

**UNDERSTANDING INTERNATIONAL STUDENTS' USE OF CMC TOOLS FOR  
LONG-DISTANCE RELATIONSHIP MAINTENANCE**

A Dissertation

Presented to the Faculty of the Graduate School

of Cornell University

In Partial Fulfillment of the Requirements for the Degree of

Doctor of Philosophy

by

Negar Khojasteh

August 2023

© 2023 Negar Khojasteh

# **UNDERSTANDING INTERNATIONAL STUDENTS' USE OF CMC TOOLS FOR LONG-DISTANCE RELATIONSHIP MAINTENANCE**

Negar Khojasteh, Ph. D.

Cornell University 2023

Thousands of international students come to the US every year and must rely on computer-mediated communication (CMC) tools to stay in touch with their family and close friends back home. In this dissertation, I examined international students' use of CMC tools for communication with their left-behind family and close friends by conducting 38 in-depth interviews with Cornell University international students from 15 different countries.

Through multiple iterations of qualitative coding, I identified themes and insights on how international students choose and use CMC tools to foster a sense of connection and togetherness with their long-distance strong ties. I found that international students use CMC tools to engage in online experience sharing with their left-behind family and friends and identified challenges they face in planning, coordinating, and setting up these online activities. Additionally, I found that students rely on both their families and their close friends for emotional support, however, they tend to share their hardships mostly with their friends as they try not to make their parents worry. This research also shows that the COVID-19 global pandemic impacted international students' communication patterns and sometimes caused previously resolved emotions such as homesickness to resurface.

Based on these findings, I discuss how the current research contributes to our understanding of long-distance relationship maintenance facilitated by technology. A detailed discussion of findings, design implications, and future directions are outlined at the end of this dissertation.

## **BIOGRAPHICAL SKETCH**

Negar Khojasteh was born and raised in Iran. She received her bachelor's degree in computer engineering from Sharif University of Technology in 2014. Negar studied Information Science at Cornell University and worked in the Communication and Collaborative Technologies Lab led by Dr. Sue Fussell and the Virtual Embodiment Lab led by Dr. Andrea Stevenson Won. During her time at Cornell, Negar published several scholarly articles, received an outstanding teaching award, and was named Dean's Scholar and Diversity Fellow for her research on international students. Outside of work and research, she enjoys photography, bird watching, and reading.

*To my beloved parents, mamani & babaei*

*And to all who leave their home country*

*in pursuit of a better future*

## ACKNOWLEDGMENTS

Many people have helped me in my journey as a PhD student over the last few years and I am forever grateful for their support and kindness.

First and foremost, I would like to thank my parents, Sakineh and Mohammadreza, who supported me every day of my PhD and encouraged me to stay strong and always move forward. Achieving a PhD from Cornell was our shared dream, and despite the challenges of visa and travel restrictions that led to six years of separation, we held onto that dream with hope and optimism.

I would like to thank my advisor, Dr. Sue Fussell for her valuable mentorship and support and for challenging me to step out of my comfort zone and for teaching me how to be a good scholar. I extend my sincere thanks to my committee members, Dr. Malte Jung, Dr. Andrea Stevenson Won, and Dr. Sharlane Cleare for their guidance and advice on this dissertation and other research projects I completed at Cornell University.

My special thanks go to Basil Safi and Richard Kiely with whom I had the privilege of working for over a year at Engaged Cornell (Einhorn center for community engagement) for over a year. Through their positive feedback and recognition of my research and technical skills, I gained the confidence to pursue a research career in the tech industry.

I also want to say thank you to my dear lab mates and friends at Cornell and specially Luping Wang, Xiaoyan Li, Jingjin Li, Mehrnaz Sabet, and Neta Tamir for numerous discussions about HCI and chats about life as graduate students and all the good memories we created together. I'd like to extend my gratitude to friends outside of Cornell, and Theresa Whynot, in particular, for her warm presence and encouragements during the last and the most difficult stage of writing this dissertation.

Finally, I want to say thank you to Dr. Arash Latifkar who was with me in this journey in every step of the way, celebrated my achievements and helped me bounce back after each setback. This dissertation and my journey as a first-generation immigrant would not have been possible if it was not for Arash's unconditional love and support.

It is for the support of people mentioned above that I, a first-generation college student from a small town in Iran got the opportunity to study at Cornell University and earn a PhD. degree. With their support in mind, I am determined to make a positive impact in my field and contribute meaningfully to society. My ultimate goal is to utilize my knowledge to empower others and create opportunities for those who may not have had the same opportunities as I did.



## TABLE OF CONTENTS

<b>BIOGRAPHICAL SKETCH</b> .....	<b>iv</b>
<b>ACKNOWLEDGMENTS</b> .....	<b>vi</b>
<b>LIST OF TABLES</b> .....	<b>x</b>
<b>LIST OF ABBREVIATIONS</b> .....	<b>xi</b>
<b>CHAPTER 1: INTRODUCTION</b> .....	<b>1</b>
1.1 The Current Study.....	5
1.2 Summary of Findings .....	8
1.3 Research Contribution .....	9
1.4 Dissertation Outline.....	10
<b>CHAPTER 2: LITERATURE REVIEW</b> .....	<b>11</b>
2.1 Technology-Mediated Closeness for People in LDR .....	11
2.2 International Students and Use of Computer-Mediated Communication.....	16
2.3 COVID-19 Pandemic and CMC Use.....	20
2.4 The Concept of Relationship Maintenance.....	23
2.5 The Current Study.....	25
<b>CHAPTER 3: METHODS</b> .....	<b>30</b>
3.1 Constructivist Paradigm and Grounded Theory .....	30
3.2 Recruitment and Demographics .....	32
3.3 Interview Procedure.....	33
3.4 Data Analysis.....	35
3.5 Reflections on Ethical Data Collection.....	36
<b>CHAPTER 4: CHOICE OF CMC TOOLS AND NAVIGATING TIME ZONES</b> .....	<b>38</b>
4.1 Choice of CMC Tools.....	39
4.2 Synchronous Communication: The Choice Between Audio and Video Calls .....	41
4.3 Asynchronous Communication, Text Messaging, and Group Chats.....	43
4.4 Family Group Chats.....	45
4.5 Communication Across Different Time Zones.....	46
4.6 Frequency of Calls with Family and Friends.....	49
4.7 Transition from FtF to Long-Distance Impacts Relationships .....	51
4.8 Chapter Summary .....	54
<b>CHAPTER 5: SHARING LIFE MATTERS AND SEEKING SUPPORT VIA CMC</b> .....	<b>56</b>
5.1 Topics of Conversations with Family.....	56
<i>Maintaining the Connection Through Sharing Daily Life Matters</i> .....	56
<i>Importance of Family Support for International Students</i> .....	60
<i>Information that Students Withhold from Their Family</i> .....	63
5.2 Topics of Conversations with Friends .....	66
<i>Sharing Life Matters with Friends</i> .....	66
<i>Friendships and Support Seeking</i> .....	67
5.3 Chapter Summary .....	70
<b>CHAPTER 6: SHARING EXPERIENCES AND ACTIVITIES WITH FAMILY AND FRIENDS ONLINE</b> .....	<b>72</b>
6.1 Planned Synchronous Online (PSO) Activities .....	73
<i>Online Celebrations with Family and Friends</i> .....	73
<i>Planned Synchronous Online Activities with Friends</i> .....	76
<i>Planned Online Synchronous Activities: Barriers and Challenges</i> .....	79
6.2 Asynchronous Shared Activities, Post-activity Sharing.....	83
6.3 Sharing US Life with Family Spontaneously .....	85

6.4 Experience Sharing with Photos and Videos.....	88
6.5 Chapter Summary .....	90
<b>CHAPTER 7: INTERNATIONAL STUDENTS' EXPERIENCE DURING THE PANDEMIC .....</b>	<b>92</b>
7.1 The Impacts of COVID-19 Pandemic on Relationships with Family and Friends .....	92
7.2 Pandemic and Homesickness.....	96
7.3 Online Experiences During the Pandemic .....	98
7.4 Chapter Summary .....	100
<b>CHAPTER 8: DISCUSSION .....</b>	<b>101</b>
8.1 CMC Tools: Choices and Routines .....	102
8.2 Technology-mediated Togetherness and Closeness .....	104
<i>Video-Mediated Experience and Activity Sharing</i> .....	104
<i>Non-Video Technology-Mediated Closeness</i> .....	108
8.3 Relationship Maintenance: Family vs. Friends .....	109
8.4 Less Visible Impacts of Living in Different Countries .....	111
8.5 Design Implications .....	114
8.6 Limitations and Future Directions .....	116
<b>CHAPTER 9: CONCLUSION .....</b>	<b>118</b>
<b>REFERENCES .....</b>	<b>120</b>
<b>Appendix A. Consent Form .....</b>	<b>140</b>
<b>Appendix B. Interview Protocol .....</b>	<b>143</b>

## LIST OF TABLES

<b>Table 1. Respondents' Demographics.....</b>	<b>33</b>
--	-----------

## LIST OF ABBREVIATIONS

CMC	Computer-Mediated Communication
HCI	Human-Computer Interaction
FtF	Face to Face
LDR	Long-distance relationship(s)
AI	Artificial intelligence
SNS	Social Network Site(s)
ICT	Information and Communication Technology
COVID-19	Coronavirus Disease of 2019

## CHAPTER 1: INTRODUCTION

Thousands of students leave their home countries and come to the US as international students every year. Until the COVID-19 global pandemic, the number of international students had consistently grown and reached an all-time high of 1.09 million in 2019 (Statista, 2023). Even though this number has decreased, possibly due to the effects of the pandemic, to around 950,000 in 2022, this population remains considerably large and constitutes a significant portion of college students in the US (Statista, 2023).

Studying in the US is an important learning experience for international students and provides them with career and employability skills such as intercultural competence and English language training (Nghia, 2019; Nilsson & Ripmeester, 2016; J. Zhou, 2015). In order to be successful and take advantage of the opportunities, international students need to navigate and adapt to new cultural and social norms of the host country, overcome language barriers for academic and social purposes, and establish friendships and connections with others in the host country (Khanal & Gaulee, 2019; Martirosyan et al., 2006; Özturgut & Murphy, 2009; Pedersen, 1991; Sherry et al., 2010). However, the process of adjusting can be stressful and demanding (Constantine et al., 2004; Hendrickson et al., 2011; Sawir et al., 2008).

During their time in the host country, many international students face a key challenge: living far from their left-behind family and friends. Physical distance poses significant challenges for international students including the inability to spend time with family and friends in person and join events and activities that have sentimental importance, such as birthdays, holiday celebrations, religious events, and cultural ceremonies. Additionally, living far from home and the geographical distance means that international students miss out on simpler day-to-day activities, such as spending time together while sharing a meal. Family routines and rituals

and other seemingly mundane moments of togetherness are very important for bonding and a sense of connection (Fiese et al., 2002). Over time, missing out on these bonding experiences can impact international students' emotional well-being (Mori, 2000) and exacerbate feelings of homesickness and loneliness (Sawir et al., 2008).

Another challenge many international students face post move is navigating communication with their left-behind family and friends across different time zones. Most international students in the US (students from Asia, the Middle East, Africa, Europe, and Australia) live in a different time zone compared to their family and friends back home. This could make the coordination of video and audio calls difficult and limited to the small window of times that there is an overlap in awake times (Cao et al., 2010).

Much research has been done on the role of CMC in the lives of separated adults in close relationships and various tools, populations, and relationship types have been studied (see Abel et al., 2021 for a review). Today, it is clear that while mediated communication does not fill the void caused by lack of face-to-face interaction during the time of separation, it helps separated people in close relationships to maintain a sense of connection and awareness (Hu et al., 2022; Vitak, 2014).

Researchers have looked at how people use CMC tools for staying connected. In the field of HCI, video-mediated closeness and intimacy used by remote families has received significant attention. An early and prominent example is the work of Kirk and colleagues on the use of video communication at home (Kirk et al., 2010). In 2010 and at the time of this study, video-mediated communication was starting to become more common for personal and at-home use compared to previous use cases of it in business. A notable contribution of this work is the emphasis on the role of video communication for fostering closeness and intimacy between

separated families. Based on their fieldwork, the authors found that several participants use video calls to experience a sense of togetherness and closeness with their close ties by allowing them to see and hear them and by partaking remotely in the formerly in-person routines (Kirk et al., 2010).

Neustaedter and colleagues have done several research studies on distance-separated adults in close and intimate relationships and their use of video communication for connection and intimacy (e.g., Heshmat & Neustaedter, 2021; Judge & Neustaedter, 2010; Neustaedter & Greenberg, 2012).

Their research, as well as other work, has shown that separated adults use video calls not only for day-to-day communication but for purposes beyond the conversation. For example, people might leave the video link on for extended periods of time without using it directly for conversations. Researchers have observed this behavior in several studies and call these always-on video calls “sharing everyday life” where the focus is not on the conversation, and people often passively monitor each other via the eyes of the cameras (Neustaedter et al., 2015). The use of CMC tools for sharing activities and experiences such as participating in major life events remotely (e.g., weddings and graduation ceremonies) (Massimi & Neustaedter, 2014, p. 43), watching TV together, and having a date night (Brubaker et al., 2012) is a creative way that people in LDRs use CMC tools. By engaging in online and shared experiences, separated adults try to compensate for the in-person experiences they miss out on.

In addition to video-mediated communication, research has also looked at other modes of communication among separated families and friends. Asynchronous communication via text messaging has shown to be an effective way of staying in touch (Belus et al., 2018; Holtzman et al., 2021; O’Hara et al., 2014) and has been mentioned as a way to navigate the challenge of

finding time to call due to different time zone (Cao et al., 2010). Additionally, research has looked at social media platforms, such as Facebook and Instagram, that enable people to stay in touch with their family and friends (Li & Peng, 2019; Vitak, 2014; Yau et al., 2020). For example, in a study focused on social media use by immigrants the authors found that seeing posts from people of the home country can create a sense of virtual connection to home and alleviates the mourning of distance (Plaza & Below, 2014). For international students, which is the population of interest in my research, leveraging social media could be challenging due to external barriers. For example, for Chinese students, Facebook can only be used with friends in the US and outside of China due to restrictions imposed by the government of the republic of China. Therefore, these students often use multiple social media platforms to stay in touch with friends (Yuan, 2015).

Finally, in the review of HCI work for remote families, we should acknowledge the unconventional platforms designed and created for separated individuals in close relationships to facilitate remote togetherness and experience sharing. These tools include but are not limited to InTouch (Brave & Dahley, 1997), sensing beds (Goodman & Misilim, 2003), Lover's Cup (Chung et al., 2006), NetPot (Foley-Fisher et al., 2010), CoupleVIBE (Bales et al., 2011), Telematic Dinner Party (Barden et al., 2012), HeartChat (Hassib et al., 2017), FamilySong (Tibau et al., 2019) and Grandtotem (Butzer et al., 2020). In summary, these tools aim to provide mutual awareness to the remote individuals of what the other person is doing (e.g., sensing beds, CoupleVIBE) or help them engage in a shared activity remotely (e.g., Grandtotem). Despite the potential of these tools in supporting remote family communication, to the best of our knowledge, none of these tools are used widely by the population of separated adults.



## 1.1 The Current Study

Past work on CMC and separated families is insightful and very valuable. However, while past research has examined separated adults' use of CMC tools for communication and connection, for the four reasons outlined below it is important to study the population of international students and their approach to relationship maintenance with strong ties over distance today.

Firstly, the CMC landscape is dynamic, and mobile media communication (e.g., smartphones) have been rapidly expanding in the past ten years (Campbell, 2020; A. J. Mason & Carr, 2022). New smartphone applications and features are released every day, and new modes of remote communication such as robot-mediated communication (Yang & Neustaedter, 2018) and avatar-mediated communication in the metaverse (Han et al., 2023) are emerging and gaining the attention of both scholars and the general public (Rospigliosi, 2022). Understanding how international students choose among the available communication options today will allow us to design technology more suited to this group and other people and families in LDR.

Secondly, In the field of HCI, as Sabie et al. (2021) have pointed out, literature about migration and mobility has focused more on the immediate challenges facing immigrants and refugees compared to their long-term struggles, or the challenges facing the unique population of international students generally (Sabie et al., 2021). Additionally, literature that focuses on international students tends to focus on factors such as acculturation and adaptation (Krsmanovic, 2021; Zhang-Wu, 2018) rather than students' relationships with their strong ties back home. In a systematic review of papers published between 2010 to 2019 about international students, the author (Krsmanovic, 2021) found that over 80% of the 334 papers are focused on acculturation, academic experience, language, and other adjustment factors and less attention has

been given to the relationship maintenance behaviors of these students. While findings of research on families in LDR provide valuable insights for other separated adults, including international students, given the difference between international students and other separated individuals in close relationships (e.g., couples in LDR, transnational families), it is important to study international students as a distinct population. It is important to note that international students are often young or emerging adults (Arnett, 2007; Wintre et al., 2015), are trained in the language of the host country (Cemalcilar et al., 2005), and strive to balance autonomy from their parents with connection when it comes to relationship maintenance (Hwang et al., 2018; Zhao, 2019). Additionally, while many immigrants aim to stay in the host country permanently, for many international students their time in the host country has a temporary nature since they plan to go back home after graduation (Zhang-Wu, 2018).

Thirdly, a significant event that has impacted how people communicate over the distance since the end of 2019 is the COVID-19 global pandemic, which resulted in lockdowns in most countries and caused travel restrictions for an extended period (Mbous et al., 2022). Researchers have studied the impact of the global pandemic on online communication with family and friends and have pointed out to the emergence of new communication patterns, such as an increase in the use of video calls (Heshmat & Neustaedter, 2021). This thesis aims to extend the literature on international students by closely examining students' use of CMC tools for communication with left-behind family and friends while impacted by the COVID-19 global pandemic.

Finally, past research has often either only focused on family relationships (e.g., Bacigalupe & Bräuninger, 2017; Hu et al., 2022; Mogharrab & Neustaedter, 2020; Ramsey et al., n.d.; Zhou et al., 2017) or regarded family and friends together as the social support factor (e.g., Bacigalupe & Bräuninger, 2017; Sherry et al., 2010; Thurber & Walton, 2012) and overlooked

the nuances and differences in how students manage these two groups of personal connections. However, friendships are inherently different from family relationships (kinships). People choose their friends based on shared interests and stages of life, and friendships are built on autonomy and could be more rewarding and recreational than kinships due to this formation based on choice (Bell & Coleman, 1999; Pahl, 2002). Therefore, the tensions and challenges the young adults experience as a result of their desire for autonomy from their parents (Arnett, 2007; Bi, 2019) might not be present in their friendships with their peers. By exploring the differences in how students maintain these relationships, I aim to provide a more in-depth view of students' unique needs that might differ depending on the relationship they try to maintain.

This dissertation aims at addressing these gaps by providing an in-depth understanding of international students' use of CMC tools in maintaining two types of close long-distance relationships, with family and close friends, over time. To this end, I propose the following research questions:

First, I propose to examine how international students choose and incorporate CMC tools in their daily lives and navigate communication across different time zones. The following research questions aim to address this angle.

**RQ1:** What factors influence international students' choice of CMC tools and modes of communication to maintain their relationships with their family and close friends?

**RQ2:** What strategies do international students use to navigate communication with family and close friends in a different time zone?

Second, I propose to examine the content of conversations between international students and their friends and family to better understand how they navigate everyday CMC use and support seeking.

**RQ3a:** How do international students use CMC tools for conversation and to maintain a sense of connection with their family and close friends back home?

**RQ3b:** In what ways do international students seek emotional support on CMC platforms from their family and close friends back home?

Third, I propose to examine international students' approach to experience and activity sharing online and to explore the barriers they face as they plan and engage in these activities.

**RQ4a:** How do students use CMC tools for experience and activity sharing with their family and close friends back home?

**RQ4b:** What experiences and activities do international students engage in with their family and close friends via CMC tools and are there differences in the types of experiences they share with each group?

**RQ4c:** What challenges do international students face in using CMC tools for experience and activity sharing, and how do they navigate those challenges?

Lastly, I propose the following research question related to the experience of COVID-19 pandemic.

**RQ5:** How has the experience of the global COVID-19 pandemic impacted students' practices and approaches to using CMC for relationship maintenance?

## **1.2 Summary of Findings**

To answer these research questions, I conducted 38 in-depth interviews with international graduate and undergraduate students at Cornell University from 15 countries such as China, India, Korea, Pakistan, Ghana, and Germany. Following a grounded theory approach (Strauss & Corbin, 1997), and through three rounds of qualitative coding that involved open, axial, and selective coding (Walker & Myrick, 2006), I identified themes and patterns of CMC use for

relationship maintenance that international students rely on to stay connected with their left-behind family and friends back home.

My findings suggest that international students utilize CMC tools to stay in touch with their left-behind strong ties and to maintain their bond beyond day-to-day communication. They use CMC tools, especially video calls, to attend events and ceremonies with their families remotely and to engage in online entertainment activities with their friends (e.g., playing video games while on a video call). While students highlighted the benefits of experience sharing online, they also mentioned several barriers, such as coordination effort across time zones, difficulty with tech setup, and limitations of CMC tools that discourage them from trying these activities regularly.

Regarding seeking emotional support, I found that students rely on their family and close friends. Students tend to portray a positive picture of their life in the US only in communication with their families. By contrast, students share their struggles with their friends to avoid causing their parents to worry about their challenges abroad.

Finally, this research shows that the COVID-19 global pandemic has impacted international students' communication with their family and friends. Many students reflected on changes in their communication patterns, such as talking to their family and friends more frequently and for longer durations to support each other during difficult times. However, as the world moves toward the pre-pandemic state, many have shifted back to their previous communication routines.

### **1.3 Research Contribution**

This dissertation contributes to the field of human-computer interaction (HCI), international education, and user experience research by providing the following:

- An in-depth understanding of international students' relationship maintenance strategies and challenges as they use CMC tools to stay connected with their family and friends.
- Evidence of significant differences between how international students maintain their long-distance friendships and family relationships.
- An understanding of the impact of the global COVID-19 pandemic on the communication practices of separated families that provides insights into distributed families' communication during times of crisis.
- A set of design implications for building CMC tools more suited to international students' unique needs.

#### **1.4 Dissertation Outline**

The remainder of this dissertation is organized as follows: In Chapter 2, I review previous research related to relationship maintenance and the use of CMC tools by distance-separated adults with a focus on international students' communication with their strong ties. Building upon this literature, I present and explain the research questions of this study. In Chapter 3, I explain the research methods and the process of recruiting participants, conducting interviews, and qualitative analysis of the data. In Chapters 4, 5, 6, and 7, I provide details of the findings of this research and in Chapter 8, I discuss how the findings of this research contribute to our understanding of international students' relationship maintenance strategies and how the COVID-19 pandemic has impacted those strategies. Finally, I provide design implications and suggestions that could address the challenges students face in using CMC tools.

## **CHAPTER 2: LITERATURE REVIEW**

The current chapter reviews previous work and existing literature and provides insights into the role of CMC tools in the lives of geographically separated families, including international students. I start by reviewing past work on technology-mediated closeness for people in long-distance relationships. Then I discuss selected past research conducted on international students' use of CMC tools for communication with left-behind family and friends. After this section, I review published papers that provide insights into the impacts of the COVID-19 pandemic on separated adults' relationships and communication and provide a brief section on the concept of relationship maintenance which I will use throughout this dissertation. Finally, I explain why understanding international students' use of CMC is an important and worthwhile topic of research today in light of the dynamic landscape of CMC and propose research questions that this dissertation aims to address.

