15 gift card.

Analysis

Interviews were recorded and later transcribed. Three researchers, all of whom were involved in conducting the interviews, analyzed the data using thematic analysis. Open and axial coding was employed to elicit emergent themes. The researchers initially carried out one iteration of open coding for three of the transcripts, to agree on a unified set of open codes. Open coding was then performed for an additional transcript, chosen randomly, to compute an interrater agreement percentage, which came out to be $\frac{\# \text{ of agreed upon cases}}{\text{total #of cases}} = \frac{15}{18} = 83.33\%$. The rest of the transcripts were divided evenly between the researchers and coded individually. The researchers later reconvened to agree on a set of axial codes.

Categories that emerged from the narratives included: *barrier/challenge, practice, workaround, impact,* and *feeling.* For instance, one participant (P11) increased his activity in certain communication channels to communicate with newly-formed connections (practice). This lead to a need to juggle between channels used by new and old ties (barrier/challenge). As a coping mechanism, he prioritized communications with close ties (workaround), which caused some relationships to dissipate (impact) and his feeling dissatisfied with his ability to keep in touch with his college friends (feeling).

FINDINGS

Participants spent an average of 16.62 minutes (SD=19.73) on the broad-based survey and an average of 25.17 minutes (SD=8.84) in the semi-structured interview. Seven interviews took place via video conferencing and five interviews were conducted in-person.

Participant ID	Sex	Age	Race/ethnic group	Occupation	# of years since first relocation after college	# of times previously relocated	International(I)/ domestic(D)
P13	М	66	Asian	Retired software developer	>10	2	D
P14	F	56	Asian	Retired civil servant	>10	7	D
P15	F	51	Asian	IT consultant	>10	2	D

Table 2. Demographics of the older age group for examining the long-term impact of communication channel management.

Quantitative Results

The broad-based survey results are summarized below. On average, participants used 9.5 communication channels (min=2, max=18, SD=4.67) prior to relocating. At the time of filling in the survey, participants reported using an average of 9.97 communication channels (min=3, max=19, SD=3.56). Most respondents made between 1-5 close friends in college (n=26), and 1-100 acquaintances (n=29). Most respondents still communicated with 1-5 close friends (n=22) and 1-10 acquaintances (n=23) from college.

The measures that follow are based on a 5-point Likert scale (see Appendix A). The results are graphically represented in Figure 1. While many participants expressed a desire to keep in touch with close ties (M=3.51, SD=1.02)and acquaintances (M=2.361, SD=1.08) from college, (n=32) reported several participants that their communications with them decreased, and gave an unsatisfactory rating on their ability to keep in touch with them (M=2.9, SD=0.97 for close friends and M=2.24, SD=0.93 for acquaintances). Further, participants rated their ability to manage their communications with their close college friends as being moderate (M=3.05, SD=0.92) and for acquaintances, they rated their abilities to be slightly well (M=2.5, SD=0.98).

Challenges and Barriers to Communication

Communication challenges arising from relocating after college graduation was a common occurrence for participants. One challenge, particularly for participants who moved away from home, was an increased obligation to inform physically distant ties about their lives "Challenges have been much more tangible from when I relocated... when I moved here I needed to communicate with my family, relatives and my college friends more" (P7). These participants also noted a greater reliance on mediated technologies for communication as they could no longer engage in direct face-to-face communication with ties back at home "I communicate with my family members very much since we don't have in person time with each other" (P10). Further, many participants expressed a sense of frustration toward juggling between new and old connections "It is very hard for me to manage all messages from my connections in Iran and new connections in Canada" (P11). Adopting new channels to connect with ties was also common, as encapsulated by the following quote: "When I was in Iran I didn't use Facebook but when I came to Germany I started using Facebook since everyone use it for communication" (P10). This resulted in burdening users with more channels to maintain.

Meanwhile, participants were limited by the amount of time and energy that they could dedicate toward their communication channels, as they were naturally leading busier lives after graduation. Many entered the workforce, graduate school, or were propelling their careers one way or another "*The most important barrier was the fact that I was very busy and didn't have enough time to keep in touch with friends from college*" (P4).

Participants often reported that having many communication channels impeded their ability to connect with college ties, due to the lack of consistency in where contacts are located "I use multiple apps because everyone is using different apps" (P6), and the bombardment of information within channels "Social network are very huge and I cannot get involved in new ones. For example, in Telegram, one in every 200 posts are of interest to me" (P11) and across channels "It's too much of a hassle to have a lot of apps to keep up with" (P4). This lead to several situations where participants would miss or forget to respond to friends "Sometimes you miss certain things when you have a bunch of messages, you miss some messages and it definitely affects your relationship with the person...it's the worst thing when you miss a message" (P2), miss important life events of their friends "Some of my friends got married and I didn't even know... In India, it happens so early. Yeah, I didn't know that and then after that two months, he suddenly sends a message and I was surprised. Birthdays too" (P2), as well as having to broadcast the same piece of news in several channels to reach different social circles "When I have a paper in a conference that I want to present, I use Facebook and Slack to inform everybody" (P7).

Coping Mechanisms

To accommodate for their busy schedules, participants coping mechanisms manage adopted to their communications. For instance, all participants prioritized communications with their closest ties "I spend time to communicate with people that I care most, not all of my acquaintances. I think we cannot do both" (P10). In spite of this, participants still desired to keep in touch with their peripheral ties, although it was predominantly for social capital rather than kinship "...so I will have job opportunities in Iran" (P2). Some participants reduced their activity in channels that they deemed less important "I turned off notifications from Facebook Messenger for the first year of my PhD, and didn't reply to my friends for a

whole year" (P1). Other participants made a conscious effort to ensure that messages were attended to in a timely manner, such as by "having a specific time to check messages and answering them if needed" (P11), personally making note of messages requiring a response "I have a notepad in my phone that I write any important notifications on it. I check my cell phone's notepad every for example four hours" (P10), and intentionally not reading messages in order to retain notifications of them "most of the time I don't open messages in order to have an indicator that I have unread messages" (P3). Lastly, participants had a tendency to avert from certain channels, even when they desired to use them, in order to keep the amount that they had to manage to a minimum "I really like Twitter, because it's very useful and interesting I think. But I don't use it because I think I can't check it regularly and it would too much for me so I choose not to use it at all" (P6).

These coping mechanisms either took valuable time out of their busy lives, or caused them to reduce, or even cease completely, communication with their college ties. In line with the survey results, all interviewees reported a disconnect between how much they wanted to remain in touch with their friends, and how well they were able to. For instance, after being asked how they felt about their communication with friends they were out of touch with, one participant expressed that "I don't have any communication with them, I miss them" (P2).

User Sentiments and Relational Impact

For many participants, the lack of communication with some of their ties brought forth feelings of dissatisfaction with their ability to keep in touch "I have tried to be active to reach that goal but I may not have reached my goal completely" (P7). Intriguingly, several participants blamed the inability to manage their relations on themselves "The problem is with you not the app since you are the one making the mistake so you should be careful not to miss any of the messages" (P2). Ties also became disappointed in one another as they expected the opposite party to enact on the relationship; they attributed a lack of communication to being uncared for "If you're always the one doing it first you'll feel like they don't really care... so you might be less inclined to reach out to them. If it's just one-sided, then I don't know then maybe it's not worth your time and maybe you should also move on to other people" (P4). A particularly telling quote was from P1, who felt neglected when a close friend did not inform him about his marriage "...they got married but why didn't they tell me. I thought we were close in our relationship".

Over time, many of our participants' college relationships withered away. As noted by P4, "You know what it hasn't been that long but I find that with my friends that are still in school, my relationships with have them lessened with them to a noticeable degree... because they have more time and they can become closer to other people and I cannot be closer to them". And after an extended period of no contact, it often became difficult to repair broken connections "After we stop talking fort a while, it's hard to initiate the conversation again" (P3).

Long-term Impact

For most of the interviewees, it had been less than a year since they relocated from college. We interviewed an older population to examine how communication management issues might impact college relationships after a significant amount of time has passed. We interviewed three broad-based survey respondents (1m, 2f) who have spent at least ten years living away from college (Table 2). Their ages ranged from 51-66 (M=57.67, SD=7.77). The interviews were conducted using video conferencing and lasted for an average of 25.67 minutes (SD=8.14).