### **2.1 Technology-Mediated Closeness for People in LDR**

Since the late 1990s and as CMC tools became more accessible and available to more people across the globe, scholars have studied the role of these tools in the lives of separated loved ones such as transnational families (Francisco, 2015; Kelly, 2015), immigrants (Chib et al., 2013), international students (Sandel, 2014; Shiau, 2015), and couples in LDRs (Abel et al., 2021). For separated loved ones who live far from each other, with extended periods of no face-to-face communication, CMC tools play a critical role in supporting a sense of connection and co-presence (Abel et al., 2021; Chib et al., 2013; Kang, 2012). The following sections discuss the role of CMC tools in everyday communication and as media for creating a sense of togetherness and closeness.

In the field of HCI, video-mediated closeness and intimacy used by remote families have received significant attention from researchers and designers. An early and prominent example is Kirk and colleagues' work on using video communication at home (Kirk et al., 2010). At the time of this study, video-mediated communication was starting to become more common for personal and at-home use compared to previous use cases of it in business. A notable contribution of this work is the emphasis on the role of video communication in fostering closeness and intimacy between separated loved ones. Additionally, this research (Kirk et al., 2010) and other early work on video at home (e.g., Judge et al., 2011; Neustaedter & Greenberg, 2012) showed that video use at home is very different from the use of video in work environments due to the difference in social norms, privacy expectations and the type of activities people engage in.

Based on their fieldwork, the authors found that several participants use video calls to experience a sense of togetherness and closeness with their loved ones by allowing them to see and hear them and by partaking remotely in the formerly in-person routines (Kirk et al., 2010). In the same year, Ames and colleagues published their findings from a field study involving 22 families and discussed the use of video calls for talking to remote family members such as grandparents (Ames et al., 2010). The authors discussed the benefits of video calls for kids, parents, and grandparents and noted that video calls allowed these families to stay connected to their remote relatives and provided a setting for group interaction which is more beneficial than one-on-one phone calls and reinforces a sense of family identity. The paper also mentions the technical challenges of setting up a video call faced by several families at the time of this research in 2010. In many cases, people made phone calls to make sure the other party had the video set up ready for the video call. In addition to *technical work* associated with coordinating



and setting up the video call, the authors also identified *behavioral work* to manage kids' behaviors and *scaffolding work* (helping children with their participation in the call).

Some of the early works on the use of video-mediated communication by families emphasized the notion of shared experiences such as showing each other the surroundings or cooking a meal together (Brubaker et al., 2012). In this work, the authors explain that shared experiences are not necessarily task-specific (which is common in an organizational context and with distributed teams (Kraut et al., 2003)), and for the people involved the important aspect is the social experience they have together. Therefore, unlike organizational and professional contexts where approaches such as “video as data” (for improving task performance) (Nardi et al., 1993) were prevalent at the time of publication of this work, in the context of personal relationships, Brubaker et al. (2012) call for a focus on people's shared experience and social scenarios they re-create in the virtual space of CMC tools (e.g., sharing a meal while being apart). Related to shared experiences, Macaranas et al. (2013) conducted a field study with 56 participants to examine the use of video communication for watching movies together. They found that watching video programs together was fun and engaging for people. However, technical issues and audio crosstalk were barriers for people (Macaranas et al., 2013). In summary, while activity sharing online is beneficial, the barriers can deter people from doing them.

In the past 15 years, Neustaedter and colleagues have done several research studies on distance-separated couples and families and their use of video communication for connection and intimacy (e.g., Heshmat & Neustaedter, 2021; Judge et al., 2011; Judge & Neustaedter, 2010; Neustaedter et al., 2015; Neustaedter & Greenberg, 2012). The use of video for experience sharing and creating a sense of remote togetherness has been a prominent theme in this line of

work and shows that people use video communication for purposes beyond just conversation. This can include everyday activities such as playing games together or eating meals at the same time while talking via video call (Heshmat & Neustaedter, 2021), keeping the video open for hours to see and hear each other passively (Neustaedter & Greenberg, 2012), or attending major life events such as weddings and graduation ceremonies remotely via tools such as Skype (Massimi & Neustaedter, 2014).

In their recent work, Heshmat and Neustaedter (2021) discuss various ways people used technology, especially video calls, during the first four months of the COVID-19 pandemic in Canada. The authors found that people used video calls for activity sharing with family and friends (e.g., virtual fitness classes), food and drink sharing, and playing games. Interestingly, many people tested out several platforms and activities. However, the frequency of engaging in online activities such as online group game play was found to reduce quickly (within days). Authors noted that the inability to have side conversations in a group video call, the difficulty of playing games that require physical objects, and overall, less satisfaction with online versus in-person experience were the reasons that many people abandoned these online activities (Heshmat & Neustaedter, 2021).

The papers discussed above are from the field of HCI. However, HCI is not the only field with interest in the use of technology by separated adults. Migration studies is another field, with a large body of research on separated families and some of this work has looked at the use of CMC tools. It should be noted that CMC tools are often referred to as information and communication technologies (ICTs) outside of HCI. The term transnational family is a common term referring to families with some members living in a different country. In the paragraphs

above I reviewed several research works in HCI around the use of video calls for closeness. Migration scholars have observed similar behaviors and the use of video communication.

For example, in a study of Polish immigrants in Ireland, authors called this use case the *omnipresence routine* where Skype is kept open for an extended period, usually hours, while grandparents watch their grandkids play. Parents in this study mentioned that Skype allowed their young kids to get familiar with their grandparents during the times of separation and could notice this familiarity during the in-person visits after months or years of separation (Share et al., 2017). A similar approach to the use of video is labeled as *omnipresent co-presence* in research on Romanian migrants in Switzerland, and the authors suggest that this co-presence “creates a feeling of continuously being and doing things together, as family interactions do not diminish with distance” (Nedelcu & Wyss, 2016, p. 211). Several other studies with immigrant families found similar behaviors around the use of technology for intimacy. In a study with immigrant workers in Israel, the author discusses the notion of co-presence and how parents who work in Israel and far from their home countries (e.g., Philippines) use technology to do parenting from a distance in various forms such as video calling their kids and other family members and monitoring their kids as they do daily activities. For example, one of the participants from Nepal uses Skype to tell bedtime stories and watch the kids eat, emphasizing that this creates a sense of intimacy and closeness even though she is physically far away (R. H. Brown, 2016).

While video-mediated communication for closeness and intimacy has received significant attention compared to other methods of communication (e.g., text messaging), research in both HCI and outside of HCI acknowledge that individuals in close personal relationships rely on various communication tools and methods to stay connected (Cramer & Jacobs, 2015; Holtzman et al., 2021; Osei et al., 2023). Asynchronous modes of communication such as sending texts and

photos have been shown to be effective methods for staying in touch with strong ties over distance (Cabalquinto, 2019). For example, in a study with Filipino immigrants in Australia, Cabalquinto (2019) noted that the act of sharing photos, often of mundane matters such as food, is perceived as an expression of love and care among the immigrants and their far-apart families and fosters a sense of connection between them. Text messaging has been considered as a medium that requires less effort compared to video and audio calls since people can send messages without consideration of time zone and other scheduling concerns (Cao et al., 2010; Hwang et al., 2018). One-on-one text messaging and group chats serve more important purposes beyond a low-effort medium and allow members to share an intimate space for engaging in routines and family rituals (Mogharrab & Neustaedter, 2020; Zhao, 2019).

In this section, I discussed how distance-separated adults use technology for closeness and connection over distance. In the next section, I provide more details on how international students use video-mediated communication and other modes of communication to stay in touch with their family and friends back home.

## **2.2 International Students and Use of Computer-Mediated Communication**

Insights from past research on international students' use of CMC for connection can be grouped into two categories: CMC-focused insights and relationship-focused insights. CMC-focused insights look at factors such as choice and affordances of tools, mode of communication, and limitations of CMC tools faced by users for everyday communication as well as experience sharing online. These insights help researchers and designers identify ways that CMC tools could be improved and features that would benefit this population. Today we know that technology facilitates communication of international students with their family and friends and enables them to have conversations and maintain mutual awareness of each other's lives during times of

geographical separation (Bhatti et al., 2021; Sawir et al., 2008; Worrall et al., 2019; R. Zhou et al., 2017). CMC tools allow these students to talk to their left-behind family and friends about everyday matters, their experience in the host country, and to get life updates on what has been happening in the lives of their family and friends back home (Bacigalupe & Bräuningner, 2017; Hautasaari et al., 2017; Sandel, 2014; Worrall et al., 2019). Wong (2017) calls international students' experience with CMC tools "an extension of home environment through media" (p. 119) and highlights the role of CMC in allowing these students to be with their family in mundane but important moments such as sharing a meal over video call or hearing the sounds and noises of home (e.g., barking of their pet dog). Additionally, research has shown that international students utilize some CMC tools such as Facebook and other SNS for multiple purposes such as building new connections in the host country, seeking information, and staying in touch with ties back home (Malone, 2019; Worrall et al., 2019).

The second category of insights delves into the dynamics of the relationship between international students and most commonly their parents with some work looking at students' relationships with other family members and friends (Sandel, 2014; Sinanan & Gomes, 2020). Insights in this category are about factors such as students' desire for autonomy from parents, parent-adult child tensions and relationship dynamics, support-seeking dynamics, and changes in these long-distance personal relationships and friendships over time.

It is important to note that students' relationship dynamic with their strong ties impacts their utilization of CMC tools. Simultaneously, the way they leverage CMC tools also impacts the quality of their relationships over time. Therefore, it is evident that these two categories of insights are interrelated and both aspects are often present in the studies on international students and technology-mediated closeness. By intentionally grouping them as separate types of insights

I aim to draw attention to the complex interplay between technology-mediated communication and international students' long-distance relationships with their strong ties. Additionally, by making this distinction and studying the relationship dynamics, we will be able to dive deeper into the needs of international students beyond the typical need for remote communication.

In the following paragraphs, I review past work in this space and the insights provided by researchers in both categories, focusing on papers published by HCI scholars since this dissertation is positioned within the field of HCI.

Related to the first category of insights and the CMC-focused lens, several researchers have conducted qualitative and quantitative studies to understand the tools and modes of communication used by international students. In a qualitative study with nine international students from China and their parents, Zhou et al. (2017) examined the use of asynchronous (e.g., email, text messaging) and synchronous (e.g., video and audio calls) communication via WeChat. They found that text messaging and video calls were the most used formats, with texts used for informal chats, video calls used for scheduled and longer conversations, and audio calls perceived as the backup for video calls (e.g., with unstable Internet connection). Related to nuances of family dynamics, Zhou et al. (2017) have emphasized their findings about both students and their parents' concerns around self-presentation and the fact that they leverage media affordances to manage self-presentation. For example, some students in the study used the privacy settings of WeChat to hide certain WeChat posts from their parents to manage the self-image seen by their parents. Importantly, this study is conducted with all participants from the same culture, the Chinese culture and the authors note the "pervasive culture of face-saving" (p. 1034). Related to this, authors also note that to maintain a positive self-image, students share

their concerns selectively and intentionally refrain from telling everything and in some cases share less with one parent compared to the other.

In a recent study, Zhao (2019) examined Chinese international students' disconnection practices living in Australia. The author discusses that all participants of the study have their parents as *friends* on WeChat which means that when they post on this platform, their parents can see. While having parents on the platform is beneficial and convenient for staying in touch, this always-on connectivity, as the author describes, in some cases leads to parents' frequent monitoring, interventions, and even conflicts. To navigate the challenge of parents' control and to redeem a sense of autonomy, Chinese students utilize the privacy features of WeChat to create multiple contact lists and sometimes hide their posts from their parents. Importantly, the author notes that for these students a full disconnection is not possible, and the students need to constantly cope and navigate familial pressures and their need and desire for autonomy. Even though this research (Zhao, 2019) is conducted with Chinese international students, the challenges faced by these students regarding managing family dynamics and finding a balance of autonomy and connection are not unique to Chinese international students.

In another qualitative study with ten South Korean international students in the UK, Hwang et al. (2018) found similar family dynamics and noted that students sometimes feel the pressure to live up to family expectations and end up avoiding contact at times or telling white lies to their parents in order to hide problems and difficulties they face in the host country and to keep aspects of their life in the UK private from their parents. To this end, some participants noted managing their self-presentation on SNS and being constantly careful about how their posts on SNS would be perceived by their parents. Considering the overall effort and the pressure felt by students around their parents' expectations for frequent communication and

constant monitoring, the authors conclude that existing technology can contribute to an unhealthy dynamic between students and their parents (Hwang et al., 2018). It is important to note that this study has been conducted in a South Korean context. As noted by the authors, the intensity of familial obligations could be different than in other countries.

Lastly, aside from the relationship tensions and challenges discussed above, international students might suffer from the limitations of CMC tools such as limited camera view (Heshmat & Neustaedter, 2021), difficulty with positioning and framing during video calls (Gan et al., 2020; Geiskkovitch et al., 2022), messaging applications (e.g., WhatsApp) with limited privacy features and limited flexibility for managing self-presentation (Nouwens et al., 2017), unstable internet connection in their home country (Farshbaf Shaker, 2017) and social media bans (e.g., the Facebook ban in China) imposed by governments (Yuan & Fussell, 2017).

In summary, despite the technical limitations, CMC tools are extremely beneficial to adults and families in LDRs. However, tensions and challenges might arise due to the complexity of the relationship dynamics between individuals. It is important to note that a large body of literature on international students' long-distance relationships with people in their home country is focused on parent-student relationships. In the next section, I discuss what we know about international students' friendships and elaborate more on why we need to distinguish these two groups (family vs friends) when we study international students' networks of strong ties.

### **2.3 COVID-19 Pandemic and CMC Use**

A significant event that has impacted how people communicate via CMC tools since the end of 2019 is the global COVID-19 pandemic, which resulted in lockdowns in most countries and caused travel restrictions for an extended period (Mbous et al., 2022; Neate et al., 2022). Many scholars in HCI and other fields believe that studying the impact of pandemic is very



important as the global pandemic changed the way people use technology (G. Brown & Greenfield, 2021; Ukani et al., 2021) for work (Gao et al., 2022) and for staying connected to other people and some changes might last even in the post-pandemic years (Tang et al., 2023). Related to the topic of this dissertation several researchers, in the past three years, have looked at the impacts of pandemic on the communication practices of separated adults in close relationships (Firang, 2020; Hari et al., 2021; Heshmat & Neustaedter, 2021; Ramirez Gomez & Stawarz, 2022). In this section, I review some of the work conducted with international students and review findings related to the relationship and communication practices of these students during the pandemic.

In a research work conducted early in the pandemic, Hu, Xu, and Tu (2020) discussed the experience of Chinese international students in the UK and their families in China during the initial weeks of the COVID-19 outbreak in the UK. The authors provide insights on the challenges these students faced such as navigating border rules imposed by China which made it hard for them to go back home, and the experiences of racism in the UK as Chinese international students. The authors also discuss the emotional experiences of both students and their parents and the fact that both students and their families reported hiding their emotions in order to keep a sense of normalcy and calm and not make others worried (Hu et al., 2022).

The use of CMC tools by families of international students in Canada to provide emotional support during the pandemic is discussed in research by Hari, Nardon, and Zhang (2021). In this paper, the authors talked about the important role of families of international students for emotional support. They reported that several participants mentioned that during this time, the CMC tools helped them have a sense of co-presence and being there for each other while apart. Additionally, some students mentioned that the quality of their interactions was

better than in pre-pandemic times because they had more time for longer and also deeper conversations with their family and friends back home (Hari et al., 2021).

More recently, Mbous and colleagues (2022) conducted a similar qualitative study (focus group with 13 international students) in the US regarding the challenges of the pandemic. They identified the common challenges that international students faced during the COVID-19 pandemic such as problems with residency and housing, challenges due to visa and travel restrictions, loss of motivation, loneliness and homesickness, and issues around finding employment post-graduation. The authors discuss the role of family and friends back home as supporters but emphasize that for many international students being away from their family is a source of worry and stress as they could not be together and support each other directly (Mbous et al., 2022). While both of this research explain the challenges of international students during the pandemic, they do not provide information on the use of CMC tools by international students and their families.

The use of CMC tools by families of international students in Canada to provide emotional support during the pandemic is discussed in research by Hari, Nardon, and Zhang (2021). In this paper, the authors talked about the important role of families of international students for emotional support. They reported that several participants mentioned that during this time, the CMC tools helped them have a sense of co-presence and being there for each other while apart. Additionally, some students mentioned that the quality of their interaction was better than in pre-pandemic times because they had more time for longer and deeper conversations with their family and friends back home (Hari et al., 2021).

In summary, research on international students shows that these students experienced difficulties unique to their status as internationals in foreign countries on top of the common

stressors experienced by local students (Chen et al., 2020). The research reviewed above discusses the role of family and friends back home in supporting these students during times of separation and crisis. However, our understanding of how international students used CMC tools and whether they used CMC in similar or different ways with two groups of their social ties (family and friends) is still unclear and requires further research which this dissertation aims to address.

## **2.4 The Concept of Relationship Maintenance**

Relationship maintenance is a universal and necessary aspect of every interpersonal relationship (friendships, family relationships, romantic relationships). Over the past several decades, scholars across disciplines have proposed numerous definitions for relationship maintenance (B. G. Ogolsky et al., 2017; B. Ogolsky & Monk, 2019).

A brief review of some of these definitions helps us understand the range of these definitions. Some of the definitions of relationship maintenance are as follows:

- “to keep a relationship in a satisfying condition” (Acitelli, 2001, p. 153),
- “processes that help to keep involved actors relatively interdependent with one another” (Agnew & VanderDrift, 2015, p. 581),
- “the preserving or sustaining of a desired relationship state or definition” (Alberts et al., 2005, p. 304),
- “[preventive and remedial] efforts to sustain a dynamic equilibrium in their relationship definition and satisfaction levels as they cope with ebb and flow of everyday relating” (Baxter & Dindia, 1990, p. 188),
- “actions and activities used to sustain desired relational definitions” (D. Canary & Stafford, 1994, p. 5),

- “communicative acts that foster perception of shared resources, identities, and perspectives” (Ledbetter, 2010, p. 22),
- “communication strategies and routines that function to maintain relationships” (Stafford & Canary, 1991, p. 218),
- “[strategic behaviors] which individuals enact with the conscious intent of preserving or improving the relationship... [and routine behaviors] that people perform that foster relational maintenance” (Stafford et al., 2000, p. 307).

In summary, the definitions of relationship maintenance include one or more of the four key points: “keeping a relationship characterized with desired relationship features, keeping a relationship in a particular state, keeping a relationship in existence, and/or repairing a wounded relationship” (Stafford, 2010, p. 279). Considering that there is no universally agreed-upon definition for relationship maintenance and as suggested by relational scholars (B. Ogolsky & Monk, 2019), researchers should specify the definition used in their particular study.

In this dissertation, I use the definition presented by Tong and Walther (2011) in discussing the role of CMC in relationship maintenance. Tong and Walther (2011) define relationship maintenance as “the performance of behaviors, which sustain both the existence of the relationship and satisfaction of each partner” (Tong & Walther, 2011, p. 99). According to the authors, this definition includes all types of relationships (e.g., friendships, family relationships, romantic relationships) and, therefore, can be used and extended to various contexts.

It is important to note that the original measure of relationship maintenance was developed with romantic relationships and couples in mind (B. G. Ogolsky et al., 2017), however, Abel’s et. al (2021) systematic review of insights from 51 published papers between

2012 to 2019 on long-distance families showed that similar themes such as video-mediated co-presence, performing family rituals online, and asynchronous chat for connection emerged in studies on families and international students as well. Studying international students' approach to relationship maintenance allows us to take a deeper look at the nuances of their relationship dynamics and better understand how they manage and maintain different forms of kinships and friendships over time, contributing to the literature on relationship maintenance.

Additionally, by using the term relationship maintenance throughout this research, I aim to connect my work and ground the insights from the findings to the broader research area on distance-separated adults in close personal relationships and contribute to this research area.

## **2.5 The Current Study**

While past research has examined separated adults' use of CMC tools for communication and connection, for the reasons outlined below it is important to study the population of international students and their approach to relationship maintenance with strong ties over distance today.

Firstly, the CMC landscape is dynamic, and mobile media communication (e.g., smartphones) has been growing with a very fast pace in the past ten years (Campbell, 2020; A. J. Mason & Carr, 2022). New smartphone applications and features are released every day, and new modes of remote communication such as robot-mediated communication (Yang & Neustaedter, 2018) and avatar-mediated communication in the metaverse (Han et al., 2023) are emerging and gaining the attention of both scholars and the general public (Rospigliosi, 2022). Understanding how international students choose among the available communication options will allow us to design technology more suited to this group and other geographically separated loved ones.

Secondly, In the field of HCI, as Sabie et al. (2021) has pointed literature about migration and mobility has focused more on immigrants and refugees compared to international students and the work in this domain has mostly focused on immediate challenges faced by migrants rather than their long-term challenges (Sabie et al., 2021). Additionally, literature that focuses on international students tends to focus on factors such as acculturation and adaptation (Krsmanovic, 2021; Zhang-Wu, 2018) rather than students' relationships with their strong ties back home. In a systematic review of papers published between 2010 to 2019 about international students, the author found that over 80% of the 334 papers are focused on acculturation, academic experience, language, and other adjustment factors (Krsmanovic, 2021) and less attention has been given to the relationship maintenance behaviors of these students. While findings of research on families in LDR provide valuable insights for other separated adults including international students, given the difference between international students and other separated individuals in close relationships (e.g., couples in LDR, transnational families), it is important to study international students as a distinct population. International students are often young or emerging adults (Arnett, 2007; Wintre et al., 2015), are trained in the language of the host country (Cemalcilar et al., 2005) and strive to balance autonomy from their parents with connection when it comes to relationship maintenance (Hwang et al., 2018; Zhao, 2019). Additionally, while many immigrants aim to stay in the host country permanently, for many international students their time in the host country has a temporary nature since they plan to go back home after graduation (Zhang-Wu, 2018).

Thirdly, a significant event that has impacted how people communicate over the distance since the end of 2019 is the global pandemic, which resulted in lockdowns in most countries and caused travel restrictions for an extended period (Mbous et al., 2022). Researchers have studied

the impact of the global pandemic on online communication with loved ones and have pointed out to the emergence of new communication patterns, such as an increase in the use of video calls (Heshmat & Neustaedter, 2021). This thesis aims to extend the literature on international students by closely examining students' use of CMC tools for communication with left-behind family and friends while impacted by the COVID-19 global pandemic.

Finally, past research has often either only focused on family relationships (e.g., Bacigalupe & Bräuninger, 2017; Hu et al., 2022; Mogharrab & Neustaedter, 2020; Ramsey et al., n.d.; Zhou et al., 2017) or regarded family and friends together as the social support (e.g., Bacigalupe & Bräuninger, 2017; Sherry et al., 2010; Thurber & Walton, 2012) and overlooked the nuances and differences in how students manage these two groups of personal connections. Friendships are inherently different from family relationships (kinships). People choose their friends, and these relationships are built on autonomy and could be more rewarding and recreational than kinships due to this formation based on choice (Bell & Coleman, 1999; Pahl, 2002). Therefore, the tensions and challenges that young adults experience as a result of their desire for autonomy from their parents (Arnett, 2007; Bi, 2019) might not be present in their friendships with their peers. By exploring the differences in how students maintain these relationships, I aim to provide a more holistic view of students' unique needs that might differ depending on the relationship they try to maintain.

This dissertation aims at addressing these gaps by providing an in-depth understanding of international students' use of CMC tools in maintaining two types of close long-distance relationships, with family and close friends, over time. To this end, I propose the following research questions:

First, I propose to examine how international students choose and incorporate CMC tools in their daily lives and navigate communication across different time zones. The following research questions aim to address this angle.

**RQ1:** What factors influence international students' choice of CMC tools and modes of communication to maintain their relationships with their family and close friends?