All interviewees utilized phone and e-mail to communicate with their college ties, but only one (P15) was active on social media. One averted from social media use due to privacy concerns "Facebook is evil. Google is tracking you. So no thank you" (P13). The other felt that it was too superficial for her tastes and did not adopt social media for this reason "People are not really their true self on there...they put on a façade so I don't like it" (P14). P15 was active on a variety of channels, such as Facebook, SMS, Facebook Messenger, texting and BBM.

Interviews revealed that the relational impact of managing multiple modes of communication was much less pronounced for this group, as participants had less of a desire to connect with their college ties. Instead, they placed greater importance on their families "You start having a family, and that starts to take over...it's not a priority for me right now" (P14) and kinships formed within the workplace "When you're working together, sort out difficult problems, that's when you find out about what the other person is, so the feeling is much deeper" (P13).

Because P13 and P14 did not use many channels to communicate, they did not feel that managing them presented a challenge. However, P15 did, as she was active on several "*There are so many options. Everyone's using a lot of different channels so there's no consistency result...* you get bombarded with irrelevant information like ads and stuff and you feel overwhelmed so it makes the straight communications more challenging". She also reported a propensity to miss life updates and messages from her college ties, but stated that the relational impact was low as ties were already distant and were not greatly affected when they did not receive a timely response "Because people don't reach out that frequently anymore from my college...it doesn't really affect them. Everybody's just kind of distant right now".

In addition, P15 noted challenges in finding friends with whom she's lost touch with due to not knowing which channels they could possibly be using "You don't know what they'll be using...finding them in the first place can be *challenging if you've lost touch with them*". The implications of this for our younger set of interviewees is that, those who are out of touch with ties due to incompatible channel use, may have trouble finding one another at a later period if they wish to reconnect.

In summary, having multiple communication channels to manage is an impediment to keeping in touch with others; inevitably, relationships are left to erode with the passing of time.

IMPLICATIONS FOR DESIGN

The study's findings point to several design implications. Ultimately, designers and developers should explore ways that can help ease the management of multiple communication channels and mediate a sense of connectedness in relationships.

Communication across channels. Users should not have to adopt new channels or adjust their channel use for the sake of maintaining relationships. In line with Nouwens et al.'s suggestions for *cross-app* communication [17], we propose allowing users of one channel to be able to freely communicate with users of other channels. Furthermore, if a person would like to broadcast updates in multiple channels, they should be able to do so as a one-time action.

Personalizing notifications and reminders. To reduce the overload of information when using multiple communication channels, channels should make it easy for users to attend to personally relevant news and messages either intelligently or by providing an efficient way to set filters. Furthermore, P3's workaround of intentionally not reading messages to retain notifications on his device points to a need for channels to provide its users with the ability to mark messages as being unread, a feature that is already integrated into several e-mail providers, such as G-mail.

Ability to set automated messages. Often, senders feel a sense of neglect and for receivers, a sense of guilt, when messages are not responded to in a timely manner. At present, e-mail providers enable users to send an automatic response when they cannot readily attend to their e-mails. We propose that all channels integrate this feature. The message could also intelligently include personalized content, perhaps a photo of the sender and receiver, as a reminder of the closeness of their relationship.

Ease the process of finding people in communication channels. Due to the existence of multiple channels, it is often difficult to reconnect with lost ties. Designers and developers should look for ways to make it easier for users to locate others in their communication channels.

Conveying a sense of effort. As coined by Kelly et al., *effortful communication* refers to a form of communication that conveys an investment of effort [13]. For instance, the paper notes that Facebook users value a direct message moreso than a *like* from friends, because more investment is required on the sender's part when piecing together a direct

message. However, this isn't always feasible given the busy and bustling lives of our users. Communication channels could explore ways to efficiently convey effort, which may help mediate a greater sense of closeness between social ties.

LIMITATIONS AND FUTURE WORK

Due to an inadequate participant pool, our interviewees consisted mainly of white male graduate students. This relatively homogenous group could be a potential source of confounds.

Our study is further limited in that, when assessing longterm effects of college relationships, we interviewed a small sample that may not be representative of the general population. In particular, when these interviewees were in college, internet was not yet in widespread use, making it difficult to remain connected with college ties. Naturally, college relationships for this set of people became less important as they grew more distant. The situation may be different for millennials, as the advent of mediated technology, which enables dyads to remain connected despite a physical separation, makes geography less of a barrier to communication than it previously was. As a result, millennials may value their college relationships even after the test of time.

Although barriers to communication may be more pronounced for those who have relocated, the issue of managing multiple channels could very well be generalized to all people. Future studies should consider a broader, more diverse set of users.

CONCLUSION

There is a discrepancy between how much people want to keep in touch with their college ties and how much they actually do. Part of the reason, as evidenced by our study, is imposed by using multiple means to communicate. Relationships wither away as a consequence, leaving dyads upset at one another for being remiss in their duty to keep in touch, users disconcerted by the growing distance in relationships that they treasure, and the blaming of one's ineptitude on undesirable relational outcomes. Touching on this, the design of communication technologies should be reconsidered to facilitate a better management of them.

APPENDIX A: BROAD-BASED SURVEY QUESTIONS

- 1. Please indicate your occupation.
- 2. Please indicate your gender.
- 3. Please indicate your race/ethnic background.
- 4. Please indicate your citizenship.
- 5. Please indicates your current location.
- How many times have you previously relocated? (Scale: 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10+ # of times.)¹

¹ This scale is based on the 2012 national US average for number of times that a 22 year-old has relocated: https://fivethirtyeight.com/features/how-many-times-the-average-person-moves/.

- How long ago was the first time your relocated since graduating from college? (Scale: 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10+ # of years.)¹
- Which communication channels did you use prior to relocating? Order these channels by frequency of use. (A list will be provided². As the list may not be exhaustive (there are likely channels we are unaware of), respondents can add new entries if need be.)
- 9. What communications channels do you use now? Order these channels by frequency of use.
- 10. How many close friends did you make during college? (Scale: 0, 1-5, 6-10, 11-20, 12-30, 31-50, 51-100, 101-150, 151-200, 201-250, 251+ # of people)³
- 11. How many close friends from college do you still communicate with now? (Scale: 0, 1-5, 6-10, 11-20, 12-30, 31-50, 51-100, 101-150, 151-200, 201-250, 251+ # of people)⁴
- 12. Since the first time you relocated after college graduation, has your communication with close friends from college increased, decreased or remain unchanged?
- 13. In your opinion, how much do you desire to keep in touch with your close college friends? (Scale: A great deal, a lot, a moderate amount, a little, none at all)
- 14. How would you rate your ability to keep in touch with close friends from college? (Scale: Extremely well, very well, moderately well, slightly well, not well at all)
- 15. How would you rate your ability to manage all of your communication apps and services to keep in contact with your close college friends? That is, how well is your ability to respond to their messages in a timely manner, remain active on all of your communication apps/services, remain updated on news about them, etc.
- 16. Questions 12-15 repeated, but with respect to acquaintances.

APPENDIX B: INTERVIEW QUESTIONS

- 1. Could you describe the way you currently manage your communications? (Prompts: Describe how your communication practices have changed since you moved away from college. How do you balance between friends and acquaintances from college and new connections? How has your frequency of communication with college friends and acquaintances changed? Have you averted, became less active in, or adopted new channels? And if so, why and how has this affected your college relationships?)
- 2. How do you remain in touch with your college ties and acquaintances? (Possible prompts: How personally

relevant is keeping in touch with them? How well do you remain in touch with your friends and acquaintances from college? How do you ensure you remain updated on their lives? How do you ensure that you respond to their messages in a timely manner? How do you remember to catch up with them after a period of no communication? How do you remain in touch with acquaintances (if they only mention close friends)? Describe a situation where you were out-of-the-loop on an important life event of a college friend or acquaintance, such as a birthday or wedding—how did it impact your relationship?)