**RQ2:** What strategies do international students use to navigate communication with family and close friends in a different time zone?

Second, I propose to examine the content of conversations between international students and their friends and family to better understand how they navigate everyday CMC use and support seeking via CMC.

**RQ3a:** How do international students use CMC tools to maintain a sense of connection with their family and close friends back home?

**RQ3b:** In what ways do international students seek emotional support on CMC platforms from their family and close friends back home?

Third, I propose to examine international students' approach to experience and activity sharing online and to explore the barriers they face as they plan and engage in these activities.

**RQ4a:** How do students use CMC tools for experience and activity sharing with their family and close friends back home?

**RQ4b:** What experiences and activities do international students engage in with their family and close friends via CMC tools and are there differences in the types of experiences they share with each group?

**RQ4c:** What challenges do international students face in using CMC tools for experience and activity sharing, and how do they navigate those challenges?



Lastly, I propose the following research question related to the experience of COVID-19 pandemic.

**RQ5:** How has the experience of the global COVID-19 pandemic impacted students' practices and approaches to using CMC for relationship maintenance?

In the next chapter, I provide details of the methodology and explain how I collected data for this research.

## CHAPTER 3: METHODS

This chapter explains the methods used in this study. I collected data by conducting semi-structured interviews with 38 international graduate and undergraduate students at Cornell University. All sessions were transcribed verbatim, and data were coded following a grounded theory (Charmaz 2006, Stratuss & Corbin, 1998) approach. The in-depth analysis of interviews provides a rich understanding of international students' use of CMC tools for maintaining their relationships with their family and friends over distance and during lengthy periods of no face-to-face interactions. Chapters 4 to 7 cover these findings in detail.

This chapter provides details of sampling, recruitment, interview procedure, interview questions, and analysis procedure. The last part of the chapter covers additional notes on the role of the researcher and considerations in ethical data collection.

### 3.1 Constructivist Paradigm and Grounded Theory

I used a grounded theory approach (Charmaz 2006, Stratuss & Corbin, 1998) to study the experiences of international students in the US. I started without exact hypotheses about this population. I started with research questions and an interest in uncovering the challenges international students face in maintaining their relationships with their family and friends and using technology in maintaining these relationships. Charmaz (2006) states that researchers who follow a grounded theory approach gather participant data and stories and then develop questions based on the collected data and insights. This process is repeated in iterations, and grounded theory keeps the researcher close to the population and the data rather than the researcher's assumptions and predetermined hypotheses.

In a grounded theory approach, the qualitative interview method works very well. It allows the researcher to have an open-ended and in-depth discovery and exploration of lived

experiences of the study subjects (Charmaz, 2006). Grounded theorists often return to the field and collect more focused data after analyzing the first set of gathered data. This iteration might be repeated multiple times as the researcher aim to fill the conceptual gaps in theory and their understanding of the population of interest (Charmaz, 2006, Stratuss & Corbin, 1998).

Following a grounded theory approach, I conducted qualitative semi-structured interviews with international students at Cornell University to better understand how they use technology to stay connected with their families and friends. In total, 38 interviews were conducted and transcribed verbatim for analysis. The rest of this chapter provides detail on how I recruited participants, conducted interviews, and analyzed data.

As discussed above, grounded theory is a research approach that aims to develop theories grounded in data collected from the research participants (Strauss & Corbin, 1997).

Constructivism is a theoretical perspective that emphasizes the person's role in creating their understanding of a phenomenon. A researcher with a constructivist standpoint believes in co-creating knowledge with the study subjects, which highlights the importance of acknowledging and understanding the real-life experiences of the people being studied (Charmaz, 2014). Both grounded theory (Strauss & Corbin, 1997) and constructivism emphasize the importance of understanding lived experiences of people and the context in which those experiences occur. I provide more details on the constructivist approach below.

As a researcher, I follow a constructivist approach in my qualitative research and assume that truth or reality is relative. As described by Guba and Lincoln (1994), in terms of ontology, a constructivist is a relativist who believes that “realities are apprehendable in the form of multiple, intangible mental constructions” (Guba & Lincoln, 1994, p. 110), and these constructions are comparable based on their sophistication and level of information they provide.

Regarding epistemology, in the constructivism paradigm, “the investigator and the object of investigation are assumed to be interactively linked so that the findings are literally created as the investigation proceeds” (Guba & Lincoln, 1994, p. 111). The grounded approach fits well with this epistemological view as findings of this research in the form of themes and patterns emerged and were interpreted as data collection progressed over time. Methodologically, the goal is to reach a “consensus construction that is more informed and sophisticated than any of the predecessor constructions” (p. 111). However, the investigator is open to elaborating on the constructions as more information and knowledge are gathered in the process and as the researcher learns the meanings participants attach to their experiences (Charmaz, 2014).

### **3.2 Recruitment and Demographics**

I recruited participants for this study using two methods. First, I posted the study details on the Cornell Sona platform. Sona is an online platform allowing researchers to share study details, eligibility criteria, and available timeslots. On Sona, any Cornell student can make an account and sign up for any number of studies if they believe they are eligible to participate. All 28 undergraduate students who participated in this study were recruited via Sona.

Secondly, I attended two graduate-student-focused events and talked about my study and collected the email addresses of those who expressed interest in participating in the study. I recruited ten international graduate students using this method. All participants were compensated for their time. Those who signed up via Sona chose between 2 Sona credits or \$20. Those recruited directly received \$20 as compensation sent to them via Venmo or PayPal immediately after the session.

I conducted interviews in two phases. The first phase included 14 students and occurred between October and December 2020. The second phase involved 24 students and was

conducted between October and December 2021, with additional interviews conducted in March and April 2022. Additional information about participants is presented below.

**Table 1. Respondents' Demographics**

ID	Grad/Undergrad	Self-identified Gender	Home Country
R1	Undergrad	male	India
R2	Undergrad	male	Taiwan
R3	Undergrad	female	Brazil
R4	Undergrad	female	China
R5	Undergrad	male	China
R6	Undergrad	male	China
R7	Undergrad	female	China
R8	Undergrad	female	China
R9	Grad	female	Japan
R10	Undergrad	female	China
R11	Undergrad	male	China
R12	Undergrad	female	Canada
R13	Undergrad	female	China
R14	Undergrad	female	Singapore
R15	Undergrad	female	China
R16	Undergrad	male	Philippines
R17	Undergrad	male	China
R18	Grad	male	Germany
R19	Undergrad	male	China
R20	Grad	male	Nigeria
R21	Undergrad	female	China
R22	Undergrad	female	China
R23	Undergrad	male	Hong Kong
R24	Grad	female	China
R25	Undergrad	female	China
R26	Grad	female	China
R27	Undergrad	male	China
R28	Grad	male	India
R29	Grad	female	South Korea
R30	Grad	male	Canada
R31	Grad	male	Germany
R32	Undergrad	female	Pakistan
R34	Undergrad	female	Ghana
R35	Undergrad	male	India
R36	Undergrad	female	China
R37	Undergrad	male	China
R38	Grad	male	China

### 3.3 Interview Procedure

Students signed up for the study using Sona and selected their preferred time slot or emailed me directly to participate and had access to a list of available times on my calendar to

choose from. All interviews were conducted remotely using Zoom due to Cornell university and CDC guidelines on minimizing in-person contact during the COVID-19 global pandemic and lasted between 45 to 60 minutes. Participants were informed at the beginning of the session that they had the choice to turn their video on or keep it off. I decided not to require video during the session to respect the preferences of those who had privacy concerns or felt uncomfortable with sharing their video and surroundings. Additionally, since I did not intend to analyze video data (e.g., participants' facial expressions and body language) and this data was not contributing to the research goals, I gave participants the choice to attend via video or audio call.

At the beginning of the session, I sent the participant the link to the IRB-approved consent form to sign electronically. Once signed, I introduced myself, explained the research goals, and answered any questions before beginning the interview. The consent form had a section asking students for permission to record the session. I also asked each participant verbally for permission to record and started the recording on Zoom Cloud after their verbal approval. All participants allowed me to record the session. They were all informed that they might ask for the recording or interview to stop at any point without any penalty or change to the agreed compensation. Fortunately, none of the interviewees asked me to stop the recording or the session. Videos were deleted after the sessions, and only audio files were used for transcription and analysis. Participants were asked a series of questions related to their use of technology for communication with their families and friends as well as their experience in the US as international students. During the interviews and for questions about their communication with friends, students were told that they could talk about any friend or friend group they preferred. I asked clarifying questions to make sure I understood whether they referred to friends from home

or friends in the US. In reporting the findings related to friendships, I have added clarifications as well and have focused on friendships with people who still live in one's home country.

### **3.4 Data Analysis**

All interview transcriptions were imported to ATLAS.ti software for qualitative data analysis. Following the grounded theory approach (Strauss & Corbin, 1997), I coded the data in three phases: open coding, axial coding, and selective coding.

In the open coding phase, I immersed myself in the data and coded each document line by line and added as many codes as I found needed. The process of open coding is done when the researcher begins to see an overarching theory or framework that embraces all of the data (Walker & Myrick, 2006), and it took me multiple iterations of open coding until I reached the point where I was confident that the codes saturated the data. At this point of data analysis, I began to notice and identify codes that were conceptually overlapping and could be grouped into larger themes.

Next, in the axial coding phase, the goal is to put the data back together “by making connections between a category and its subcategories” (Strauss & Corbin, 1990, p. 97). To do this, I used memos and notes to understand and identify themes and connections between codes. I categorized codes into groups, merged similar codes, and identified the themes and the relationship between themes informed by my understanding of existing theories.

Finally, in the last phase, I conducted selective coding. In this stage of coding, the researcher generates a theory, hypothesis, or story based on the data and the identified themes (Walker & Myrick, 2006). In the grounded theory approach (Strauss & Corbin, 1997), the selective phase of coding is where the researcher refines the theory by choosing a main category or theme and connecting all other categories to that one (Walker & Myrick, 2006). In my work, I

identified the core category of relationship maintenance connected to all other themes that emerged in the data. Chapters 4 to 7 provide my findings in detail.

### **3.5 Reflections on Ethical Data Collection**

The materials for this project were ready in the spring of 2020. However, due to the COVID-19 global pandemic as a significant stressor for people and especially international students who faced issues related to travel restrictions, the data collection process was postponed for seven months until October 2020.

To answer research questions, the content of the interview and the questions were intentionally focused on students' experiences and activities rather than their emotions and feelings about being away from home and far from their loved ones. Before asking participants about feelings of homesickness and their experience with pandemic, I asked whether they were willing to talk about homesickness or if they wished to skip that segment. Only one participant chose to skip that segment of the interview.

As it is standard procedure in interview studies, students were informed in the beginning that they could skip any of the questions or ask for the interview to be terminated at any point without any penalty. Throughout each session, I paid close attention to participants' tone of voice, choice of words, and overall signals of their mood to ensure that I minimized the potential triggering topics to the best of my abilities. Fortunately, none of the participants asked for the interview to be terminated. As far as I can tell, none of the participants experienced significant emotional discomfort during the interview.

I chose to disclose my status as an international student from Iran and as someone, at the time of this research, on a student visa (F1) to participants of this study. I made this decision because telling the participants about my status as an international student in the US helped them



feel more comfortable during the interview and helped me build and express empathy as a researcher. In order to not skew participants' responses, I limited the self-disclosure to my nationality and my visa status. I did not share specifics of my relationship with my family and friends or my challenges as an international student with participants.

The findings chapters (chapters 4 to 7) present quotes from respondents which have been anonymized using labels (R1 to R38). The quotes enrich the study and add depths to the conclusions and insights drawn from this research.

## **CHAPTER 4: CHOICE OF CMC TOOLS AND NAVIGATING TIME ZONES**

Close relationships are maintained over time through consistent communication. People who live in close proximity leverage both in-person and mediated interactions (e.g., text messaging) for bonding and connecting. International students who live far from their home countries, however, need to rely on CMC tools for extended periods to maintain their bonds with their loved ones. Therefore, their interactions are primarily mediated by CMC tools.

The stories students shared regarding how they maintain these long-distance relationships with their strong ties had a common theme, and that was an established sense of routine. It is very common for these relationships to fall into a routine and follow a consistent communication pattern that involves certain CMC tools and specific modes of communication as well as the time of day and week when these interactions happen.

To study these communication patterns, we need to take a step back from focusing on what happens during an interaction and focus on students' decisions that create these patterns and routines. Factors that influence these decisions provide an in-depth and realistic picture of students' experience with CMC tools and how they fit these tools in their day-to-day lives.

To understand communication patterns, we need to study the key elements that create these patterns, such as the CMC tool selected by users, the preferred mode of communication, and the frequency and timing of the communication. This chapter takes a closer look at these key elements and explores the nuances and differences in communication patterns as a function of the type of relationship.

Technology-mediated routines help students, and their loved ones stay connected over distance and over time. However, the transition from a face-to-face to a long-distance relationship that relies heavily on CMC tools as the primary outlet for communication could

impact relationships in unanticipated ways. In the final section of this chapter, I discuss this in more detail.

#### **4.1 Choice of CMC Tools**

Respondents mentioned a variety of tools and apps that they use on a regular basis to stay connected with their family and friends. While there are many applications available to users, they generally use the same set of tools over time and do not switch between applications frequently. In almost all cases, students continue to use the apps and tools that are commonly used in their home country by their strong ties as group chats with family and friends are already established prior to their move to the US. For example, all participants who are from China mentioned that they use WeChat for communication with their family and friends who live in China. In the examples below, R7, R2, and R32 reflect on their choice of CMC tools and all mention that they use the tool that is popular in their home countries. It is worth noting that all of the CMC tools that the participants of this study use frequently are used for instant messages, audio, and video calls.

For example, R7 uses WeChat, an app mentioned by all participants from China, as the primary way of communicating with family and friends in China. This example shows the importance of using the same tool as others from their home country and using the same method of communication where links are already established and initiating a conversation via calls or messages is easy and available.

We mainly use WeChat, which is like the most commonly used social media platform in China. So I still kept that. And I use that to chat with my parents and friends. (R7, f, China)

R2 is from Taiwan and uses Line and mentions that this app is popular in Taiwan. R2 also showed awareness of the popularity of Line in other countries and knows that WeChat is an app used mostly by people who live or are from China.

I talk to them on a daily basis, actually. So I use this app called Line. It's pretty popular in Korea, Japan and Taiwan. I use that because most people use that. So I use that to talk to my parents... WeChat is like a Chinese thing. There are people who have relatives or have a lot of friends in China that might use it. But for me personally, I don't have any ties to people in China. So I don't feel the need to use it because most Taiwanese people use Line. (R2, m, Taiwan)

Lastly, R32, who is from Pakistan, uses WhatsApp and shares that this is the app most people in Pakistan use.

We use WhatsApp, which I think most people in Pakistan use. I can call them like a normal call, so I usually use WhatsApp, and I message them on WhatsApp every day. (R32, f, Pakistan)

A less common reason for choosing an app is the unique features of the app that other apps do not offer or offer in a more limited capacity. For example, R9 shared that she and her family use Telegram because of the stickers it offers. However, Telegram lacks an important capability, the call option, so for that, R9 relies on Skype and Line applications.

We use Telegram for messaging because it has these really cute stickers. And same with Line. but telegram doesn't have a call or video call function, which is why we use Skype [for calls] instead. (R9, f, Japan)

## 4.2 Synchronous Communication: The Choice Between Audio and Video Calls

The choice between video and audio is an important choice, and several factors could impact this decision. An overarching pattern found in the data is that families have established norms around the preferred media for their interactions. Most students were able to articulate their reasons as to why they do video or audio calls with their family, and they could discuss what situations would lead to their choosing one medium over the other alternatives. A very common reason for choosing video is its relative closeness to face-to-face interaction. Users value the ability to see their loved ones and their faces and feel more connected to them when they chat over video compared to the alternative synchronous method, which is a phone call. However, as mentioned by R35 and other students an audio call might be preferred when the connection is unstable.

I'm very, like, close to my parents and my family members. So I feel like a video call is more like you're talking to them in person. And I don't see there's any reason why you don't use video calls with your parents, especially [since] you're far away. And like I said, when there's emergency maybe you don't have Wi-Fi or you don't have internet, you can like, just call and explain that. But like other times video is always the best choice. (R35, f, China)

However, video calls might require more preparation compared to audio calls. Students might feel pressured to present themselves and their living environment (e.g., their dorm) in a certain way which can add stress and effort to the call. For example, one of the students (R26) mentioned that phone calls are more comfortable because parents might comment about the tidiness of the room.

We have weekly phone calls. I don't really want them to see me because they usually say my room is a mess. (R26, f, China)

Additionally, audio calls are seen as the more convenient way of communicating since both students and their parents can engage in the conversation without the need to hold the device (phone, laptop, etc.) in front of their face, and this also allows users to do the call at the same time as they do other activities such as walking around, etc.

Because it's [phone call] just more comfortable. I mean, I mostly talk to her [mother] when I walk to campus or something. And you can have your cell phone in your pocket and speak via headphones. But when you do a video call you have to do it like we're doing it right now [video call interview]. You really have to take the time. We speak like every other day, and it's very comfortable to just get like a normal phone call to just do whatever you do at the moment. (R31, m, Germany)

Students' choice of an audio vs. a video call is also impacted by perceived parents' expectations. Several students mentioned that they do video calls because they know one or both parents want to see them via video, and therefore, they do video calls often. I did not find similar perceived expectations in students' relationships with their friends. In the example below, the student specifically explains that he prefers phone calls in general but with his parents, he does video calls because he knows they want to see him via video and see his face.

I [do] phone call with my friends, I don't really have to see them, basically. Even in the Philippines, we don't video call. Whereas with my mother and my father, of course, they're my parents, they'd love to see my face, so we have video calls often. (R16, m, Philippines)

Lastly, it is important to keep in mind that students whose families live in countries or regions with unstable Internet connection rarely have a choice between phone and video calls since the video quality is very poor and therefore phone calls are their only option.

I think my parents don't really use the video call feature. I don't think so. I feel like audio is just odd, it's also a better connection. Because back home Internet connections are not really good and a video call will just keep cutting out so audio is better, even though sometimes that cuts out too. But it's usually better.

(R33, f, Ghana)

#### **4.3 Asynchronous Communication, Text Messaging, and Group Chats**

Asynchronous communication, such as text messaging, has limitations that could impact the experience of individuals who rely on it for communication. Most importantly, the people involved do not see or hear each other in real-time, and there could be a time delay between sending a message to receive a reply. When we consider the distance-separated loved ones who rely primarily on CMC tools for staying connected, asynchronous communication contributes less to the sense of togetherness compared to the synchronous and more involved modes of communication, such as audio and video calls. However, the review of students' responses about their experience with messaging shows that despite the lack of real-time audio-visual cues, messaging has a significant role in how international students maintain their close relationships over distance. To better understand their experience, I explain two categories of use cases for messaging based on the needs it addresses.

The first category is the use of messaging for quick and regular updates. This use case is not particular to the population of international students. The ease of sending a message that rarely requires planning makes this medium very popular with anyone who uses CMC tools,

including international students. All students mentioned that they send messages to their family and friends regularly though the frequency of it varies among students. For some students, messaging is a way of doing daily check-ins and is mostly used as a quicker alternative to a phone call when they are busy, or the conversation topic does not require a phone call. For example, R14 shared that he texts his mother every day to check in and let her know that he is doing well. For this quick check-in, he rarely does a phone call, and the quick texts are part of his morning and evening routine. In addition to these daily check-ins, he shared that he might text his mother throughout the day, but those are spontaneous and not part of the daily routine.

I always text my mom in the morning and when I go to bed. I mean the one constant is just like messaging when I'm up, just so that she knows, like, you know, I'm alive and like, okay. (R14, f, Singapore)

Students' reflection on their use of messaging signals a second category of use cases which is closely related to students' experience with maintaining relationships over distance. For many of the participants of this study, messaging applications provide a shared virtual space where conversation flows easily and almost continuously. Between phone calls and video calls, asynchronous communication in the form of sending pictures and texts or, in some cases, video and audio clips helps students and their strong ties remain in touch and aware of each other's day-to-day life experiences and feelings. The prevalence of these micro-interactions among the participants of this study shows that students and their strong ties value these messages more than what might seem like a mere exchange of words or media content.

For example, R31 shared that he sends messages to his parents and girlfriend, who all live in Germany, more often than he talks to them over video calls. In his response, R31 emphasized that the texts are about his everyday experiences and small matters that he sends



them of his life in the US. A beautiful sunset, as R31 describes in this example, is in itself not a major or unique event. However, the act of sharing this simple moment is an expression of affection by him to the people he cares about.

We text actually quite a lot. So we text a lot more than we zoom. So especially with my girlfriend, we basically text every day. I would not say we text all the time, but we text pretty much. And with my parents, I text like every other day and I send pictures. So to my girlfriend as well as to my parents, from the University, when I go to a sports game. And when there was nice sunset, like it was yesterday. So I sent them a picture of the sunset of the campus yesterday. I mean when we text it's most of the time, just daily stuff. (R31, m, Germany)

#### **4.4 Family Group Chats**

Most students mentioned using family group chats as a space to share photos, videos and other daily updates. While the level of activity in these groups differ among families, they all share the notion of family space and a space where all family members feel comfortable sharing and engaging with others. Based on students' stories, it seems that these groups are used as CMC alternatives to a family conversation where each member is able to share and interact with others at the times of day that is convenient. The flexibility that these group chats offer make them easy for members to stay connected without the effort needed to schedule a family group call. For example, R2 shares his experience and refers to what happens in the group chat as a constant flow of conversation.

I mostly use a group chat to post updates on my life. And actually, in most cases, my mom would be sending like recipes or like, there's like random photos or reposting things in a group chat for me to read, and I would like respond to that.

But I often post what I'm eating, I just take photos of the food I'm having to the group chat, and they'll comment on it. It's like a pretty natural way to interact.

And it's like a constant flow of conversation. (R2, m, Taiwan)

While the group chats are regarded as open spaces for sharing, a few students mentioned that they are careful not to share too many pictures in these groups. For example, R24 shared his concern about sharing too many photos, and his quote signals his perception of the space as a shared space that belongs to everyone.

I share some photos in family group. But not all of them. You know, I will pick certain images for family group because I'm afraid that it will be very annoying if I share too many photos. Because they have their own things to share. And I can, I cannot like take up all the space. (R24, f, China)

#### **4.5 Communication Across Different Time Zones**

When I asked students about their decisions regarding the timing of calls to their family and friends, most commonly the answers reflected students' consideration of time zone difference between US and their home country. Except for international students who are from Canada or the countries in South America, all other international students in the US experience a significant time difference with their home country. This time difference, ranging from 6 hours (e.g., Morocco) to 12 hours (e.g., Taiwan), impacts' students communication routine and pattern with their strong ties. With limited overlap in wake times between the two time zones and by taking into account the unavailable times (classes, jobs, etc.) students and their families have limited options during their day to call each other.

For example, R22 shared that he usually calls his parents after school and at night when it is morning in China. During the week, sometimes one of his parents won't be on the call because

he or she has left the house for work by the time R22 calls. R22's experience is not unique. Many international students, similar to R22 and R29, experience a similar situation. The time of day that works for students for a call might not work for one or even both parents resulting in shorter or less frequent calls.

I try to call them both [parents], but because of the time zone difference, I mainly call them during my night like in a weekday. So in that case, maybe like one of my parents won't be available because they're at work. So in that case, I'll just talk to the one who is available. (R22, f, China)

I don't really communicate with my family much. because of the time difference, it is difficult. So when I can do it, they're mostly asleep or at work. So we try to do it like once or twice a month over the weekend and when we do we talk for like an hour or two over video. (R29, f, South Korea)

To address the challenge of finding the right time to call each other, many students and their strong ties have developed routines around the timing of calls. Routines are helpful for keeping a relatively consistent schedule for calls based on the mutual understanding of each other's availability and time zone. These routines might not be followed at all times and changes happen for periods of time. I will discuss some of the factors that impact the routines in the next section. However, on a high-level students' responses show that these routines and in other words, the patterns of synchronous communication, remain relatively consistent over time. For example, R14 mentioned that he calls his mother around the same time every time, which is evening in the US and morning in Singapore. This set schedule allows R14 to not only talk to his mother but also get the chance to talk to his brother during breakfast time in Singapore.

Singapore and US, they have like a 12 to 13 hour time difference, depending on the daylight savings, so I generally call her [mother] at like 7:40 PM, my time, which is the morning in Singapore, and that's right before my brother leaves for school. So then I can talk to both of them at the same time. So that's generally like when I call for about the 10 to 15 minutes. (R14, f, Singapore)

Similar to R14, a few other students mentioned that they plan their calls around the respective mealtimes of the two countries (e.g., dinner time at one location, and breakfast or lunchtime at the other location). For families who intentionally set their communication routines around mealtimes, these times are more than a convenient time to coordinate calls. Video calling each other during the meals is a shared experience that brings a sense of togetherness, similar to sharing meals in person at a table. For example, R9 shared that he often calls his mother while eating breakfast, and they have a video call while talking and eating their meals.

I tend to call my parents or my mom once in the morning, and then once in the evenings because of the 12-hour time difference so twice a day... so I'll be eating breakfast, and then she [mother] will be close to eating dinner or preparing dinner. And so that's when I often call her kind of while I'm eating breakfast, we will be video calling. (R9, f, Japan)

Routine calls with friends are less common. However, some students have regular and routine calls with their best friends from home.

With one of my friends in China, she and me are like she's my bestie from high school, and we kept contacting with each other every day. We do one video call every week and like that's the rule. Because we both think that we need to, like,

see each other every week to get rid of our stress and talk. Just chat with each other about interesting things or some worries happen in life. (R25, f, China)

In this section, I discussed how routines help students navigate the challenge of living in a different time zone than their family and friends. Another strategy used by students in addressing the time zone issue is use of asynchronous modes of communication for messaging family and friends during the times that they might be sleep (outside of their awake times) which I discussed in the previous section.

As mentioned above, communication routines are followed often but are not set permanently. The following segment discusses some of the factors that influence these routines and especially the frequency of calls. Generally, the timing of the calls is relatively consistent since the underlying reason, the time zone difference, remains consistent and does not change. However, the frequency of calls can be easily impacted by external factors. The next section discusses this aspect of routines and looks at factors that could impact it.

#### **4.6 Frequency of Calls with Family and Friends**

The frequency of interactions is another key component of relationship maintenance and a key aspect of family communication routines. Among students of this study, the frequency of calls varies and has a wide range. Some call their family every day, and some do so every few weeks. However, most students call their families at least on a weekly basis. Those who call their family very often (e.g., daily) tend to have shorter calls, and those who call less frequently usually have longer calls. Since CMC tools are practically free to use with access to a reliable Internet connection, financial concerns do not impact how often or how long students talk to their family and friends. The typical frequency and duration of calls that students settle at results from multiple factors and personal preferences. Some of the most common factors that were

mentioned in the interviews were parents' expectations (often for more frequent communication), parents' and students' need for emotional support (especially during difficult times), and availability of free time due to everyday commitments (e.g., at work and school). I provide more details on these factors below.

Many students shared sentiments that highlighted the role of parents' expectations in their decision about how often to call home. For example, R28 shared that when he does not call home for a period of one or two weeks, his family reacts to this change in a typical cadence negatively.

Sometimes I would be calling once every day or two days, but in certain weeks, I might not have a single phone call, which definitely angers my family. I've had stretches in which I haven't talked in 10 to 12 days. My mother exaggerates it. She calls it like, like a month or something. It's really 12 to 15 days. But yeah, I realized that 12 to 15 days is a lot [for] not having a phone call. (R28, m, India)

Efforts to manage family needs and expectations are fairly common. Another student, R5, shared that he feels guilty when he does not call his parents for an extended period. This and similar examples show that students constantly face decisions around how to maintain their relationships and how much effort to put in while still maintaining their sense of independence as well as focusing on their day-to-day matters.

Sometimes when I didn't talk with my parents for a while, I felt guilty about that.

I would like to be patient and talk to them often and longer. But usually, it won't be too long, just five to ten minutes. (R5, m, China)

Some students have to navigate a balance between their preferences and this sense of autonomy and their parents' expectations or needs for frequent communication. Students desire to maintain these long-distance relationships, however, their need for communication might not

match their parents' needs. For example, R3 shared that her mother is persistent and calls her daily, but she chooses not to respond to those calls every time her mother calls. Another interesting point in R3's response is that she highlighted that the frequency of calls has changed over the years and now she calls her parents more often than before.

Mom calls me every day doesn't mean I necessarily pick up every day. But she definitely tries every day. With WhatsApp like, all day, every day. My family isn't super big into video calls. My mom likes video calling though. My parents are divorced. I call my mom separately. I would say I call my dad once a week which is a pretty good rate. It has changed over the years. I think freshman year I was pretty neglectful. But as I've grown up I've like made it more intentional to call back home. (R3, f, Brazil)

Several students used the term "independent" in their reflection on their communication frequency. Most of the students who call home less than weekly mentioned that they see themselves as independent adults and they don't feel the need to call home more often. For example, R8 shared that he doesn't see himself as "super dependent" on his parents and, therefore, text messaging is adequate in their family dynamic for relationship maintenance.

I probably video call my parents once a month usually, sometimes once per three weekish. We don't do a call that often because of the time difference. And I've just never been super dependent on my parents. So texting is enough for us to maintain that tie. (R8, f, China)

#### **4.7 Transition from FtF to Long-Distance Impacts Relationships**

Many people have a closer relationship and bond with one of their parents compared to the other. The participants of this study shared a similar sentiment regarding their relationships

with their parents. In the majority of the cases, students highlighted that they had had a closer relationship with one parent (often their mother) even before leaving their country.

This study does not aim to investigate family and parent-child dynamics and why students feel closer to one parent than the other. However, based on the stories shared by students, it is clear that the transition of the relationships from face-to-face to long-distance impacts this dynamic and potentially increases this gap in closeness. In particular, the relationship of a student with the parent they have a less strong bond with is impacted more as the relationship transitions to a long-distance one. Impromptu and spontaneous family interactions happen frequently when family members are present in the same physical space. In these face-to-face settings, anyone who is present can join the conversation at any time or be part of the interaction by simply being present at the moment of the interaction. However, when students move to a new country, family visits happen less frequently, and the majority of the communication needs to be virtual and mediated due to the physical distance. CMC tools are very limited in providing a shared space where family members can be part of the interaction without directly talking to each other. This seemingly simple shift in communication mode can have a significant impact on students' relationships with the parent, who is quieter, is less expressive, and is less direct with interactions.

R2 shared his experience with this unequal communication and the consequences of it. In this case the fact that R2's father does not use messaging frequently could contribute to the gap in their relationship. R2 uses the term "jealousy" to describe the ongoing dynamic and tension that has appeared in their family as a result of this unequal communication. While not every family experience this level of negative emotions caused and exacerbated by the transition from



FtF to LDR, this example shows the importance of acknowledging the changes in relationships when they transition to LDR.

I talk to my mom more because she texts me more if that makes sense. And sometimes I feel that my dad probably would be jealous of that. So I try to like, call my dad because my dad doesn't really text me that often. He send[s] like news to me. And I respond to it, but it's not an ongoing conversation. He is not really good at like messaging people, I guess. But I feel like this is a sort of like jealousy thing going on between them. (R2, m, Taiwan)

Another student, R10 shared that she has long video calls with her mother only. As she describes, her father "is in the background".

I video call my mother at least once a week. most of time, the video call will last like, two, two or more hours. And most of the time [my mom] speaks because she really likes to talk. Sometimes we do it like, two twice or three times a week. And I don't video call my father that much, because he's always in the background. He sometimes engage[s] in video call[s], like, sometimes, he ask me some questions about like, what, how do you feel this week? Are you tired now? And then he just he just goes away. (R10, f, China)

In this case, R10's mother is more vocal and communicative, which allows for the maintenance of the relationship even over the distance since the two talk for hours on a video call. In contrast, R10's father is less communicative and therefore, their relationship might be more impacted by the change from FtF to long distance. R10's response also shows that her father might not know what to talk about since he asks simple questions and then disengages from the conversation.

For international students living in a different country than their strong ties have another consequence in the long-term as well. International students have unique and sometimes very different experiences since they live in a new country and culture compared to their ties and this could impact the number of shared topics they have to talk about with their strong ties. R33 described this experience as having “separate lives” compared to her friends back home.

I feel like since I came, it has been more of like, I have like separate experiences.

I still tell them what has been happening with me, and they tell me what has been happening with them. But there is kind of like a change, because at first, we would like hang out together, we had shared experiences, but now it kind of feels like two separate lives. I mean, there is like a physical separation. But then like, especially everything is like, pretty different now. (R33, f, Ghana)

#### **4.8 Chapter Summary**

In summary, most international students of this study have a relatively set routine for their interactions with their family and friends. These routines involve specific CMC tools, mode of communication, and time of day and week when the audio and video calls take place. These routines enable international students to have regular interactions with their family and friends across different time zones.

This chapter also emphasizes the importance of asynchronous mode of communication and especially instant and text messaging in the communication practices of international students. Family groups chats emerged as an important virtual family space where members can freely share photos, and daily updates and maintain a connection.

In the next chapter, I discuss the topic of conversations among international students and their strong ties and highlight the variations in topics these students share with their family compared to their close friends back home.

## **CHAPTER 5: SHARING LIFE MATTERS AND SEEKING SUPPORT VIA CMC**

This study explores how students navigate relationship maintenance remotely and how they use CMC tools to stay connected with their family and friends over distance. On the surface, international students' conversations with their families seem typical and straightforward. International students update their families on schoolwork, their day-to-day activities, and life updates. While what students share might seem typical, what students do not share reveals important nuances and complexities in the dynamic of students' relationship with their family and especially their parents.

In this chapter, I discuss the content of students' conversations with their family and friends and provide details on the topics they intentionally withhold from their family as well as their reasoning for the decision to not share some matters with the family members and especially their parents. Related to that, I explain how students rely on their friends for matters they don't talk about with their family (e.g., homesickness) and explore students' perspectives on why some topics and concerns are better shared only with friends.

The focus of this chapter is on the content of students' conversations and their support-seeking behavior. In the next chapter, I discuss online shared experiences and students' approaches to engaging family and friends in their daily experiences.

### **5.1 Topics of Conversations with Family**

In the following sections, I discuss the topic of conversations between international students and their families and especially their parents.

#### ***Maintaining the Connection Through Sharing Daily Life Matters***

Students dedicate a significant part of their conversation time talking about their everyday experiences and giving their parents updates on what is happening in their life and at

school. These regular updates allow students to maintain a sense of connection with their family and especially their parents over time. An emerging theme in the responses was around students' effort to reassure parents of their health and success in the US. Students are aware that their parents care deeply about their well-being in the US, even when they don't specifically ask about it. R19, for example, mentioned that in almost every call, he tries to reassure his parents that he is doing well in the US and at school despite being distant from the family.

I tell them about the coursework. Just the daily issues that I've been faced during this week. And give them some updates about my grades and my like health. Like just telling, just telling them like I'm doing good out here without you guys. (R19, m, China)

For some students navigating the conversations and constant updates on their daily routines can become frustrating at times. For example, R3 explained that her mom is always worried about her health and diet and sometimes even asks her to send pictures of what she is eating. For parents, asking this level of detail about their kid's life could be a signal of their attempt to be involved in their lives. However, on the student's side, these constant concerns expressed by a parent can cause frustration. Overall, this and similar examples reflect one of the challenges students face which is balancing a sense of independence while maintaining their bond with their parents.

[I tell my mom] what's up with my life. My mom is very concerned. Like, [she asks] are you exercising like, are you eating well, blah blah blah, like, show me what you're eating, what you're wearing, etc. (R3, f, Brazil)

During the calls, parents also share their daily routines and activities and update their adult children on events and matters happening back home. Sharing these mundane and daily

matters in detail which is relatively common among parents of international students, signals parents' desire to maintain their bond and closeness with their kids and it can also help parents with feelings of loneliness and sadness after the departure of their kids.

[my mom] tells me about like, "oh, I went to the market this morning. And I got some groceries or like, and then I got a haircut. And then I went to meet my friend." She like, send me live updates, like a huge block of text okay, she updates me pretty frequently on what she's doing in her life and say oh I bought these clothes today. I bought these shoes. It's like, she tells me everything. (R2, m, Taiwan)

While some parents share extensively about their day (see example above from R2) for some parents, what dominates the conversations are students' life experiences and activities rather than parents' life. For example, R16 mentioned that the conversations with his father are mostly about R16 and his life. R16's father prefers to just listen to him talking about his college experience which shows the high level of involvement and interest of R16 father as a parent. Additionally, R16's comment about his father's life when he says, "it's probably boring" highlights the difference in lifestyle of R16 and his father. R16's father has a routine lifestyle of being at work and home, while R16 is a college student living and studying in a new country which means new experiences and activities.

They're more interested in hearing about me than I am about hearing about them, so my dad actually says barely anything about his life there. It's probably boring anyway because he just works all day. And then he goes to bed. The most my dad tells me about his life is the weather in Beijing. (R16, m, Philippines)

Maintaining engaging conversations can be challenging for some families, especially given the cultural and lifestyle differences that international students live while in the US compared to their parents back home. Despite these challenges, responses shared by participants show that the majority of parents make an effort to connect to their kids and do their best to find topics to talk about. For example, R10 explains that her father sends questions on trivial matters, and R10 thinks that this is his father trying to have a conversation but does not know what to talk about.

My father's message is more about like [for example] he just asked me, are you tired now? Are you doing your homework now? What did you eat today? It's like I think less information. I feel like he just wants to talk with me. But he doesn't really know like, what to talk about. So he'll just say, "oh, what are you doing now?" (R10, f, China).

Another student discussed an interesting case that is related to the point mentioned above regarding challenges some parents face in initiating conversations that their kid would be interested and engaged in. R2 explains that he and his father started talking about politics after his move to the US, and it gave them a chance to connect and have a topic to talk about. R2 adds that his father wasn't interested in politics in the past but R2's interest in the topic has encouraged his father to participate in discussions around politics.

I feel like he's not really good at like, starting conversations. So he always needs a topic to talk about. So that one he does a lot to like, to find a topic...my dad, I feel like he wasn't that into politics. But I think it's because I tried to talk about it with him a lot. And he like, tr[ied] to get into that. So like the loop of what's going on. So you can find like a topic that we can both talk about. Because

sometimes I try to talk about what I'm studying here. And I feel like that usually doesn't really go pretty well, because it's hard to explain. It's like a, like someone who doesn't really have background in it. Like I'll be talking about technologies and how that's like effectiveness and things. Sometimes it seems that he didn't really get it and like, it's hard to like, keep the conversation going. But when it comes to like Taiwanese politics or like world politics, it's pretty easy to just like keep talking about it because there's so much to discuss. (R2, m, Taiwan)

In summary, for international students and their parents, conversations around mundane life matters and activities seem to serve a purpose beyond updating each other and telling each other of life happenings, they can provide emotional support to both the parent and the student by reducing feelings of loneliness and separation and fostering a sense of comfort. Additionally, another less visible effect of these conversations is building memories and maintaining shared topics over time. While students and their parents don't have the opportunity to create in-person memories, these regular conversations could create a sense of shared relationship history and allow separated families to maintain shared topics to discuss.

### ***Importance of Family Support for International Students***

Students rely on their families, and especially their parents, for emotional support and for advice about problems and challenges they face in the US. Based on the data I gathered, seeking support and asking for advice is the second most common topic after daily updates. Several students pointed out their strong relationship with one or both of their parents and emphasized that their parents are the ones they fully trust and a source of emotional support. Having someone to share worries and challenges with can reduce stress and anxiety for students, allowing them to cope better and adjust to living in a new country. For example, R24 explained that she feels



comfortable talking to her mother about the challenges she faces with the coursework. This is a clear example of emotional support where R24's mother supports her during a challenging time at school with exams.

[my mom] knows me best. And I cannot find anyone else that is more appropriate for me to share [this problem] with. So, yeah, I think she is the last boundary for me to protect me from those disappointment and sadness and those regrets. My mom will tell me that she didn't expect too much from me especially with my study... those words make me feel very comfortable and I try to pick up my confidence and keep on going. (R24, f, China)

The act of support-seeking could be explicit (e.g., asking for help), but it could also be implicit where a student feels support and comfort through just having a conversation with their loved ones. Several students, who consider themselves very close to their parents, pointed out that even just hearing the voice of their parents or seeing them via video calls helps them feel better and is comforting to them. For example, R37 said that just hearing his mother's voice helps him feel less anxious and is comforting. Similarly, R36 mentioned that he feels good just talking to his family. In these and similar examples, we notice the crucial role of CMC tools in the life of separated families. While CMC tools are not ideal in addressing all of the emotional and social needs of international students, they play a critical role in times of separation by enabling international students to maintain a line of connection and communication.

[phone calls] are effective because sometimes when I feel anxious, I will call her to hear her voice and her voice and emotion and you know our talking actually comfort me and relieves my anxious feelings. (R37, m, China)

School can be stressful but just like speaking to them because my family is super important to me so just being able to, like talk to them in a sense kind of relieves me. And so I would say, generally, speaking with them puts me in a pretty good mood. (R36, m, China)

Seeking support from parents is not limited to emotional support. While relying on parents for emotional support is more common, some students talked about seeking parents' advice with practical matters and challenges they are facing in the US. For example, since many students go through job search for internships and full-time positions during their time in the US, talking about job interviews and the process of applying for jobs was a topic that came up in the interviews several times. R7, for example, explains that she shares her job search journey with her parents and seeks advice on related matters. R7's openness to involving her parents in her career journey also shows that she values their opinion and trusts that their advice, despite being based on a different cultural context, is still applicable to her experience in the US. In times of challenge and uncertainty, many international students draw comfort from the bond they have with their family members.

The beginning of the semester, it's like, pretty heavy recruiting season. I would let them know. Like, the companies that I'm looking like most of the companies I'm looking at. And I would also update them on, like, the interviews I'm getting and like how, in general, the process is going for me. And sometimes I would also seek advice from my parents on like, you know, how to do interviews and like, talk about the industry in general with my, my parents, my dad mostly, to get some like to get their insights as well. (R7, f, China)

It is important to note that not all parents have the background and skills necessary to support their adult children with their job search and other US-specific matters. In the next section, I explain how these students rely on their friends for matters their parents can't help them with and provide a more comprehensive picture of the support systems for international students.

### ***Information that Students Withhold from Their Family***

Several factors lead students to withhold information from their families. International students are worried about making their parents worried or sad and therefore choose not to disclose their emotional challenges, such as homesickness. The physical distance and parents' inability to provide tangible help also contributes to a pattern of withholding information. Lastly, families' lack of experience with the US social and political landscape can be a discouraging factor for students since they believe their families might not be able to understand the nuances of their experience in the US culture. In the following lines, I review these reasons in more detail.

Many students mentioned concerns about the impact of sharing challenges and problems they face with their loved ones and especially their parents back home. Students intentionally skip matters that they feel might make their parents worried or sad, which includes problems they have in or out of college. For example, R19 explains that he doesn't talk about the difficulty of studying in the US in order to not make his parents worried. This and similar examples show that students are mindful of the potentially negative impact of their hardships and what they share on the emotional well-being of their parents.

The [school] pressure I don't talk about. Like I just want to tell them like the positive side of my coursework, like what I've learned, like, what grades I get,

like, the how much homework it is, like how hard it is, I never really want to share it to them [my parents]. Because I don't want to make them worried. (R19, m, China)

Among the respondents, the feeling of homesickness and similar emotional experiences, such as a sense of isolation and loneliness, were commonly mentioned as topics students don't tell their parents. Students actively and intentionally try to paint a positive picture of their emotional well-being in the US. R25's response highlights the emotional toll and pressure of portraying a positive and sometimes unrealistic picture and not expressing one's emotions fully. For many students, this disconnects between how they feel internally and how they express and talk about their experience in the US externally can cause further stress and discomfort. International students are in a difficult position and have to find a balance between their desire to share their struggles and seek emotional support and their desire to protect the emotions of their loved ones.

Last week I had a video call with my grandma and when we finished the call I started to cry. I'm still immersed in the emotion. Like, because in the video call, I am more likely to show them, I live a happier life in there. And don't worry about me. And, and I am good. And I yeah, but when I finish it, I just face like, ah, like the feeling of I leave my I leave my own life and I live just by my own and I don't have other people by my side in US closely. So those feelings become more and more like strong, much stronger when I finish the phone call. (R25, f, China)

Another reason for not sharing problems is international students' perception that their family cannot help with the issue and therefore they choose not to burden them with the information about the problem. Most notably, in instances where the family is unable to provide

tangible support or help the student with solving the issue, we see a pattern of not sharing the problem altogether. R13 is one of the students who mentioned this approach.

I think I tend to reserve, like sad feelings or things I am annoyed about, because my parents wouldn't be able to help even if I tell them. So things that we can't change, I tend to not just not talk about it. (R13, f, China)

Additionally, since families living in students' home countries have no direct experience with US social landscape and cultural norms, they might be unable to fully understand the issues such as stereotypes and microaggressions that international students have to deal with. Several students mentioned that they don't share these instances with their families since they know their families wouldn't understand it. R34 explained that he often gets asked about his skill in speaking English and that he doesn't share this and similar negative experiences with his family. His reasoning for not telling the family is rooted in the perception that the family wouldn't be able to understand this particular experience.

One thing I get so often, which is funny, somewhat annoying, sometimes is when I'm like speaking to a stranger, and they're like, Oh, where are you from? I'm like, I'm from India. Oh, you speak really good English for an Indian. I'm like, bro, English is my native language. People have stereotypes and assumptions about India already. Me and my Indian friends always joke about it. I shared on the Internet, like with my other international friends. But I don't talk about these with my family. I mean, honestly, it's like, very like these are like, I see them as minor inconveniences, usually. And it's also something that my family has no experience in. So I feel like it would be hard for me to explain it, it's gonna be hard for them to understand it. (R34, m, India)

Note that R34 explains that he shares this experience of microaggression with his international friends probably because it's easier for his friends to understand this. In the next section, I provide more details on topics students feel more comfortable sharing with their friends than their families.

## **5.2 Topics of Conversations with Friends**

In the following sections, I discuss the topic of conversations between international students and their friends back in their home country.

### ***Sharing Life Matters with Friends***

In the previous section, I discussed that with family, many students feel the need to paint a positive picture of how their life looks like in the US and to reassure their parents that they are living a happy and successful life. This perspective is not common in interactions of international students with their close friends, and they feel comfortable sharing the difficulties of living in the US as international students. The overarching theme related to international students' relationship with their friends is that with close friends, they feel comfortable sharing anything, and the range of topics they share is more extensive than what they share with their parents. Here, for example, R4 talked about a small group of friends from middle school that she still talks to very often. R4's friends live in her home country, China. R4's experience highlights the importance of close friends for international students. This close bond allows R4 to feel comfortable with sharing both everyday and daily matters and more personal matters such as her emotional state. This level of comfort and trust is very important and shows that close friends can be a significant source of support for international students.