- 3. How do you ensure that your college friends and acquaintances remain up-to-date on your own life? (Possible prompts: How do you decide where to broadcast news about your life? Describe a situation where you wanted to broadcast the same news to friends on different communication channels.)
- 4. How have your relationships been impacted by your ability to manage your communication channels? (Possible prompts: Describe any relationships that have strengthened. Describe any relationships that have fallen apart. Describe any college friend or acquaintance that you want to back in touch with, but haven't. If so, why? What about with acquaintances (if they only mention close friends)?)
- 5. For college friends or acquaintances that do not use the same channels as you do, what are the ways you have kept in touch with them? (Possible prompts: Are you still in touch with these friends or acquaintances? For those for which you are, how did you overcome this situation? For those for which you aren't, why not?)
- 6. If you had a magic wand, what would be your ideal way to manage multiple modes of communication? (Possible prompts: How open are you to adopting new channels of communication? What are your thoughts on having multiple communication channels?)

REFERENCES

- Martina Balestra, Orit Shaer, Johanna Okerlund, Lauren Westendorf, Madeleine Ball, and Oded Nov. 2016. Social Annotation Valence: The Impact on Online Informed Consent Beliefs and Behavior. *Journal of medical Internet research* 18, 7: e197. https://doi.org/10.2196/jmir.5662
- Eric P.S. Baumer, Phil Adams, Vera D. Khovanskaya, Tony C. Liao, Madeline E. Smith, Victoria Schwanda Sosik, and Kaiton Williams. 2013. Limiting, leaving, and (re)lapsing: an exploration of facebook non-use practices and experiences. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems - CHI '13*, 3257–3266. https://doi.org/10.1145/2470654.2466446
- Frank R. Bentley, JoEllen Kames, Rafiq Ahmed, Rhiannon Sterling Zivin, and Lauren Schwendimann. 2010. Contacts 3.0: bringing together research and design teams to reinvent the phonebook. In *Proceedings*

² List of channels: phone, texting, Messenger, WeChat, WhatsApp, SMS, BBM, Skype, Snapchat, Slack, Twitter, Tinder, Grindr, GChat, iMessage, Telegram, Couchsurfing, GroupMe, Line, Facebook, LinkedIn, G-mail, Yahoo Mail, Outlook, AOL, GMX, Zoho Mail, iCloud, and Proton Mail.

³ Scale based on the 2013 distribution of friends on Facebook: http://www.pewresearch.org/fact-tank/2014/02/03/6-new-facts-about-facebook/.

⁴ Scale based on the Dunbar number of 100-250, i.e. the cognitive limit on the number of relationships that one can maintain (https://en.wikipedia.org/wiki/Dunbar%27s_number).

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of the 28th of the international conference extended abstracts on Human factors in computing systems - CHI EA '10, 4677–4690. https://doi.org/10.1145/1753846.1754210

- Lisa F. Berkman, Thomas Glass, Ian Brisette, and Teresa E. Seeman. 2000. From social integration to health: Durkheim in the new millennium. *Social Science* & *Medicine* 51, 6: 843–857. https://doi.org/10.1016/S0277-9536(00)00065-4
- Marta E Cecchinato, Abigail Sellen, Milad Shokouhi, and Gavin Smyth. 2016. Finding Email in a Multi-Account, Multi-Device World. Proceedings of the SIGCHI conference on Human factors in computing systems - CHI '16: 1200–1210. https://doi.org/10.1145/2858036.2858473
- Henriette Cramer and Maia L. Jacobs. 2015. Couples' Communication Channels: What, When & Why? In Proceedings of the 33rd Annual ACM Conference on Human Factors in Computing Systems - CHI '15, 709– 712. https://doi.org/10.1145/2702123.2702356
- Yanqing Cui and Mikko Honkala. 2013. A novel mobile device user interface with integrated social networking services. *International Journal of Human-Computer Studies* 71, 9: 919–932. https://doi.org/10.1016/J.IJHCS.2013.03.004
- Hannah Deakin and Kelly Wakefield. 2014. Skype interviewing: reflections of two PhD researchers. *Qualitative Research* 14, 5: 603–616. https://doi.org/10.1177/1468794113488126
- David Dearman and Jeffery S. Pierce. 2008. It's on my other computer!: computing with multiple devices. In Proceeding of the twenty-sixth annual CHI conference on Human factors in computing systems - CHI '08, 767– 776. https://doi.org/10.1145/1357054.1357177
- Mark Granovetter. 1983. The Strength of Weak Ties: A Network Theory Revisited. *Sociological Theory* 1: 201– 233. https://doi.org/10.2307/202051
- 11. Mark S. Granovetter. 1995. *Getting a job : a study of contacts and careers*. University of Chicago Press.
- 12. R B Hays. 1985. A longitudinal study of friendship development. *Journal of personality and social psychology* 48, 4: 909–24. Retrieved October 16, 2017 from http://www.ncbi.nlm.nih.gov/pubmed/3989674
- 13. Ryan Kelly, Daniel Gooch, Bhagyashree Patil, and Leon Watts. 2017. Demanding by Design: Supporting Effortful Communication Practices in Close Personal Relationships. In Proceedings of the 2017 ACM Conference on Computer Supported Cooperative Work and Social Computing - CSCW '17, 70–83. https://doi.org/10.1145/2998181.2998184
- 14. Jonathan Lazar, Jinjuan Heidi Feng, and Harry Hochheiser. 2017. *Research methods in humancomputer interaction*. Elsevier.