We kind of talk [about] everything. Firstly, we talk about our like, like they are all graduated this year, so before that we talked about like, study, and then we talk

about work. And then we talked about like, relationships. Yeah, and we share like food and even some like emotions like someone feel like very depressed or like stressed out, so we just talk about it. (R4, f, Pakistan)

Dating was a topic that came up several times, and students said that they talk about their dating life with their friends in much more detail compared to what they share with their parents, and some students don't share their dating life with their parents at all. R1 refers to old friends who are from India but live in the US as international students at the time of the interview.

I'm more open about my dating life with my friends...[and] more open about like some of my social and party life as well. I try to share a little bit with my mom. But it's of course a little toned-down vs with my friends I tell them a lot about people I'm seeing. (R1, m, India)

Feeling more open and comfortable with friends was echoed by several other students as well and the ease of talking to peers the same age was discussed by some students. For example, R32 shared that she feels more comfortable talking about relationships with her close friends, who are the same age as her and are high school friends from home.

[for] personal stuff, like, my relationship stuff and things like that. I feel like it's easier to talk to like people your age than it is to talk to, like your dad or something. So like, definitely, or even like, like, even if there's like some drama going on with like, my friends in college, like, I'll be more likely to tell my high school friends because they're going through the same things. (R32, f, Pakistan)

### ***Friendships and Support Seeking***

Students rely on their family and their friends for emotional support and practical advice. While both family and friends provide support, there are important differences in the dynamic of

support seeking as students interact with these two sources of their strong ties. As discussed in the previous section, students generally feel less hesitant to bring up their difficult and challenging experiences when they talk to their friends. In the context of support seeking, this comfort in sharing personal matters ease the sharing of emotions and feelings that students often withhold from their parents. Students feel more comfortable open up to their close friends about the difficulties of living in the US. For example, R25 explains that she talks to two of her close friends who live in China about her feelings of homesickness, and she emphasizes that she doesn't tell her family when she misses them.

I will not tell my family I missed them. But I will tell my friends I really miss my family. Because I don't want to show my family those side of things where like some bad things were like something made me feel worried about I, I chose not to, like tell to my family, but I will tell to my friends. (R25, f, China)

As mentioned above, students are more comfortable sharing their emotional challenges with their close friends. Several students said that they consider their siblings as close friends, and they have a strong bond with their siblings. In these cases, the dynamic of support seeking is more similar the one with close friends, and the student feel comfortable sharing emotional matters that they are likely to withhold from parents. In the example below R29 is talking about her experience and that she prefers to talk to her friends from home or her sister regarding an incident at Cornell rather than her parents because she does not want to worry them.

I think with my friends I talk a lot more about like, how I feel here rather than with my family like I think I do that with my sister like how I feel. But with my parents, I don't really, if I'm going, like if I'm having hard times, and I don't really talk about that, because I don't want them to worry about me. So like the



events that happened this week, I haven't really told my parents but I've like told my sister just to make sure that [she knows] these are going on, but like, I'm okay. Like, you know, things like that, but I just don't want to worry my parents.

(R29, f, South Korea)

It is important to note that students' willingness to not worry parents about challenges they face is not the only reason for relying on friends. Several students pointed out that they feel more comfortable with their friends because those friends who live in the US as international students are experiencing similar matters as they do. For many students, going through similar experiences as other international students in the US creates a sense of mutual understanding and empathy with other friends who are international students, which results in more comfort and ease in sharing and talking about life experiences.

For example, R32 said that she feels that her friends can relate to her experience better compared to her family because her friends are also international students in the US. R32 emphasized that if her friends were still in Pakistan, the dynamic of their relationship would have been different and possibly, they would feel less close to each other due to the difference in everyday experiences living in two different countries and cultural environments. This highlights the importance of shared experiences and environments in shaping and changing relationships over time.

I'm like, more comfortable with my high school friends [compared to family] just because, like I grew up with them and like, a lot of them are also like in America as I feel like we can still relate a lot. Like I feel like if they were all back home and I was the only one here it might have been harder, but personally, it hasn't

been hard for me because we're kind of like going through the same things. (R32, f, Pakistan)

Shared experience of living in the US as international students also make it easier for students to seek practical support and help from those friends who live in the US as international students. R23 shared his perspective on this point and said that he relies on his friends regarding information on job search in the US and highlighted the fact that his parents wouldn't be able to help him with this matter.

Usually, I'm just like more in depth about like my recruiting problems given that, like they would understand better given that they've been through. So it's like my parent, like there's no way like, there's no point for me to complain about it that much because it's like, they don't really know what I'm doing anyways. So it's more, I like more seek advice with my friends and I'll go in more detail about these things. Given that they would understand better and know how to help.

(R23, m, Hong Kong)

### **5.3 Chapter Summary**

Overall, the current chapter discusses the content of conversations between international students and their strong ties. Students use CMC tools to share everyday life matters with their family and friends.

Regarding emotional support, I found that international both family and close friends from home have a key role in supporting international students. Several students reported that they tend to portray a positive picture of their life in the US and withhold from sharing their challenges and hardships. These students tend to share their struggles with their friends instead

as they try to avoid making their parents worried about them. Personal topics (e.g., dating) is another category of topics that some students tend to only share with their friends.

In the next chapter, I discuss the online activities and shared experiences that international students engage in with their family and friends to foster a sense of togetherness. These activities include the following: planned synchronous activities such as online celebrations, spontaneous activities, and post-activity sharing with photos and videos.

## CHAPTER 6: SHARING EXPERIENCES AND ACTIVITIES WITH FAMILY AND FRIENDS ONLINE

Face to face interactions and spending time together in the same physical location allow people in close relationships to share experiences and engage in shared activities. In these shared moments, people experience a sense of intimacy and togetherness which enhances their relationship and connection (Fiese et al., 2002).

Due to the geographical distance, international students miss the chance to have these shared experiences with their loved ones in person. Living far from family and close friends with no face-to-face interactions for extended periods of time has a direct and potentially negative impact on international students' mental health and their relationship with their family members and close friends (Mori, 2000; Sawir et al., 2008).

Findings of this study show that to mitigate the negative impacts of distance, some international students use CMC tools to do shared activities with their family and friends (e.g., playing online games). This chapter discusses planned synchronous online activities such as online celebrations with family members and playing video games with friends. I then review the common challenges and concerns that students shared regarding planning, coordinating, and sharing experiences online with their strong ties and their experience with unplanned and spontaneous experience sharing such as eating meals together during a regular video call.

Additionally, I discuss the notion of *post-activity sharing* which in this dissertation I define as the act of sharing experiences and activities afterwards. Post activity sharing might be unidirectional in which only the student or the strong ties share. For example, students might send their parents photos of places they have visited or food they have cooked. Post-activity sharing might be bidirectional in which both the students and the family (or friends) engage in an

activity offline and then share and talk about it online. For example, both the student and the family watch a movie separately and then talk about it during a call. Finally, I discuss experience sharing via photo and video sharing.

In this chapter I have categorized students' interactions into the aforementioned categories for two reasons: first, the categorization of students' interactions with their strong ties helps us understand the nuances of their relationship maintenance strategies. Each category highlights students' response to a need or desire and by understanding these needs and desires we can design better solutions for this population. Second, compared to synchronous experience sharing, less attention has been given to non-synchronous experience sharing (Heshmat et al., 2020). By discussing experience sharing that happens outside of the phone and video calls, my goal is to highlight the importance of designing for this common type of interaction observed among the participants of this study. Understanding students' behavior and reasoning for experience sharing help us design tools that better support the social needs of this population.

## **6.1 Planned Synchronous Online (PSO) Activities**

Planned and synchronous online activities are those activities where international students and their strong ties plan for an online activity in advance by setting a specific time and discussing other logistics. In this section I discuss two subcategories of PSO activities that came up in the interviews often: online celebrations with family and friends.

### ***Online Celebrations with Family and Friends***

Celebrating with family online (e.g., birthdays, new year, and religious holidays) was the most common instance of online activities done with family mentioned by students. For some of the distance-separated families in my study, using CMC tools is a routine way of observing cultural and religious events together as a family. Although the specifics of family celebrations

differ, the common theme is that families tend to go beyond a regular video or audio call and put extra effort into planning the online family get-together. For example, some families do video calls on special days even though their usual mode of communication is phone calls. Some families plan for a longer-than-usual video call that can last for hours and might involve extended family members, especially grandparents. In the following example, the student shares how the family facilitates the participation of R14 in a culturally significant event by having a video call at a specific time.

We have like one major celebration just called Ganapathy. It's like an Indian kind of cultural celebration. So for that, generally like, what would happen is that my mom would just like would FaceTime me or they [family] video call me and so I could see like, the Aarthi, which is the prayer time. So I could see that happening in real-time. (R14, f, Singapore)

Another student, R9, shared her family tradition about birthdays and other special days during the interview. The fact that this family has developed a tradition and process for celebrating special days online and remotely shows the significance of these days for this family and their dedication to celebrating while living far away.

During birthdays, we have a family tradition where, for example, recently it was my birthday, so I bought a cake, and they bought a cake. And we would do a video call and then we celebrate my birthday that way. So we'd still saying happy birthday and then we take photos and it's really funny. They would like hold up their iPad and we take a selfie. So we do celebrations that way. And same with like Mother's Day, Father's Day. Christmas, I'm home for Christmas usually. That's how we've been doing it [celebrations] when I've been remote. I would

say those would be most of the shared activities. They're mostly during celebrations. (R9, f, Japan)

In my data, celebrating events with friends was less commonly mentioned. The reason for the prevalence of family celebrations online could be due to the fact that some of these occasions are counted as family celebrations (e.g., religious events, Mother's Day) and even for those who celebrate in person they do it mostly with their families and loved ones rather than their friends. Once they are established in the host country, students tend to celebrate events with their friends who live in the same city and celebrating with friends from home is not very common. However, there are exceptions, and some international students celebrate events and especially birthdays with their friends. For example, R34 shared his experience about the routine video calls he and his friends from India have for birthdays and emphasized that during the call they all have a group conversation and do not engage in any specific activity.

We usually have a group video call for a friend's birthday. So we'd be like, hey, it's our friend's birthday is coming up, let's group call at 12 and organize zoom call or whatever. That's pretty much all we do. (R34, m, India)

Another student shared her experience about celebrating a festival with cultural significance with her friends. R24 touches on the emotional aspect of staying in touch with her friends and emphasizes that group calls last long since they do not happen very frequently due to busy schedules of these students. R24 also mentioned switching to more convenient ways of communication during the times that she and her friends are busier. R24 response is a good example of how students adapt to the challenge of staying in touch online by using modes of communication that require less effort and planning.

Last time we had a group talk was the mid-autumn festival of China. We had a group video call because, you know, my [old] roommates are in graduate school right now in China. So they are... also very busy. So every time we have a video call, it will last very long. Because it will makes us feel very disappointed if we hang up quickly. So we often making it a very long talk. With the semester goes on there'll be more classes and a lot of exams. So it becomes harder for us to arrange a certain time for video call. So we just text on WeChat whenever we want which makes it very much more convenient. (R24, f, China)

### ***Planned Synchronous Online Activities with Friends***

PSO activities that students do with their friends differ from the activities that they do with their family members. PSO activities students do with their families focus heavily on celebrations and special events. With their friends, however, students engage in online activities that are centered around entertainment and experiencing fun together as a group. Most students recalled doing at least one PSO activity in the past few months before the interview session. Playing video games online with friends was commonly mentioned in the interviews. R37's reflection on his experience playing games with friends shines light on the emotional importance of these online activities. R37 refers to this experience as "the happiest moment" of his day, which shows the positive impact of spending time with friends online on the emotional wellbeing of international students. Additionally, playing games with friends allow R37 to take a break from the daily pressures of school. Overall, the example shared by R37 highlights the importance of CMC tools in the lives of international students.

We play, you know, online poker and other online games. We use the app called Discord, [which] enables us to record ourselves to show our voice to them



[friends] simultaneous[ly] and it's convenient for us to use these apps while we playing games. So we will open this app [Discord] while we are playing games. It's the happiest moment actually is the happiest moment for me during the day when we don't talk about our study, our courses, our assignments and we just immerse ourselves in these games. Actually, some games are very fierce. It's a very fierce game and so very exciting, and we can just [be] immersed in games and don't say anything that worries me. (R37, m, China)

The benefits of playing games online with friends extend beyond the fun and entertaining game-playing experience. Several students reflected on the positive emotions they felt while playing games with their friends. Feelings of being at home, and a sense of togetherness were mentioned, and some even mentioned that during the game playing, they forget that they are far from their friends and have a sense of co-presence with their friends back home. As described by R36, playing video games with friends feels “awesome,” and he feels like they are “back home together.” Playing games online gives R36 a sense of togetherness with his friends despite the physical distance.

WeChat has a desktop version, and we start a call there while we're playing games...it feels awesome. It feels like we're back home together kind of like, it just feels like, I mean, using games as a medium it feels like you're in a present setting kind of, in a way. Yeah, it feels like, I'm closer with my friends literally, but then there's still that proximity that we're not... It's kind of we'd be in the zone, in our little world, playing the games and the topics would surround about that. (R36, m, China)

Other than playing games online, participants shared about watching movies and drinking with friends. Similar to the example above related to playing games online, the core of students' stories about watching movies and other activities such as drinking was the sense of togetherness they felt during those activities. Students face barriers and challenges that make these activities less desirable. In the next section on barriers and challenges I provide more details on these issues.

Other than playing games online, a few students mentioned unique and creative ways of doing online activities with their friends. For example, R25 and her best friend, who lives in China, are both guitar enthusiasts and play music and sing together using WeChat video call. By using WeChat to play music together, R25 and her best friend have found a way to use CMC not just for conversations but also for engaging in a hobby they enjoy. This allows them to create new memories and express themselves in a delightful way.

We both like [to] play guitar. Sometimes we will have a like a phone call on WeChat and she will play her guitar and I will sing the song or like I play the guitar, she sing the song or we play together. (R25, f, China)

In summary, students engage in various online activities with their friends, such as playing video games and watching movies. A common theme among these stories is the sense of co-presence and togetherness that international students feel while doing these activities with their friends online. For international students, these activities strengthen their bonds with their strong ties and help them feel happy and supported. PSO activities have a key positive role in students' lives. However, students face barriers in planning, and engaging in them that I cover in the next section.

### *Planned Online Synchronous Activities: Barriers and Challenges*

An important observation that should be mentioned here is the low frequency of PSO activities among the 38 students I interviewed in this study. While most students could remember doing a PSO activity, almost none of the participants reported frequent PSO with family or friends. Given that students had a positive view of these activities, I asked them follow-up questions to better understand why they do not engage in such activities more frequently.

On a high level, there are two categories of barriers for students: (1) challenges related to planning the activity and (2) logistical and technical challenges of doing the activity.

The first category of barriers involves hurdles of planning an online activity and working around busy schedules and different time zones. When families live together in the same house or within short distances, shared experiences can happen naturally and with low effort. Every time the family gets the chance to be together in the same location, members have many activity options to choose from (e.g., sharing meals, snacks, watching TV, etc.) to have a good time and enjoy each other's company. However, for distance-separated loved ones, creating shared experiences or even a simple family conversation in the form of a group call, for example, requires planning among family members who, in most cases, live in different time zones. Related to planning difficulties, time zone as a barrier was mentioned by most of the participants. For example, R36, who shared that playing games with friends feels like being together with them, explained that living in different time zones and busy schedules make it very hard to plan for activities that require all participants to be present and online at the same time.

We're all in different [timezones]. One of my friends is in the UK. So there's definitely time difference regarding that and then we all have, I mean our like

schedules are different, our workload is different. So it's kind of difficult to be together [online] at the same time. (R36, m, China)

Additionally, time zone as a barrier not only impact the frequency of doing PSO activities but it can also impact the quality of these online interactions. Planning activities around time zone could lead to short, and rushed experiences or as R31 explains, it could lead to experiences that are more suited for some participants and not for everyone. This could result in less enjoyable experiences and discourage people from trying online synchronous activities together.

I will actually zoom today in the afternoon with my best friend actually in Germany and he most of the time, he'll have a glass of wine because it's like in the evening for him, but for me, it's three in the afternoon and I want to work after that. So it's hard to do (R31, m, Germany)

The second category involves the logistical and technical challenges that can arise during the PSO activity. Planning PSO activities takes time and effort, and the issues that happen during the activity might make them less desirable for people to invest time and effort in them. For example, R14 shared that she and her friends tried watching movies together, but technical issues made the experience frustrating to the point that they decided not to watch movies online and abandoned the idea altogether. This and similar examples show that when the activity becomes time-consuming to set up and troubleshoot, the challenges can impact the flow of activity negatively. When the challenges impact the flow and joy of the experience and the effort required to address the challenges is perceived as high, the likelihood of people abandoning the idea or activity increases.

We tried it a couple of times, initially, we liked the activity of like, watching a movie together and like being able to comment on it together. But like, we

realized, my friend especially he got pretty annoyed because it took a lot of just like technological setup, like in terms of you know, sometimes the screen is smaller, it's like, either you see the person or you see the screen you can't see like both, then it's just like, it became a bit annoying, up to a point where I think halfway through, we were just like, we're not going to do like this movie thing anymore. It was through Netflix and like Netflix Party, which is that extension that Netflix has that we used to use to watch movies together. Which was okay, but I think it like definitely could have been like a better just in terms of like the interface and just like using the technology itself. (R14, f, Singapore)

Another student, R4, shared that her parents sometimes try to play an instrument with her while on the video call. However, while playing this instrument which has cultural significant for this family is possible and enjoyable in a FtF setting, it is as R4 describes, very hard to do remotely.

Oh, I'll say like sometimes my parents would like to play like a instrument called Guzheng with me but it's like impossible because we are in like, different places. So sometimes [my mom] will show me like how she plays because she know[s] how to play and I know how to play. Like if we can, like sit together we can play [together] like a piano, but now it is kind of hard. (R4, f, China)

In addition to the common reasons mentioned above, some international students shared that they prefer to spend the time they have during a call on the conversation rather than on a shared online activity. The perceived value and benefit of doing an online activity differ among students. While some students view online activities with family or friends as a bonding and joyful experience, there are also students who see such activities as a distraction from the

conversation and, therefore not see them as useful or desirable. They shared that for them, the conversation is the most important element of the interaction, and they prefer to focus entirely on that. For example, in the following quotes, both students highlight the value of conversation and talking about their day-to-day experiences. Both students share that they perceive a similar prioritization on the other end as well. R26 acknowledged that doing activities could be enjoyable. However, she prefers to prioritize the conversation.

I think it can be fun. But I just say I prefer to spend my time talking. I just, I just have so many things to share with her [close friend]. And same for her too. (R26, f, China)

Related to the previous point, another student, R16 shared that doing online activities would take time and also emphasized that his parents are more interested in hearing about his daily experience. In this case, R16's decision about the use of CMC for conversation-focused calls rather than activities reflects his desire to address the needs and preferences of his parents. The same student in another section of the interview, discussed his experience of playing video games with friends. Therefore, it seems that for R16 and many other students, the decision to engage in conversation-only or activity-based CMC is affected by the nature of their personal relationships and the expectations and needs of their close connections.

I prefer taking pictures any time, whatever time and then sending it at my whim than having, for example, something like a scheduled zoom Jenga session.

Unfortunately, these days, I don't have very much time to do that and I think they'd [parents] much rather call me than do something with me. I think they're more interested in hearing about my day. (R16, m, Philippines)

When we look closer, we learn that decision-making around these activities is impacted by factors such as the time and effort required for planning and doing the activity and individuals' perception of the value of such activities for themselves and their strong ties. Additionally, students consider the needs and preferences of others when they make decisions around their use of CMC tools for conversations and activities. To address some of the barriers mentioned above, students engage in asynchronous shared activities that I discuss in the next section.

## **6.2 Asynchronous Shared Activities, Post-activity Sharing**

In the previous section, I discussed some of the barriers to planning and doing activities online with family and friends. One way that some students have addressed these barriers is by engaging in asynchronous activities. In this form of activity sharing, the involved parties do the activity by themselves and then talk about it later, either during a call or via text messaging. In other words, the actual performance of the activity happens asynchronously, and the sharing and discussion around it happen synchronously (e.g., during a call) or asynchronously via text messaging. The unique characteristic of these activities is that they are embedded in the everyday lives of students and their strong ties. Since people are not bound to plan and coordinate the time of the activity and can do it at their preferred time, we see a pattern of the regular occurrence of these activities in students' stories.

While not every student I talked to had examples of asynchronous activities routinely performed with their loved ones, those who mentioned such activities did express sentiments that signal the regularity of these activities. For example, R3 discussed how she and her family share their activities (in this case, screenshots of run paths, and crossword puzzles) by sending screenshots and updates to the family group chat. This asynchronous activity sharing allows R3

to stay connected and maintain a sense of closeness with her father and brother on a daily basis. Additionally, this activity provides them with a shared topic to talk about and gives each other encouragement. Overall, R3's example shows the importance of shared activities in maintaining and strengthening close relationships in lack of physical proximity.

My family is like super sporty. So everyone in my family runs. So when I finish around here in Ithaca, I'll send them a screenshot of like my activity. I'll send him [father] a screenshot of my activity and then maybe that'll come up in the call, he'll be like, oh, what did you do? and I'm like, oh, I went on that run on Saturday. He was like, Oh, yeah, I saw like, you did it in like, 30 minutes. Like, that's like, good time or whatever. So we might discuss it. And another thing my family does, is we have a group chat between my brother and my dad and me. So like a family group chat. And every day my dad sends like a good morning message and we all do the New York Time's Mini, the crossword. So we, every day we share, like our times. So it's like we compete and today, I beat them. (R3, f, Brazil)

Another international student, R16, shared a story about cooking a family recipe and sending pictures of the cooking process and the final dish to his parents. This photo sharing allowed him to feel connected to his family and especially his father, who taught him this particular recipe and gave the father a chance to express his pride and support for R16's achievement.

I have started cooking here [on campus in Ithaca] independently. I learned from my dad when he was still there with me [in Philippines]. I cooked salmon, the way he would usually cook salmon three weeks ago and though I didn't film it, I



didn't film the process, I took pictures. So I took pictures of myself grocery shopping and I took pictures of the ingredients, the salmon that I picked out and then during the cooking process, I took some pictures of like the salmon baking in the oven and of course the final product that was all dressed up and everything. And I sent it to the family group chat. And my dad was gushing over it because he was so proud of me to see [and] realized that I finally cook the salmon like that he's been cooking for years. (R16, m, Philippines)

Overall, asynchronous activity sharing is a relatively low-effort way of engaging in shared experiences without going through the challenges of coordinating plans for a specific time using a specific CMC tool. Separated loved ones who use asynchronous activity sharing gain several benefits that are comparable to doing activities synchronously, such as enjoying a sense of togetherness and maintaining and strengthening their relationships. Additionally, it provides the opportunity for the students and their loved ones to learn about each other, share their interests, and provide and receive emotional support even when they are not together physically. Asynchronous sharing, similar to synchronous sharing, provides a sense of normalcy and can be especially effective for those who cannot engage in synchronous activities due to challenges such as time zone, busy schedules, Internet connection issues, etc.

### **6.3 Sharing US Life with Family Spontaneously**

Another common way that international students and their strong ties engage in shared experiences is by spontaneous sharing. These shared experiences occur when one or both sides of the conversation are engaged in another activity or task and decide to share it with the other person at the same time. For example, a student walking around campus while having a video call with their parents might decide to switch the camera view (from selfie view to rear view)

and give parents a tour of the campus, their dorm, etc. while continuing the conversation with them. In the example mentioned by R16, the student did not plan on doing a virtual campus tour, however, during the call, he decided to do so. This simple act creates the opportunity for R16 and his mother to create a shared memory using CMC.

I walked around the campus just for the hell of it just because I felt like it while I was calling my mom and I flipped my camera, so it was pointing in front of me and I kind of gave her like a mini tour, a mini tour of the campus. But that wasn't planned, I just kind of felt like doing it. (R16, m, Philippines)

This form of experience-sharing is most often initiated by students since they know their parents want to be more involved with their daily lives and experiences in the US. Parents sometimes share what happens on their side as well. For example, as mentioned by R25, both she and her parents share what they are eating during the video call. In many cultures, gathering around a shared dining table is meaningful and symbolizes togetherness and therefore is part of the family routine. In this example, the student talks about an important routine that's about sharing moments of togetherness with her family over meals and cooking. In another part of the interview, the same student shared an example of asking her mother's opinion during shopping and using video calls to show her the available options at the store.

Sometimes when I have a dinner, they will have a breakfast together with me and they will show what they eat for their breakfast and sometimes they will company with me like to cook my dinner and guide me like distantly. It's really great because sometimes I don't know how to cook and they are really good at cooking so it's like they are just by my side and help me... one time when I went to Walmart I video my mom because I wanted to buy a comforter and I didn't know

which size to buy and how thick the comforter I need so I asked my mom and let her see. The video is very convenient because I can let her see what I'm shopping for and also like when I buy cook[ing] stuff I ask my mom whether it is suitable for me to use. (R25, f, China)

The relatively low effort required for these shared experiences makes them a great option for students and their families. Parents may feel hesitant to ask their adult children for such activities (e.g., campus tours) in order not to take their time and therefore, when these happen spontaneously and impromptu no one feels pressured. On the student side, the fact that these events and instances are unplanned gives them the freedom to dedicate as much time and energy as they prefer to these activities. Spontaneous shared experiences have the benefits offered by planned shared experiences (e.g., sense of connection and togetherness) but without the pressure of requesting, planning, and dedicating certain amount of time to the experience.

In the following quote, R38 explains his routine of showing his surrounding on video calls to his mom and provided examples during the interview to emphasize that spontaneous sharing is not limited to special times and involves many day-to-day activities he does regularly such as grocery shopping. For R38, this regular sharing is a way of staying connected to his mother and a form of emotional expression and desire to have his mother involved in his daily life in the US.

We usually keep in touch because we want to know how it feels to live in the respective countries and then sometimes it might seem weird [when] I made a video and everybody was there like my friend was there but I don't care because well I will only live here for one year and I don't think it's inappropriate anyway so I just make a call with my mother a video call so maybe people will think oh

what are you doing but I don't care like I just want to share with them [family]  
my surrounding by using video call like showing this is Cornell, this is my  
building, this is a new building... I want to show [things] even as simple as I if  
I'm lining up in a supermarket and waiting like, look this is the supermarket.

(R38, m, Indonesia)

Spontaneous shared experiences with friends were rarely mentioned in the interviews, probably because most interactions of students with their friends happen over text and video calls are less frequent. Additionally, students' communication with their friends is less frequent overall compared to family members (especially parents). Additionally, a factor that motivates students to share their daily life experiences and surroundings with family is their awareness of the need that parents have to be involved in students' daily experiences. Students do not seem to have a similar assumption about their relationship with their friends. In other words, while students might discuss their life in the US and at college with their friends, they don't have the motivation to share their daily life experiences with their friends. Shared activities with friends as discussed in the previous section, are aimed at satisfying a different need which is having a fun and enjoyable time with friends.

#### **6.4 Experience Sharing with Photos and Videos**

It is very common for international students to share about an activity or experience by sending pictures, and videos to their family and friends. Regardless of the medium that is used to capture and share the experience, the core of this interaction is sharing details of an activity or experience that the person sees as meaningful and interesting to the other party. Experience sharing via photos and videos came up in almost all interviews. Some students engage in experience sharing daily and some reflected on doing it at least weekly. Sharing mundane

moments and experiences was mentioned by several students. Since international students live far from their family and friends, experience sharing via photos and videos is an effort towards filling the gap of distance. By sending pictures and videos of their experiences and activities in the US, students give their loved ones a glimpse of their daily lives. For example, in the following quote, R29 describes that she sends pictures to her family regularly about her experience in the US as well as her experience as a newlywed who is living with her husband in the US. R29 values this photo sharing routine and is actively working on maintaining this form of interaction. She mentioned that she often takes the lead by being the person who sends the pictures.

It is mostly me sharing pictures showing like we went for a hike or something. I just got married like this summer so I'm here with my husband. He is also a PhD student at Cornell, so I just like update them about like what we're doing. They want to know how things are going with my husband. So it's yeah, it's mostly me doing that. They also share some photos if they have like family events or something. (R29, f, South Korea)

Several students had similar stories reflecting the role of photo and video sharing to meet parents' desire or expectation to know more about their adult children's lives in the US. Here another student explains how he uses the app Snapchat to send his parents photos to meet his parents' desire to know more about his day-to-day life. He frames this expectation as a "problem" at first but then reframes it as a request raised by his parents for wanting to know more. R23 also briefly mentioned that his parents do not know how to use Snapchat to send photos to him, but they use WhatsApp for sending photos. This and similar examples show that

students and their families use a variety of applications to stay connected and they might use only some of the features and affordances of each CMC tools.

That was a big problem, like, not a problem. But like, my parents always wanted to see what was going on. And then I was like, but realistically, I'm not going to save all my photos and send it to them. So I just usually snap them now. So I snap like once a day. I think I snap like 10 people. Yeah. So it's just like, day to day life. I mean, my life is not really exciting these days. Usually, me getting food or me recruiting [and job searching] like, just like day-to-day pics. Maybe like on the weekend, I'll take a nice photo of wherever I am if it's a nice day kind of thing... they don't send back because I don't think they know how to. They send photos on WhatsApp. Usually, I don't think they know how to use Snapchat. They only know how to like see mine. (R23, m, Hong Kong)

## **6.5 Chapter Summary**

In summary, this chapter highlights various ways international students leverage CMC tools to engage in online experience and activity sharing with their family and friends back home. I found that students find planned online activities (e.g., online celebrations) beneficial and enjoyable, however, the challenges they face with planning and setting up these activities tend to discourage them from pursuing them frequently. Interestingly, other forms of activity sharing such as spontaneous activity sharing and post-activity sharing are more common, most likely due to lower effort required for conducting them and the fact that these alternative forms of sharing can be easily incorporated in the day-to-day interactions that students have with their strong ties.

In the previous chapter, I discussed the importance of group chats as virtual shared spaces for staying connected. In many cases, groups chats are used for photo and video sharing discussed in the current chapter. International students use photo and video sharing as acts of love and care and as a way to share a glimpse of their life in the US with their family and friends.

In the next chapter I discuss the effects of COVID-19 global pandemic on international students' communication practices with their family and friends back home.

## **CHAPTER 7: INTERNATIONAL STUDENTS' EXPERIENCE DURING THE PANDEMIC**

In this chapter, I provide findings of my research related to international students' experience with using CMC tools for connecting with their loved ones during the pandemic, especially during the early phases of lockdown in the US. The first section of the chapter discusses the changes in content and frequency of calls and how this change impacted students' relationships with their families. In many cases, students reported that they felt closer to their parents during the pandemic due to more frequent communication.

In the second section, I discuss the emotional experiences of students and specifically the feeling of homesickness. Finally, I explain students' use of CMC tools for engaging in online activities and experiences with their friends.

### **7.1 The Impacts of COVID-19 Pandemic on Relationships with Family and Friends**

Several students mentioned that during the COVID-19 pandemic and especially during the initial lockdown, their content of conversations shifted toward topics related to health and safety as well as logistics and discussions around going back home or staying in the US. While the pandemic occupied most of the conversations during the initial phases and during the lockdown, for many this changed over time, and international students and their families talked about it less frequently. For example, R7 shared that in the beginning the conversations were focused on the pandemic and her parents' concerns about her staying in the US which is not surprising given the uncertainty that families, including separated ones experience early on and during the lockdown. However, over time and as families adjusted to the reality of the pandemic as an ongoing issue, the conversations have shifted to more regular topics for R7 and her family, as well as many other students I talked to. Additionally, the change in the topics might also



signal the families' attempt at establishing a sense of normalcy during the difficult times of separation. By talking about TV shows and regular topics, R7's parents might have tried to focus on a shared positive experience to help their daughter cope with the stress of an ongoing pandemic.

I think after the pandemic, firstly, the time definitely gets longer, because I'm, like, more flexible and I think secondly, from the conversation content perspective, I just feel like we talk a lot more about the pandemic itself. And I think that's very natural because my parents are a little concerned about me staying here in the US just by myself. So that's something I think, especially during the beginning of the pandemic, like in March or April, we talked about that a lot like in our video chats. And I think that's something we usually begin our conversation with. But I think, as it comes to now, when like, the pandemic has been going on for quite a few months we just kind of like, I think the percentage of time we devote to talking about the pandemic just becomes less. and I think right now, our conversation would just be more about like our life, like, we spent a lot more time I feel like talking about, like, the shows we watch and stuff. I think just to like, I think, yeah, just to I think my parents are also like trying to help me relieve some of my stress. So they would like recommend shows to me, and we would talk about that. So like, just normal entertainment conversations, I think. So that's something I would say like I noticed as a difference. (R7, f, China)

An increase in the frequency of communication with parents was mentioned by the majority of students. Some students reflected on the impact of this increase in communication

and shared that it made them feel more connected to their parents. R4 shared that her parents called her more often than usual during the early phases of the pandemic because they were worried about her. She also reflected on her emotional connection with them and said that the pandemic changed the perception she had of herself as an independent person and made her realize that in times of crisis and difficulty, she needs the emotional support of her parents. This example highlights the fact that the pandemic has impacted family relationships and, in some cases individuals' perceptions of themselves.

I stayed in Ithaca and my parents were really worried about me, like, they call me like, more often than usual, because they are like, really care about the situation in the US and they like, they just mention a lot of like, how should I protect myself? I feel like they are, I just feel I like, um, I didn't see them nervous like that before...So I just feel getting more connected with my parents. Because in my high school, or even throughout my freshman year, I felt like I'm really independent because I just live by myself and grow up. I just feel like I can achieve everything, but like in a pandemic, you're just feeling so upset and you just need your parents' support. So I'm kind of more emotional when I communicate with them. (R4, f, China)

Another student, R12 from Canada, reflected on the change in her relationship with her parents. She shared that she tried to make more calls compared to pre-pandemic times. This indicates that the pandemic has made R12 more motivated to strengthen her bond with her family. R12 also shared that she makes sure her parents get the correct information which is important to note since fake news and false information online is a problem shared by other students as well. Finally, it is interesting that R12 and her family shared more pictures during the

pandemic, and this might signal their effort to be more in touch with each other and to support each other in this way.

I think we definitely talk more. I think since the pandemic, I definitely have made more of an effort to call my parents and like be consistent, like weekly, or like biweekly basis, because before I could very easily go like, like a month and a half, two months without calling them, which is, you know, like, not ideal. Like, obviously, I want to talk to my parents, but so with the pandemic, I think I've definitely made more of an effort to check in with them every week or so. You know, just to make sure that they're safe. They're getting the correct information about the pandemic as well. And like, we would we talk about, the borders being open or closed. And just like what we want to do after the pandemic and things like that. I think we definitely send each other more like pictures and stuff since the pandemic has started. (R12, f, Canada)

While most students mentioned emotional support from parents as the main support during the early phases of the pandemic, some shared that they relied on both their family and their friends from home for emotional support. R5 said that in addition to his parents, his conversations with his friends from home helped him significantly with pandemic anxiety and feelings of sadness and loneliness. In this case, R5's lack of a strong social network in the US also exacerbated the anxiety and worries during the pandemic and highlights the importance of social support in the host country for international students.

I feel like talking with my parents was absolutely beneficial for my mental health at the time and reaching out to some friends from home too. I think I was a little bit depressed, like, the flights were kept canceling and the price of the

international flights also raised [sic] up at a dramatic rate and you just watch the cases in the US kept growing and living here is also expensive, you don't have other economic income and also I was a transfer student, so I don't get tons of friends here to support me and to get connected with. I just couldn't imagine, what should I do if I get infected? So at that time, it's just fear. I was afraid, you know, and was uncertain about what the future will be. (R5, m, China)

## **7.2 Pandemic and Homesickness**

In our conversation about homesickness, many students shared that at the beginning of their time at Cornell, they felt very homesick, but over time and as they found friends in the US, they felt less homesick. It is important to note and acknowledge that on an emotional level, international students' experience with the pandemic has several facets. Many students chose to stay in the US during the lockdown, and in addition to pandemic anxiety and concerns about getting sick, they also felt homesick for their families and home country. For example, R9 shared that he experienced homesickness as a freshman at Cornell, but over time those feelings improved once he made friends. R9 shared that not being able to go home makes him homesick again, and while talking to parents about the pandemic could be stressful, he still finds it beneficial to have those conversations. Similar to the quotes I shared in the previous section, this one is another example showing the importance of emotional support from parents.

It was really hard at the beginning, and I found myself not really wanting to socialize with anyone, or I just kept thinking about home, and it was all very distracting and that was kind of all throughout freshman year. And then once I started opening up and making friends, that became a lot better. During COVID times, I haven't gotten to go home for quite a while so I've definitely been feeling

pretty homesick. So that's been harder. But I've been trying to go outside more and go on walks with people in my research lab. So that's been really nice. But it definitely was hard during the beginning of my undergrad, and I found myself, you know, not doing very well in my courses because I was just emotionally distracted. And then, as I opened up more, and just over time, it became a lot better...I think recently, it's been a little bit different because of the pandemic. So sometimes, talking about the pandemic and trying to make plans during all of this uncertainty can be a little bit stressful. So sometimes I do feel a little bit stressed after the conversation, but almost always, I feel really happy and pleased, and I'm always cheered up when we get to get to chat and talk. So I almost always feel really good going in and going out of the conversations [with parents]. (R9, f, Japan)

R33, a female student from Ghana, also talked about homesickness. R33's story about choosing to stay in the US during the pandemic because of fear of not being able to come back as a result of visa status is a common story. On top of border restrictions and countries' mandatory quarantines, many international students did not have the option to go back to their home country due to the fear of not being able to re-enter the US. R33 shared that during the pandemic, she felt very homesick and lonely. Another interesting point in her response is that she felt a separation between her experience and the experience of her family back in Ghana since their situation were different.

When it first started, everyone started going home, even all my friends were at home. But then I didn't want to go back home. Because I just felt like, I had just come out of my freshman year. And I felt I didn't know like, when it was going to

end when we would come back. And some of my friends who are gone. They're like, well, they were born and raised in Ghana, but then they have American citizenship. I just felt like if something came up, I'm on a student visa, if something came up, and I wasn't able to come back into the country, I didn't want that kind of like, complication...the situation was way worse here than in my home country. It wasn't serious there. And it wasn't like so extreme. I think there was a lockdown period, which might have helped with the situation. So then the infection rate wasn't too high. So even though I was like, telling them what was happening, and they also watch, they watch American news a lot so they also had their news sources, but then it still felt like they were having a completely different experience. And I was having mine, and then there was just this kind of, like, separation that I couldn't like exactly relate to them. (R33, f, Ghana)

### **7.3 Online Experiences During the Pandemic**

Several students discussed their engagement with online activities and experiences with friends during the pandemic. For example, R14 talked about various activities such as playing games, listening to music, and watching movies with her friends especially during special occasions such as for her friends' birthdays.

During the pandemic, with friends I've done like Club Penguin like together while we were video calling, streaming like music, as well as watching movies together. So we tried it a couple of times, like, initially, we liked the activity of like, watching a movie together and like being able to comment on it together but It wasn't that frequent. It was mostly for like occasions, for example, if it was someone's birthday, then like after the Zoom call for their birthday then we'd

also like play a game. I think for the movies, like with the friend one on one, it is probably also just like, once every, like, three weeks or so. Not frequent. I wasn't a huge fan. Like I'm not a gamer or like anything so I'm not like, I wasn't like super accustomed to it. (R14, f, Singapore)

R6 talked about watching live streams during the pandemic with his friends. He found it enjoyable that he could watch others play games while talking to his friends about it. In this case, even though R6 and his friends were not actively playing themselves, they shared experience of watching games online helped them have a shared topic and experience to talk about.

Something I want to bring up is that I began to watch like, people streaming during the pandemic because I actually needed to feel that I am seeing a lot of people. Like seeing all the people chatting, like talking about the same subjects. And I began to watch those, those streaming or like game streaming with my friends. And talking to friends was even more helpful, to feel that I'm actually being attended to. Yeah, being paid attention to. (R6, m, China)

R24 shared a creative and unique experience. She and her friends used a feature offered by WeChat to create a map with each person represented with a dot on the map. R24 used the word "romantic" to describe this seemingly simple but delightful experience.

I think it is very romantic that we share [with] each other the geometrical [sic] location and we make a screenshot of that because all of them are in China, and I'm in US right now... it is a function that's provided by WeChat, real time location sharing. So if you open that function, it will display the world map that will include all of the members in one map...I think it is very romantic to like, have all of us in one map and each of us will stand for a one circle on the map and

with our profile image on it. So it is very, I think it is very romantic. (R24, f, China)

This example shows how during the pandemic and times of separation, some students relied on the available features of CMC tools to connect to each other in new and creative ways.

#### **7.4 Chapter Summary**

In this chapter, I discussed the impacts of COVID-19 global pandemic on international students' communication with their family and friends back home. This research shows that during the pandemic and especially during the early phases of pandemic, international students communicate longer and more frequently with their parents. Additionally, several students pointed out that they tried online activities during this time to feel less isolated. Importantly, my study shows that experiencing a crisis while living in a host country as an international student can resurface emotions such as homesickness and loneliness.

In the next chapter, I discuss the findings presented in chapter 4, 5, 6, and 7 and provide design suggestions and implications as well as future directions.



## CHAPTER 8: DISCUSSION

This study aimed to understand how international students use CMC tools to maintain their relationships with left-behind family and friends living in their home countries. More specifically, I aimed to understand how international students (a) choose and use CMC tools for every communication with their strong ties, (b) use CMC tools for activity and experience sharing online with their strong ties, and (c) the impacts of COVID-19 global pandemic on their relationships with their left-behind family and friends. Additionally, I explored the ways that international students engage in and prefer relationship maintenance with their family versus their friends back home.

To explore these research questions, I conducted in-depth semi-structured interviews with 38 international graduate and undergraduate students at Cornell University. I used grounded theory (Strauss & Corbin, 1997) to uncover insights and themes in the data and to provide a detailed picture of how students navigate relationship maintenance across distance and time zones using CMC tools.

My findings suggest that students rely heavily on CMC tools to stay connected to their family and friends back home. They use CMC tools, especially video calls, to attend events and ceremonies with their families remotely and to engage in online entertainment activities with their friends (e.g., playing video games while on a video call). For students and their strong ties back home, online activities and photo sharing elicit a sense of togetherness and co-presence and provide a way of expressing care and support while being apart. Many students reflected on the joy of these interactions and the fact that they feel less sad, lonely, and homesick when they feel connected and close to their close ties.

While students highlighted the benefits of experience sharing online, they also mentioned several barriers, such as coordination effort across time zones, difficulty with tech setup, and limitations of CMC tools that discourage them from trying these activities regularly. My research also shows that the COVID-19 global pandemic has impacted students' communication with their strong ties. Many students reflected on changes in their communication patterns, such as talking to their family and friends more frequently and for longer durations to support each other during difficult times. However, many have shifted back to their previous communication routines as the world moves toward the pre-pandemic state. In the following lines, I discuss the theoretical and practical implications of these findings, the limitations of the study, and future research directions.

### **8.1 CMC Tools: Choices and Routines**

Consistent with previous literature (Bhatti et al., 2021; Worrall et al., 2019), my research shows that international students leverage CMC tools to stay in touch with their family and friends back home. This choice of CMC tools is strongly influenced by the prevalence of these tools in their home countries. When students move to the US, they continue to use the same set of tools and applications, as this allows them to maintain a seamless connection with their existing network back home, which is expected based on past research (Yu & Guo, 2022). Past research emphasizes the use of different messaging applications for different groups of contacts as a strategy people use to create *communication places* with defined rules around membership and goals (Nouwens et al., 2017; Sandel, 2014). While I found sentiments around the use of certain CMC tools such as Snapchat, mostly with friends, I did not find clear categorization of tools based on contacts or relationship types, and at least among the participants of this study, these boundaries seem to be more fluid and flexible. To manage self-presentation or privacy,

students rely on the features provided in the applications rather than using a different CMC tool altogether.

This study also showed that newer CMC tools, such as social virtual reality, have not gained significant traction among international students. None of the participants reported utilizing social VR platforms to interact with their left-behind family and friends. Despite the potential of social VR as a way to connect and share activities with close bonds remotely (Han et al., 2023; Rospigliosi, 2022), its utilization among international students appears to be notably absent. This observation might be due to the broader trend of low adoption of VR for social interactions (Ball et al., 2021; Cummings et al., 2022), rather than being exclusive to this specific population.

Regardless of what CMC tools they use, a common theme among all participants was the establishment of a sense of routine and consistency when it comes to their CMC usage. The majority of participants were able to describe when, for how long, and how often they communicate with their strong ties, highlighting a relatively consistent and pre-determined schedule for interactions, especially with their parents. As research on communication of college students and their parents has found (Shakeri et al., 2023), communication routines might change temporarily when external factors force individuals to adjust these routines. This can go both ways. For example, students might communicate more often with their strong ties when they or their parents need more emotional support or might communicate less often when school schedules get busy. This flexibility within the established routines highlights the dynamic nature of the communication patterns and reflects the nuances between students' needs, parents' needs and expectations, and other external factors that altogether shape the communication patterns.

Consistent with other research on the use of technology during the pandemic (Firang, 2020; Hari et al., 2021), this study provides further evidence that international students engaged in more frequent and longer conversations with their family and friends during the pandemic, especially during the initial weeks. An intriguing finding of this study related to routines and the global pandemic is that students tended to revert to their pre-pandemic communication patterns after a short time which shows that external factors often have a temporary effect on communication routines rather than a persistent and long-term effect.

## **8.2 Technology-mediated Togetherness and Closeness**

In this chapter, I use the term technology-mediated togetherness and closeness to refer to the sense of emotional connection and bond that separated adults experience when they use technology to share experiences and to engage in routines that have meanings and value for those involved in the relationship. It is worth noting that a key factor that differentiates this form of remote togetherness with a regular text message or group call is the intention of those who participate in the interaction and the meaning they attach to it. Separated individuals perceive these shared moments valuable for maintaining their relationships and the meaning and importance of these interactions goes beyond the activity itself. In the following paragraphs, I provide more details on how people leverage technology-mediated togetherness to maintain their long-distance close relationships.

### ***Video-Mediated Experience and Activity Sharing***

During times of physical separation, individuals miss out on the opportunity to share meaningful moments, and they cannot spend quality time together face to face. This challenge is experienced by all distance-separated families and individuals such as immigrant families (e.g., Demirsu, 2022; Nedelcu & Wyss, 2016), couples in long-distance relationships (e.g., Baishya &

Neustaedter, 2017; Heidecker et al., 2012) and international students (Hautasaari et al., 2017; Wong, 2017). Past work has shown that to navigate this challenge, separated adults leverage CMC tools as means to recreate a sense of togetherness by doing similar activities they used to do in-person via the mediated channels that CMC tools offer, such as video calls (Geiskkovitch et al., 2022; Kirk et al., 2010; Massimi & Neustaedter, 2014). Aligned with past work, I found that to bridge the gap caused by distance, international students rely on CMC tools for day-to-day communication and sharing life updates as well as experience and activity sharing online. Given that most work on online experience sharing has been done with couples in LDR and transnational families as users, my research extends this body of work by providing specific insights into activities students engage in with their families and friends. I found that with the type of online activities with family revolves around celebrations, cultural events, and religious occasions, while with friends, students engage in activities surrounding fun and entertainment, such as playing video games and watching movies.