- Lynn Magdol. 2002. Is Moving Gendered? The Effects of Residential Mobility on the Psychological Well-Being of Men and Women. *Sex Roles* 47, 11/12: 553– 560. https://doi.org/10.1023/A:1022025905755
- 16. A. H. Maslow. 1943. A theory of human motivation. *Psychological Review* 50, 4: 370–396. https://doi.org/10.1037/h0054346
- 17. Midas Nouwens, Carla F. Griggio, and Wendy E. Mackay. 2017. "WhatsApp is for family; Messenger is for friends": Communication Palces in App Ecosystems. In Proceedings of the 2017 CHI Conference on Human Factors in Computing Systems - CHI '17, 727–735. https://doi.org/10.1145/3025453.3025484
- William Odom, Abigail Sellen, Richard Harper, and Eno Thereska. 2012. Lost in Translation: Understanding the Possession of Digital Things in the Cloud. *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*: 781–790.
- 19. Antti Oulasvirta and Lauri Sumari. 2017. Mobile Kits and Laptop Trays: Managing Multiple Devices in Mobile Information Work. *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*: 1127–1136.
- 20. Erin M. Sahlstein. 2004. Relating at a distance: Negotiating being together and being apart in longdistance relationships. *Journal of Social and Personal Relationships* 21, 5: 689–710. https://doi.org/10.1177/0265407504046115
- 21. Lauren E. Scissors and Darren Gergle. 2013. "Back and forth, Back and Forth": Channel Switching in Romanic Couple Conflict. In *Proceedings of the 2013 conference* on Computer supported cooperative work - CSCW '13, 237–248. https://doi.org/10.1145/2441776.2441804
- 22. Irina A. Shklovski and Scott D. Mainwaring. 2005. Exploring technology adoption and use through the Llens of residential mobility. In *Proceedings of the SIGCHI conference on Human factors in computing systems - CHI '05*, 621–630. https://doi.org/10.1145/1054972.1055058
- 23. Timothy Sohn, Vidya Setlur, Koichi Mori, Joseph "Jofish" Kaye, Horishi Horii, Agathe Battestini, Rafael Ballagas, Christopher Paretti, and Mirjana Spasojevic. 2010. Addressing mobile information overload in the universal inbox through lenses. In Proceedings of the 12th international conference on Human computer interaction with mobile devices and services -MobileHCI '10, 361–364. https://doi.org/10.1145/1851600.1851666
- 24. Janet Vertesi, Jofish Kaye, Samantha N. Jarosewski, Vera D. Khovanskaya, and Jenna Song. 2016. Data Narratives: uncovering tensions in personal data management. In Proceedings of the 19th ACM Conference on Computer-Supported Cooperative Work & Social Computing - CSCW '16, 477–489.

GROUP ID: 5

https://doi.org/10.1145/2818048.2820017

25. Chia-chen Yang, B Bradford Brown, and Michael T Braun. 2014. From Facebook to cell calls: Layers of electronic intimacy in college students' interpersonal relationships. *New Media & Society* 16, 1: 5–23. https://doi.org/10.1177/1461444812472486