An unexpected finding was that the frequency of planned online experience and activity sharing was considerably low. In other words, the majority of students reflected that they do not typically engage in online activities with their strong ties, and even for special occasions, the more common experience is a group video call, often longer than a regular call, or with members who tend to be absent on regular calls such as grandparents or siblings, without any specific shared activity. Therefore, engaging in online activities such as playing video games or cooking meals while on camera was rarely reported as part of the routine communication practices of international students.

It is important to note that over the pandemic and especially during the initial phases, students started to engage in online activities with their friends (both from home and in the US).

However, as students in my study shared, many abandoned these activities and settled into group calls and talking rather than doing activities such as cooking together or watching movies. This pattern of increase then decrease in frequency and variety of online activities during the pandemic has been noted by other researchers as well (Heshmat & Neustaedter, 2021).

To better understand the reasons why these online activities are not very popular, I asked students about their perspectives. For those who find these activities beneficial in bonding and connection, I found that planned online activities are less common due to the hurdles of planning across time zones and technical challenges associated with setting up and preparing the equipment (both hardware and software setup). While most students believe that online activities are useful in creating a sense of togetherness, the hurdles of planning and setting up such activities discourage them from pursuing them regularly. Additionally, the value and benefits of such activities are unclear to some students, making them less desirable. For those students who have never tried such activities with their family or friends, it could be hard to imagine what the experience might feel like and how they can leverage it. Some students did not have a clear picture of such a scenario and were unsure whether their families would enjoy such an experience. While past work has discussed challenges associated with time zone and scheduling activities (Cao et al., 2010; Heshmat et al., 2020; Shakeri et al., 2023) and setting up the equipment (Gan et al., 2020), less attention has been given to separated adults' perception of the value of such activities and the necessary steps they need to take to incorporate such activities into their routine, particularly when they lack prior experience. My research shows that many international students have no experience with online experience sharing and are uncertain about where to start, what activities to try, and how to select activities that would interest their strong ties and bring value to their relationships. Related to experience sharing, an emerging theme in

the data was the notion of experience sharing without any particular preparation or planning, which I refer to as *spontaneous experience sharing*. This form of experience sharing is valuable and warrants further attention from scholars as exploring the benefits and potential of this approach can provide insights on developing tools that facilitate this form of experience sharing.

It is also important to note that as indicated by scholars who study family dynamics and rituals (Fiese et al., 2002; Wolin & Bennett, 1984), family rituals (e.g., celebrating special occasions and religious events) are encouraged in some families while in some other families, these rituals are not necessarily valued as important activities. Therefore, it is likely that some students are not involved in shared activities with their families online since rituals and family activities are not part of the normal routine or are valued less, even when the family members are together in-person.

In contrast to findings in the literature on distance-separated adults in close relationships, the phenomenon commonly referred to as *open connection* (Kirk et al., 2010), *omnipresence routines* (Share et al., 2017), *omnipresent co-presence* (Nedelcu & Wyss, 2016) was not prevalent among the participants of my study. These labels refer to the notion of the always-on video where the video call is kept open for an extended period, usually hours, and is claimed to increase the sense of togetherness among users of this communication strategy (Nedelcu, 2017; Nedelcu & Wyss, 2016; Share et al., 2017). Interestingly, among the participants of this study, only one student mentioned such an experience with a close friend from home, and I did not find this behavior common or part of people's communication routines. Given that the studies mentioning open connections are about transnational families with children or couples in LDR, this observation signals the inherent differences in students' relationships compared to other distance-separated adults.

### *Non-Video Technology-Mediated Closeness*

Other than video and audio calls, separated adults in close relationships leverage asynchronous modes of communication, such as text messaging, to connect and staying in touch (Holtzman et al., 2021; Taipale & Farinosi, 2018). Text and instant messaging are considered easy and low-effort communication modes that people around the world use very frequently for exchanging information, images, audio, and video clips (O'Hara et al., 2014). I found that international students utilize text and instant messaging for everyday check-ins and updates and for purposes that directly help them feel more connected to their strong ties, such as group chats. The ease and flexibility that asynchronous communication affords make messaging a desirable approach to navigating time zone differences and busy schedules, as noted by other researchers (Cao et al., 2010; Heshmat et al., 2020)

A major theme related to asynchronous communication was group chats with family and group chats with close friends. The importance of family group chats has been noted by researchers (Mogharrab & Neustaedter, 2020), and in my study, I found that these groups serve as a shared virtual space for communication, and as described by some students, creating a constant and continuous flow of conversation. Students' sentiments show that parents and sometimes other family members, such as grandparents, utilize this shared space for low-cost interactions where they can share a message without the fear of them taking time from the student, which is in line with past research (Muñoz et al., 2018). Group chats also provide a space where members can be involved in other members' interactions. In the case of international students, many students have regular calls with their parents but talk to their siblings less frequently. The group chats provide the opportunity for students to be passively or actively involved in the conversations between their siblings and parents.



Consistent with past work (Cabalquinto, 2019; Sinanan et al., 2018; Zhao, 2019), I found that students regularly send photos and sometimes short videos to show their strong ties and a glimpse of their daily life in the US. Based on the stories students shared during interviews, it is clear that photo and video sharing serves an important need and purpose: maintaining a sense of connection and care over time. Regarding the type of media they share, most commonly, students reported that they share photos of the food they have cooked or ordered in restaurants and photos of their positive experiences, such as traveling, nature, and time with friends in the US. Sharing these mundane and simple moments creates a sense of togetherness (Cabalquinto, 2019) and an “intimate visual co-presence” (Ito & Okabe, 2005). For some students, the act of sending photos is also a way of reassuring parents and providing proof that they have a good life in the US. By sending photos to their loved ones, especially their parents, students respond to their parent’s concerns and worries about them living abroad and express their love and care. This act also provides everyone involved with a shared topic to talk about and discuss during the calls.

### **8.3 Relationship Maintenance: Family vs. Friends**

Literature on international students’ relationship maintenance with ties back home primarily centers around their relationships with their parents (e.g., Hwang et al., 2018; Zhou et al., 2017) and as noted by other scholars (e.g., Sinanan & Gomes, 2020), less has been done on understanding students’ relationship maintenance with their close friends from home. One of the key contributions of this study is in shining light on the differences in how students maintain their relationships with their long-distance close friends compared to their family members (especially their parents).

I found that students talk to their friends about a wider range of topics. As previous work has shown, international students tend to avoid talking about their problems and struggles and even tell white lies about their situation in the US to their parents to mask their problems (Hwang et al., 2018; Shiau, 2015). My findings are aligned with past research in this regard, and I found similar approaches even though not all students present this behavior. A very small number of participants mentioned that they feel comfortable telling their parents everything, including their hardships and struggles. My research shows that the majority of students share hardships and challenges with their friends and in a few cases, their siblings instead. With their friends, students do not feel the pressure of portraying a positive picture of their social and academic life in the US and therefore feel comfortable sharing these struggles.

Other than topics related to challenges in the US, some students also shared that they talk about their social and dating life with their friends only and refrain from sharing those with their family and especially their parents. This deliberate choice stems from these students' desire for autonomy and independence, and for those coming from traditional family backgrounds could be rooted in expectations and social norms of their home country and family. Literature on the relationship between young and emerging adults and their parents notes the desire for autonomy and individuality (Arnett, 2007; Shakeri et al., 2023; Wintre et al., 2015). However, it is critical that we take the cultural pressures and expectations of ties in the home country (Binsahl et al., 2015; Hwang et al., 2018; Walton-Roberts, 2015) into account when we study international students' relationship with their parents to get a fuller picture of their dynamic and reasons behind certain choices.

The difference in relationship dynamics is not limited to the topics and conversations. As discussed in the previous section, with family, the synchronous activities are about family rituals and cultural events. These activities are often around cherished traditions and family rituals and have a deep meaning for both the students and their families and reinforce a sense of belonging and identity within the family unit (Abel et al., 2021; Fiese et al., 2002; Wolin & Bennett, 1984). However, with friends, online activities are mostly focused on experiencing fun and entertainment together though in some cases, students engage in cultural celebrations as well. These online activities reflect the nature of interactions students were accustomed to, which each group of their close and strong ties before their relocation.

Overall, these important differences in students' relationship dynamics and maintenance behaviors show that when we design tools for international students, we need to take into account the connections those who will be using the tool have.

#### **8.4 Less Visible Impacts of Living in Different Countries**

The past three sections of this chapter provided details on how international students leverage technology during times of separation to stay connected to their left-behind family and friends. While CMC is extremely useful for distance-separated adults in close relationships, several challenges arise due to distance, particularly living in two different countries for extended periods of time and connecting with strong ties primarily with CMC tools. In this section, I briefly discuss some of these consequences.

The current study shows that for some families, the change of relationship from FtF to long-distance alters the dynamic of parent-student communication significantly. My findings show that specifically, for the parent with a less expressive communication style or less interest in use of CMC tools, this change could result in reduced communication and interaction time.

Unlike face-to-face interactions, traditional CMC tools often do not provide opportunities for passive participation in conversations. For example, a parent (or another family member) might be able to hear the student's conversation with the other parent but remains unseen by the student or totally excluded from the conversation if they do not speak and are out of the camera view. While the negative impact of this presence while being invisible or only partially included in one interaction could be small, the effect is cumulative, and over time the less active involvement of a parent could affect the relationship between the parent and the student. It is important to note that this issue is not limited to parent-student relationship. Students' relationships with their grandparents or young siblings, who are typically participants in the family space, might suffer similarly as well since they miss out on the opportunity to be passively involved.

In addition to lack of support for passive presence, living in two different countries and cultures can impact the availability of shared topics with their left-behind family and friends. International students in the US are immersed in a new culture and encounter unique and new experiences, some of which could be completely beyond their left-behind strong-ties knowledge and understanding. This is related to Clark and Brennan's theory of grounding as common ground relies on mutual knowledge and beliefs (Clark & Brennan, 1991). These new experiences can be conversation topics in some cases. However, over time the divergence in day-to-day experiences and differences in social and cultural contexts could create a gap in shared matters to talk about. My research findings show that sometimes students are hesitant to share certain topics due to the perception that their remote strong ties back in their home country might not be able to comprehend matters unique to US cultural, social, or political environment. Other researchers have noted similar issues due to distance as well and note that the long-term absence of shared

social contexts could weaken relationships, and a gap in the ‘common world’ may appear, causing separated loved ones to have less in common to talk about (Ryan et al., 2015, p. 212)

Finally, concerning international students’ experience during the COVID-19 pandemic, their responses uncovered unique challenges that this population faced during the pandemic. Lack of immediate access to their support system back home and dealing with news and uncertainty in two countries was a key challenge that emerged in the data, highlighting a crucial distinction between international and local students. Local students typically have access to their immediate family members and support system during times of difficulty or crisis. However, international students’ access to their support system could get complicated by factors such as border closure and restrictions, visa issues, and financial concerns (Firang, 2020; Gomes et al., 2021; Hari et al., 2021).

Importantly, I also found that going through a crisis as an international student could also resurface emotions that are not prominent during normal times. A noteworthy illustration of this phenomenon is experiencing higher levels of homesickness during times of crisis. Students reflected that early on and right after moving to the US, they experienced homesickness, and these feelings got resolved over time as they got used to the new culture and environment. Literature admits that the first weeks and months post-move is harder, and feelings of homesickness are more likely to be experienced over times these feelings subside as the individual gets accustomed to the new environment and establish local connections (Hack-Polay & Mahmoud, 2021; Hautasaari et al., 2017). My research shows that even for students with established connections, pandemic stress and isolation brought back the emotions that students typically grapple with during the early stages post-move, such as homesickness and loneliness.

## 8.5 Design Implications

In addition to the insights provided above, my research also points out to design implications that can guide the future tools designed for international students and separated loved ones.

The first category of design implications focuses on streamlining the process of selecting and coordinating shared synchronous online activities. The effort required in each of these steps can be discouraging to some users, and CMC tools can help people overcome these barriers by making these steps less difficult and time-consuming. For example, CMC tools can provide a list of potential activities along with the level of difficulty, tech setup, and preparations needed to help users choose the activity that fit their interest and available equipment. Such lists also help students and their loved ones discuss possible activities to choose what works well for everyone involved. To increase personalization, AI algorithms can be employed to curate these lists based on the interests and preferences of each user. Additionally, CMC tools can guide users through the process of selecting activities by providing them with step-by-step tutorials on how to prepare the setup for each activity and how to troubleshoot.

Related to the coordination step, I found that many students find it challenging to find a time that works for them and their loved ones living in different time zones. Students mentioned that although they use online scheduling tools to plan calls with a group of friends, they find it overly formal and awkward to use typical online scheduling tools to schedule a call with their family. To ease this awkwardness, CMC tools, and popular messaging applications can incorporate scheduling features to help students and their families find time easily and smoothly. To take this a step further, such functionalities can automatically check students' calendars and recommend times for longer calls or online activities.

The second category of design implications revolves around enriching the experience of photo and video sharing. Beyond the basic exchange of photos and videos, additional functionalities can enhance this experience. For example, one valuable feature to consider is the reminiscing feature which can facilitate discussions about past memories based on photos and videos shared between family members. It is important to note that this feature might not be desirable by all users, and for some people looking at past photos might trigger homesickness and therefore, users need to have control and be given the choice to turn this feature off if they want to. The ability to create personalized albums is another useful feature. These albums can be accessed by both international students and their distant loved ones, providing a delightful narrative of their experience. Additionally, features like commenting and collaborative album creation can be a bonding shared online activity by itself. By adding these and similar features, CMC tools can transform the experience of photo and video sharing and make the experience more engaging.

Last but not least, based on the current research, some of the parents might find it difficult to find topics to talk about. Given that AI platforms are becoming increasingly prevalent, these tools can help parents by recommending interesting topics relevant to international students living and studying in the US. AI platforms can use previous conversations, the interests of both the students and their strong ties, cultural backgrounds, and events and news in both the host and home country to generate conversation prompts that are timely and meaningful.

## 8.6 Limitations and Future Directions

Findings from this research contribute to research on international students, long-distance relationship maintenance, and computer-mediated communication. However, there are several limitations within this work that warrant attention in future research studies.

First, this research only focused on international students and their reflection, narrative, and perception of their relationships with their strong ties. I did not interview their left-behind family members and friends and therefore this research is limited and does not provide insights on how family members and friends of international students navigate their long-distance relationships with international students and how they impact choice of CMC tools and the routines that are set in the relationship. Future research should explore this dynamic and explore the role of parents' expectations, family dynamics prior to the students' move to the host country, and their preference and comfort with online activities to shine lights on potential factors that shape the relationship maintenance routines.

Additionally, I collected data using qualitative interviews with a relatively small sample of international students at one large US university. While the findings presented in this research are based on in-depth interviews, I only spent one hour with each participant which limits the amount of data and insights gathered. Future research should explore this topic using other methods such as diary studies and ethnography to gain more contextual and self-reflection data from a larger sample of participants. Large scale surveys can also be helpful in providing quantitative data and insights.

Finally, data for this research was collected after the COVID-19 global pandemic lockdown in the US. This global phenomenon has impacted international students in various degrees depending on factors such as country of origin, financial status, and visa status. As a



result, their experiences and perspectives might have been influenced by the challenges they faced during the pandemic. Future work should examine the temporary vs lasting impacts of the pandemic on students' utilization of CMC for relationship maintenance.

## CHAPTER 9: CONCLUSION

This dissertation presented an in-depth qualitative study that aimed at understanding international students' use of CMC tools to maintain long-distance relationships with family and friends back home.

The research questions were defined to cover different but interconnected aspects of CMC use by international students for long-distance relationship maintenance. The first set of questions focused on students' choice of CMC tools and modalities, the second set explored the content of conversations and the dynamics of support-seeking, the third set delved into online experience sharing via CMC tools, and finally, the last research question examined the impacts of COVID-19 global pandemic on students' CMC practices for relationship maintenance.

To address the research questions, I collected data by conducting 38 in-depth interviews with international undergraduate and graduate students at Cornell University from 15 countries. Data analysis showed that international students and their left-behind family and friends use CMC tools not only for daily updates and information exchange but for experience and activity sharing, which creates a sense of togetherness and intimacy. While CMC tools are not designed particularly for separated loved ones, my study shows that families and close friends in long-distance relationships use CMC tools with the goal of feeling closer to their loved ones and try to do some of the activities they used to do when they were in-person. I found that synchronous and planned experience sharing online is less frequent than the forms of experience sharing that are spontaneous or asynchronous, possibly due to the lower effort required.

Additionally, related to seeking emotional support, I found that many international students portray a positive picture of their life in the US when they talk to their parents and

sometimes intentionally withhold information about their struggles and instead share those with their close friends.

Finally, this research shows that the COVID-19 global pandemic has impacted students' communication with their loved ones. Many students reflected on changes in their communication patterns, such as talking to their family and friends more frequently and for longer durations to support each other during difficult times. However, many have shifted back to their previous communication routines as the world moves toward the pre-pandemic state.

The findings of this study contributed to the literature by providing an in-depth understanding of international students' use of CMC tools for seeking support, sharing everyday life moments, and engaging in activities online. These findings also inspire the design of future CMC tools for distance-separated loved ones.

## REFERENCES

- Abel, S., Machin, T., & Society, C. B. (2021). Social media, rituals, and long-distance family relationship maintenance: A mixed-methods systematic review. *New Media & Society*, 23(3), 632–654. <https://doi.org/10.1177/1461444820958717>
- Acitelli, L. (2001). Maintaining and enhancing a relationship by attending to it. *Close Romantic Relationships*, 161–176. <https://doi.org/10.4324/9781410600462-13>
- Agnew, C., & VanderDrift, L. (2015). Relationship maintenance and dissolution. In M. Mikulincer, P. R. Shaver, J. A. Simpson, & J. F. Dovidio (Eds.), *APA handbook of personality and social psychology* (Vol. 3, pp. 581–604). American Psychological Association. <https://doi.org/https://doi.org/10.1037/14344-021>
- Alberts, J. K., Yoshimura, C. G., Rabby, M., & Loschiavo, R. (2005). Mapping the topography of couples' daily conversation. *Journal of Social and Personal Relationships*, 22(3), 299–322. <https://doi.org/10.1177/0265407505050941>
- Ames, M. G., Go, J., Kaye, J., & Spasojevic, M. (2010). Making love in the network closet: The benefits and work of family videochat. *Proceedings of the 2010 ACM Conference on Computer Supported Cooperative Work (CSCW '10)*, 145–154. <https://doi.org/10.1145/1718918.1718946>
- Arnett, J. J. (2007). Emerging adulthood: What is it, and what is it good for? *Child Development Perspectives*, 1(2), 68–73. <https://doi.org/10.1111/J.1750-8606.2007.00016.X>
- Bacigalupe, G., & Bräuninger, I. (2017). Emerging Technologies and Family Communication: The Case of International Students. *Contemporary Family Therapy*, 39(4), 289–300. <https://doi.org/10.1007/S10591-017-9437-7>

- Baishya, U., & Neustaedter, C. (2017). In your eyes: Anytime, anywhere video and audio streaming for couples. *Proceedings of the ACM Conference on Computer Supported Cooperative Work, CSCW*, 84–97. <https://doi.org/10.1145/2998181.2998200>
- Bales, E., Li, K. A., & Griwsold, W. (2011). CoupleVIBE : Mobile implicit communication to improve awareness for (long-distance) couples. *Proceedings of the ACM Conference on Computer Supported Cooperative Work, CSCW*, 65–74. <https://doi.org/10.1145/1958824.1958835>
- Ball, C., Huang, K. T., & Francis, J. (2021). Virtual reality adoption during the COVID-19 pandemic: A uses and gratifications perspective. *Telematics and Informatics*, 65, 101728. <https://doi.org/10.1016/j.tele.2021.101728>
- Barden, P., Comber, R., Green, D., Jackson, D., Ladha, C., Bartindale, T., Bryan-Kinns, N., Stockman, T., & Olivier, P. (2012). Telematic dinner party: Designing for togetherness through play and performance. *Proceedings of the Designing Interactive Systems Conference, DIS '12*, 38–47. <https://doi.org/10.1145/2317956.2317964>
- Baxter, L. A., & Dindia, K. (1990). Marital Partners' Perceptions of Marital Maintenance Strategies. *Journal of Social and Personal Relationships*, 7(2), 187–208. <https://doi.org/10.1177/0265407590072003>
- Bell, S., & Coleman, S. (1999). The anthropology of friendship: Enduring themes and future possibilities. In *The Anthropology of Friendship* (1st ed.). Taylor and Francis. <https://doi.org/10.4324/9781003135821-1>
- Belus, J. M., Pentel, K. Z., Cohen, M. J., Fischer, M. S., & Baucom, D. H. (2018). Staying connected: An examination of relationship maintenance behaviors in long-distance

relationships. *Marriage & Family Review*, 55(1), 78–98.

<https://doi.org/10.1080/01494929.2018.1458004>

Bhatti, N., Kotut, L., Haqq, D., Stelter, T. L., Saaty, M., Kelliher, A., & McCrickard, D. S.

(2021). Parenting, studying and working at home in a foreign country: How international student mothers in the US use screen media for and with their young children. *Proceedings of the ACM on Human-Computer Interaction*, 5(2), 1–25. <https://doi.org/10.1145/3479584>

Bi, N. (2019). *Mediated metamorphosis: Communication between Chinese international students and their parents and its role in their adaptation* [PhD Dissertation, Cornell University].

<https://doi.org/https://doi.org/10.7298/qcta-0774>

Binsahl, H., Chang, S., & Bosua, R. (2015). Identity and belonging: Saudi female international students and their use of social networking sites. *Crossings: Journal of Migration & Culture*, 6(1), 81–102. [https://doi.org/10.1386/cjmc.6.1.81\\_1](https://doi.org/10.1386/cjmc.6.1.81_1)

Brave, S., & Dahley, A. (1997). InTouch: A medium for haptic interpersonal communication. *CHI '97 Extended Abstracts on Human Factors in Computing Systems (CHI EA '97)*, 22-Marc, 363–364. <https://doi.org/10.1145/1120212.1120435>

Brown, G., & Greenfield, P. M. (2021). Staying connected during stay-at-home: Communication with family and friends and its association with well-being. *Human Behavior and Emerging Technologies*, 3(1), 147–156. <https://doi.org/10.1002/hbe2.246>

Brown, R. H. (2016). Multiple modes of care: internet and migrant caregiver networks in Israel. *Global Networks*, 16(2), 237–256. <https://doi.org/10.1111/GLOB.12112>

Brubaker, J. R., Venolia, G., & Tang, J. C. (2012). Focusing on shared experiences: Moving beyond the camera in video communication. *Proceedings of the Designing Interactive Systems Conference (DIS '12)*, 96–105. <https://doi.org/10.1145/2317956.2317973>

- Butzer, M., Levonian, Z., Luo, Y., Watson, K., Yuan, Y., Smith, C. E., & Yarosh, S. (2020). Grandtotem: Supporting international and intergenerational relationships. *Proceedings of the ACM Conference on Computer Supported Cooperative Work*, 227–231. <https://doi.org/10.1145/3406865.3418307>
- Cabalquinto, E. C. (2019). ‘They could picture me, or I could picture them’: ‘Displaying’ family life beyond borders through mobile photography. *Information, Communication, and Society*, 23(11), 1608–1624. <https://doi.org/10.1080/1369118X.2019.1602663>
- Campbell, S. W. (2020). Cutting the cord: Social and scholarly revolutions as CMC goes mobile. *Journal of Computer-Mediated Communication*, 25(1), 101–110. <https://doi.org/10.1093/JCMC/ZMZ021>
- Canary, D., & Stafford, L. (1994). Maintaining relationships through strategic and routine interaction. In D. J. Canary & L. Stafford (Eds.), *Communication and relational maintenance* (pp. 3–22). Academic Press.
- Cao, X., Sellen, A., Brush, A. J. B., Kirk, D., Edge, D., & Ding, X. (2010). Understanding family communication across time zones. *Proceedings of the ACM Conference on Computer Supported Cooperative Work, CSCW*, 155–158. <https://doi.org/10.1145/1718918.1718947>
- Cemalcilar, Z., Falbo, T., & Stapleton, L. M. (2005). Cyber communication: A new opportunity for international students’ adaptation? *International Journal of Intercultural Relations*, 29(1), 91–110. <https://doi.org/10.1016/J.IJINTREL.2005.04.002>
- Charmaz, K. (2014). *Constructing Grounded Theory* (J. Seaman, Ed.; 2nd ed.). SAGE Publications.

- Chen, J. H., Li, Y., Wu, A. M. S., & Tong, K. K. (2020). The overlooked minority: Mental health of international students worldwide under the COVID-19 pandemic and beyond. *Asian Journal of Psychiatry*, 54, 102333. <https://doi.org/10.1016/J.AJP.2020.102333>
- Chib, A., Malik, S., Aricat, R. G., & Kadir, S. Z. (2013). Migrant mothering and mobile phones: Negotiations of transnational identity. *Mobile Media & Communication*, 2(1), 73–93. <https://doi.org/10.1177/2050157913506007>
- Chung, H., Lee, C. H. J., & Selker, T. (2006). Lover’s Cups: Drinking interfaces as new communication channels. In *CHI '06 Extended Abstracts on Human Factors in Computing Systems (CHI EA '06)*, 375–380. <https://doi.org/10.1145/1125451.1125532>
- Clark, H. H., & Brennan, S. E. (1991). Grounding in communication. *Perspectives on Socially Shared Cognition*, 13(1991), 127–149.
- Constantine, M. G., Okazaki, S., & Utsey, S. O. (2004). Self-concealment, social self-efficacy, acculturative stress, and depression in African, Asian, and Latin American international college students. *American Journal of Orthopsychiatry*, 74(3), 230–241. <https://doi.org/10.1037/0002-9432.74.3.230>
- Cramer, H., & Jacobs, M. (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>
- Cummings, J. J., Cahill, T. J., Wertz, E., & Zhong, Q. (2022). Psychological predictors of consumer-level virtual reality technology adoption and usage. *Virtual Reality*, 27(2), 1357–1379. <https://doi.org/10.1007/s10055-022-00736-1>



- Demirsu, I. (2022). Watching them grow: Intergenerational video-calling among transnational families in the age of smartphones. *Global Networks*, 22(1), 119–133.  
<https://doi.org/10.1111/glob.12334>
- Farshbaf Shaker, S. (2017). A Study of transnational communication among Iranian migrant women in Australia. *Journal of Immigrant & Refugee Studies*, 16(3), 293–312.  
<https://doi.org/10.1080/15562948.2017.1283078>
- Fiese, B. H., Tomcho, T. J., Douglas, M., Josephs, K., Poltrock, S., & Baker, T. (2002). A review of 50 years of research on naturally occurring family routines and rituals: Cause for celebration? *Journal of Family Psychology*, 16(4), 381–390. <https://doi.org/10.1037/0893-3200.16.4.381>
- Firang, D. (2020). The impact of COVID-19 pandemic on international students in Canada. *International Social Work*, 63(6), 820–824. <https://doi.org/10.1177/0020872820940030>
- Foley-Fisher, Z., Tsao, V., Wang, J., & Fels, S. (2010). NetPot: Easy meal enjoyment for distant diners. *Lecture Notes in Computer Science (Including Subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics)*, 6243 LNCS, 446–448.  
[https://doi.org/10.1007/978-3-642-15399-0\\_56](https://doi.org/10.1007/978-3-642-15399-0_56)
- Francisco, V. (2015). ‘The Internet is magic’: Technology, intimacy and transnational families. *Critical Sociology*, 41(1), 173–190. <https://doi.org/10.1177/0896920513484602>
- Gan, Y., Greiffenhagen, C., & Reeves, S. (2020). Connecting distributed families: Camera work for three-party mobile video calls. *Proceedings of the 2020 CHI Conference on Human Factors in Computing Systems*, 1–12. <https://doi.org/10.1145/3313831.3376704>
- Gao, J., Ying, X., Cao, J., Yang, Y., Foong, P. S., & Perrault, S. (2022). Differences of challenges of working from home (WFH) between Weibo and Twitter Users during

- COVID-19. In *Extended Abstracts of the 2022 CHI Conference on Human Factors in Computing Systems (CHI EA '22)*, 1–7. <https://doi.org/10.1145/3491101.3519790>
- Geiskkovitch, D. Y., Müller, M., & Neustaedter, C. (2022). The needs of grandparents and grandchildren in a socially and geographically distanced world: A case study. *Proceedings of the ACM Conference on Computer Supported Cooperative Work, CSCW*, 14–17. <https://doi.org/10.1145/3500868.3559444>
- Gomes, C., Hendry, N. A., Souza, R. De, Hjorth, L., Richardson, I., Harris, D., & Coombs, G. (2021). Higher degree students (HDR) during COVID-19. *Journal of International Students*, 11(S2), 19–37. <https://doi.org/10.32674/JIS.V11IS2.3552>
- Goodman, E., & Misilim, M. (2003). The Sensing Beds. *UbiComp 2003 Workshop*, 40–42. [www.mediamatic.nl/doors/Doors2/DunRab/DunR](http://www.mediamatic.nl/doors/Doors2/DunRab/DunR)
- Guba, E. G., & Lincoln, Y. S. (1994). Competing paradigms in qualitative research. In N. K. Denzin & Y. S. Lincoln (Eds.), *Handbook of qualitative research* (pp. 105–117). Sage Publications, Inc.
- Hack-Polay, D., & Mahmoud, A. B. (2021). Homesickness in developing world expatriates and coping strategies. *German Journal of Human Resource Management*, 35(3), 285–308. <https://doi.org/10.1177/2397002220952735>
- Han, E., Miller, M. R., DeVeaux, C., Jun, H., Nowak, K. L., Hancock, J. T., Ram, N., & Bailenson, J. N. (2023). People, places, and time: A large-scale, longitudinal study of transformed avatars and environmental context in group interaction in the metaverse. *Journal of Computer-Mediated Communication*, 28(2). <https://doi.org/10.1093/jcmc/zmac031>

- Hari, A., Nardon, L., & Zhang, H. (2021). A transnational lens into international student experiences of the COVID-19 pandemic. *Global Networks*, 23(1), 14–30.  
<https://doi.org/10.1111/GLOB.12332>
- Hassib, M., Buschek, D., Woźniak, P. W., & Alt, F. (2017). HeartChat: Heart rate augmented mobile messaging to support empathy and awareness. *In Proceedings of the 2017 CHI Conference on Human Factors in Computing Systems (CHI '17)*, 2017-May, 2239–2251.  
<https://doi.org/10.1145/3025453.3025758>
- Hautasaari, A., Yamashita, N., & Kudo, T. (2017). Role of CMC in emotional support for depressed foreign students in Japan. *Conference on Human Factors in Computing Systems - Proceedings, Part F127655*, 2614–2621. <https://doi.org/10.1145/3027063.3053197>
- Heidecker, M., Eckoldt, S., Diefenbach, K., & Hillmann, S. (2012). All you need is love: Current strategies of mediating intimate relationships through technology. *ACM Transactions on Computer-Human Interactions*, 19(4), 1–19. <https://doi.org/10.1145/2395131.2395137>
- Hendrickson, B., Rosen, D., & Aune, R. K. (2011). An analysis of friendship networks, social connectedness, homesickness, and satisfaction levels of international students. *International Journal of Intercultural Relations*, 35(3), 281–295.  
<https://doi.org/10.1016/j.ijintrel.2010.08.001>
- Heshmat, Y., & Neustaedter, C. (2021). Family and friend communication over distance in Canada during the COVID-19 pandemic. *In Proceedings of the 2021 ACM Designing Interactive Systems Conference (DIS '21)*, 1–14. <https://doi.org/10.1145/3461778.3462022>
- Heshmat, Y., Neustaedter, C., McCaffrey, K., Odom, W., Wakkary, R., & Yang, Z. (2020). FamilyStories: Asynchronous Audio Storytelling for Family Members Across Time Zones.

*Proceedings of the 2020 CHI Conference on Human Factors in Computing Systems (CHI '20)*, 1–14. <https://doi.org/10.1145/3313831.3376486>

Holtzman, S., Kushlev, K., Wozny, A., & Godard, R. (2021). Long-distance texting: Text messaging is linked with higher relationship satisfaction in long-distance relationships. *Journal of Social and Personal Relationships*, 38(12), 3543–3565. <https://doi.org/10.1177/02654075211043296>

Hu, Y., Xu, C. L., & Tu, M. (2022). Family-mediated migration infrastructure: Chinese international students and parents navigating (im)mobilities during the COVID-19 pandemic. *Chinese Sociological Review*, 54(1), 62–87. <https://doi.org/10.1080/21620555.2020.1838271>

Hwang, E., Kirkham, R., Monk, A., & Olivier, P. (2018). Respectful disconnection: Understanding long distance family relationships in a South Korean context. *Proceedings of the 2018 Designing Interactive Systems Conference (DIS '18)*, 733–745. <https://doi.org/10.1145/3196709.3196751>

Ito, M., & Okabe, D. (2005). Intimate visual co-presence. *Ubiquitous Computing Conference*.

Judge, T. K., & Neustaedter, C. (2010). Sharing conversation and sharing life: Video conferencing in the home. *In Proceedings of the SIGCHI Conference on Human Factors in Computing Systems (CHI '10)*, 2, 655–658. <https://doi.org/10.1145/1753326.1753422>

Judge, T. K., Neustaedter, C., Harrison, S., & Blose, A. (2011). Family Portals: Connecting families through a multifamily media space. *In Proceedings of the SIGCHI Conference on Human Factors in Computing Systems (CHI '11)*, 1205–1214. <https://doi.org/10.1145/1978942.1979122>

- Kang, T. (2012). Gendered media, changing intimacy: Internet-mediated transnational communication in the family sphere. *Media, Culture and Society*, 34(2), 146–161.  
<https://doi.org/10.1177/0163443711430755>
- Kelly, C. (2015). ‘Let’s do some jumping together’: Intergenerational participation in the use of remote technology to co-construct social relations over distance. *Journal of Early Childhood Research*, 13(1), 29–46. <https://doi.org/10.1177/1476718X12468121>
- Khanal, J., & Gaulee, U. (2019). Challenges of international students from pre-departure to post-study: A literature review. *Journal of International Students*, 9(2), 560–581.  
<https://doi.org/10.32674/jis.v9i2.673>
- Kirk, D. S., Sellen, A., & Cao, X. (2010). Home video communication: Mediating “closeness.” *Proceedings of the 2010 ACM Conference on Computer Supported Cooperative Work (CSCW '10)*, 135–144. <https://doi.org/10.1145/1718918.1718945>
- Kraut, R. E., Fussell, S. R., & Siegel, J. (2003). Visual information as a conversational resource in collaborative physical tasks. *Human-Computer Interaction*, 18(1), 13–49.  
[https://doi.org/10.1207/S15327051HCI1812\\_2](https://doi.org/10.1207/S15327051HCI1812_2)
- Krsmanovic, M. (2021). The Synthesis and future directions of empirical research on international students in the United States: The insights from one decade. *Journal of International Students*, 11(1). <https://doi.org/10.32674/jis.v11i1.1955>
- Ledbetter, A. M. (2010). Assessing the measurement invariance of relational maintenance behavior when face-to-face and online. *Communication Research Reports*, 27(1), 30–37.  
<https://doi.org/10.1080/08824090903526620>

- Li, L., & Peng, W. (2019). Transitioning through social media: International students' SNS use, perceived social support, and acculturative stress. *Computers in Human Behavior*, 98, 69–79. <https://doi.org/10.1016/j.chb.2019.03.011>
- Macaranas, A., Venolia, G., Inkpen, K., & Tang, J. (2013). Sharing Experiences over Video: watching video programs together at a distance. *Human-Computer Interaction- INTERACT 2013*, 8120, 73–90. [https://doi.org/10.1007/978-3-642-40498-6\\_5](https://doi.org/10.1007/978-3-642-40498-6_5)
- Malone, L. (2019). Finding themselves between home and host cultures. *In Companion Proceedings of The 2019 World Wide Web Conference (WWW '19)*, 42–45. <https://doi.org/10.1145/3308560.3314193>
- Martirosyan, N. M., Bustamante, R. M., & Saxon, D. P. (2006). International students in English-speaking universities: Adjustment factors. *Journal of Research in International Education*, 5(2), 131–154. <https://doi.org/10.1177/1475240906065589>
- Mason, A. J., & Carr, C. T. (2022). Toward a theoretical framework of relational maintenance in computer-mediated communication. *Communication Theory*, 32(2), 243–264. <https://doi.org/10.1093/ct/qtaa035>
- Massimi, M., & Neustaedter, C. (2014). Moving from talking heads to newlyweds: Exploring video chat use during major life events. *Proceedings of the 2014 Conference on Designing Interactive Systems (DIS '14)*, 43–52. <https://doi.org/10.1145/2598510.2598570>
- Mbous, Y. P. V., Mohamed, R., & Rudisill, T. M. (2022). International students challenges during the COVID-19 pandemic in a university in the United States: A focus group study. *Current Psychology*, 1–13. <https://doi.org/10.1007/s12144-022-02776-x>

- Mogharrab, A., & Neustaedter, C. (2020). Family group chat: Family needs to manage contact and conflict. *In Extended Abstracts of the 2020 CHI Conference on Human Factors in Computing Systems (CHI EA '20)*, 1–7. <https://doi.org/10.1145/3334480.3382872>
- Mori, S. (2000). Addressing the mental health concerns of international students. *Journal of Counseling and Development*, 78(2), 137–144. <https://doi.org/10.1002/J.1556-6676.2000.TB02571.X>
- Muñoz, D., Ploderer, B., & Brereton, M. (2018). Towards design for renegotiating the parent-adult child relationship after children leave home. *In Proceedings of the 30th Australian Conference on Computer-Human Interaction (OzCHI '18)*, 303–313. <https://doi.org/10.1145/3292147.3292149>
- Nardi, B. A., Schwarz, H., Kuchinsky, A., Leichner, R., Whittaker, S., Gifford, S., & Sciabassi, R. (1993). Turning away from talking heads. *In Proceedings of the INTERACT '93 and CHI '93 Conference on Human Factors in Computing Systems (CHI '93)*, 327–334. <https://doi.org/10.1145/169059.169261>
- Neate, T., Kladouchou, V., Wilson, S., & Shams, S. (2022). “Just Not Together”: The experience of videoconferencing for people with Aphasia during the Covid-19 pandemic. *In Proceedings of the 2022 CHI Conference on Human Factors in Computing Systems (CHI '22)*, 1–16. <https://doi.org/10.1145/3491102.3502017>
- Nedelcu, M. (2017). Transnational grandparenting in the digital age: Mediated co-presence and childcare in the case of Romanian migrants in Switzerland and Canada. *European Journal of Ageing*, 14(4), 375–383. <https://doi.org/10.1007/s10433-017-0436-1>

- Nedelcu, M., & Wyss, M. (2016). 'Doing family' through ICT-mediated ordinary co-presence: Transnational communication practices of Romanian migrants in Switzerland. *Global Networks*, 16(2), 202–218. <https://doi.org/10.1111/glob.12110>
- Neustaedter, C., & Greenberg, S. (2012). Intimacy in long-distance relationships over video chat. *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems (CHI '12)*, 753–762. <https://doi.org/10.1145/2207676.2207785>
- Neustaedter, C., Pang, C., Forghani, A., Oduor, E., Hillman, S., Judge, T. K., Massimi, M., & Greenberg, S. (2015). Sharing domestic life through long-term video connections. *ACM Transactions on Computer-Human Interaction (TOCHI)*, 22(1), 1–29. <https://doi.org/10.1145/2696869>
- Nghia, T. (2019). Motivations for studying abroad and immigration intentions: The case of Vietnamese students. *Journal of International Students*, 9(3), 758–766. <https://doi.org/10.32674/jis.v0i0.731>
- Nilsson, P. A., & Ripmeester, N. (2016). International student expectations: Career opportunities and employability. *Journal of International Students*, 6(2), 614–631. <https://doi.org/10.32674/jis.v6i2.373>
- Nouwens, M., Griggio, C. F., & Mackay, W. E. (2017). “WhatsApp is for family; Messenger is for friends”: Communication places 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>
- Ogolsky, B. G., Monk, J. K., Rice, T. M., Theisen, J. C., & Maniotes, C. R. (2017). Relationship maintenance: A review of research on romantic relationships. *Journal of Family Theory and Review*, 9(3), 275–306. <https://doi.org/10.1111/JFTR.12205>



- Ogolsky, B., & Monk, J. K. (Eds.). (2019). *Relationship maintenance: Theory, process, and context*. Cambridge University Press.
- O'Hara, K., Massimi, M., Harper, R., Rubens, S., & Morris, J. (2014). Everyday dwelling with WhatsApp. *Proceedings of the ACM Conference on Computer Supported Cooperative Work, CSCW*, 1131–1143. <https://doi.org/10.1145/2531602.2531679>
- Osei, O. E., Mazzucato, V., & Haagsman, K. (2023). Sustaining Ghanaian transnational parent–child relationships through WhatsApp: A youth-centric perspective. *Handbooks of Sociology and Social Research*, 97–111. [https://doi.org/10.1007/978-3-031-15278-8\\_7](https://doi.org/10.1007/978-3-031-15278-8_7)
- Özturgut, O., & Murphy, C. (2009). Literature vs. practice: Challenges for international students in the US. *International Journal of Teaching and Learning in Higher Education*, 22(3), 374–385.
- Pahl, R. (2002). Towards a more significant sociology of friendship. *European Journal of Sociology / Archives Européennes de Sociologie*, 43(3), 410–423. <https://doi.org/10.1017/S0003975602001169>
- Pedersen, P. B. (1991). Counseling international students. *The Counseling Psychologist*, 19(1), 10–58. <https://doi.org/10.1177/0011000091191002>
- Plaza, D., & Below, A. (2014). Social media as a tool for transnational caregiving within the Caribbean diaspora. *Social and Economic Studies*, 63(1), 25–56.
- Ramirez Gomez, A., & Stawarz, K. (2022). Socially distanced games: Exploring the future opportunities of remote play. *In Extended Abstracts of the 2022 Annual Symposium on Computer-Human Interaction in Play (CHI PLAY '22)*, 93–102. <https://doi.org/10.1145/3505270.3558338>

- Ramsey, M. A., Gentzler, A. L., Morey, J. N., Oberhauser, A. M., & Westerman, D. (2013). College students' use of communication technology with parents: Comparisons between two cohorts in 2009 and 2011. *Cyberpsychology, Behavior, and Social Networking*, *16*(10). <https://doi.org/10.1089/cyber.2012.0534>
- Rospigliosi, P. (2022). Metaverse or Simulacra? Roblox, Minecraft, Meta and the turn to virtual reality for education, socialisation and work. *Interactive Learning Environments*, *30*(1), 1–3. <https://doi.org/10.1080/10494820.2022.2022899>
- Ryan, L., Klekowski Von Koppenfels, A., & Mulholland, J. (2015). 'The distance between us': A comparative examination of the technical, spatial and temporal dimensions of the transnational social relationships of highly skilled migrants. *Global Networks*, *15*(2), 198–216. <https://doi.org/10.1111/GLOB.12054>
- Sabie, D., Talhouk, R., Dedeoglu, C. E., Maitland, C., Wulf, V., Yafi, E., Sabie, S., Almohamed, A., Abujarour, S., Le Louvier, K., Hussain, F., & Ahmed, S. I. (2021). Migration and mobility in HCI: Rethinking boundaries, methods, and impact. *In Extended Abstracts of the 2021 CHI Conference on Human Factors in Computing Systems (CHI EA '21)*, 1–6. <https://doi.org/10.1145/3411763.3441352>
- Sandel, T. L. (2014). "Oh, I'm Here!": Social media's impact on the cross-cultural adaptation of students studying abroad. *Journal of Intercultural Communication Research*, *43*(1), 1–29. <https://doi.org/10.1080/17475759.2013.865662>
- Sawir, E., Marginson, S., Deumert, A., Nyland, C., & Ramia, G. (2008). Loneliness and international students: An Australian study. *Journal of Studies in International Education*, *12*(2), 148–180.

- Shakeri, H., Geiskkovitch, D. Y., Garg, R., & Neustaedter, C. (2023). Sensing their presence: How emerging adults and their parents connect after moving apart. *In Proceedings of the 2023 CHI Conference on Human Factors in Computing Systems (CHI '23)*, 18(23), 1–18. <https://doi.org/10.1145/3544548.3581102>
- Share, M., Williams, C., & Kerrins, L. (2017). Displaying and performing: Polish transnational families in Ireland skyping grandparents in Poland. *New Media & Society*, 20(8), 3011–3028. <https://doi.org/10.1177/1461444817739272>
- Sherry, M., Peter, T., & Chui, W. H. (2010). International students: A vulnerable student population. *Higher Education*, 60, 33–46. <https://doi.org/10.1007/s10734-009-9284-z>
- Shiau, H. (2015). Beyond the cultural dichotomy, what do we share? An ethnographic study of intergenerational smartphone MMS use in sojourning experiences. *Journal of Asian Pacific Communication*, 25(1), 42–62. <https://doi.org/10.1075/JAPC.25.1.03SHI>
- Sinanan, J., & Gomes, C. (2020). ‘Everybody needs friends’: Emotions, social networks and digital media in the friendships of international students. *International Journal of Cultural Studies*, 23(5), 674–691. <https://doi.org/10.1177/1367877920922249>
- Sinanan, J., Hjorth, L., & Ohashi, K. (2018). Mobile media photography and intergenerational families. *International Journal of Communication*, 12(8), 4106–4122.
- Stafford, L. (2010). Measuring relationship maintenance behaviors: Critique and development of the revised relationship maintenance behavior scale. *Journal of Social and Personal Relationships*, 28(2), 278–303. <https://doi.org/10.1177/0265407510378125>
- Stafford, L., & Canary, D. J. (1991). Maintenance strategies and romantic relationship type, gender and relational characteristics. *Journal of Social and Personal Relationships*, 8(2), 217–242. <https://doi.org/10.1177/0265407591082004>

- Stafford, L., Dainton, M., & Haas, S. (2000). Measuring routine and strategic relational maintenance: Scale revision, sex versus gender roles, and the prediction of relational characteristics. *Communication Monographs*, 67(3), 306–323.  
<https://doi.org/10.1080/03637750009376512>
- Statista. (2023, June). *Number of international students in the United States from 2003/04 to 2021/22*. Statista Research Department.  
<https://www.statista.com/statistics/237681/international-students-in-the-us/>
- Strauss, A., & Corbin, J. (1997). *Grounded theory in practice*. SAGE Publications, Inc.
- Strauss, A., & Corbin, J. (2008). *Basics of qualitative research: Grounded theory procedures and techniques* (3rd ed.). SAGE Publications, Inc. <https://doi.org/10.4135/9781452230153>
- Taipale, S., & Farinosi, M. (2018). The big meaning of small messages: The use of WhatsApp in intergenerational family communication. *Acceptance, Communication and Participation. ITAP 2018. Lecture Notes in Computer Science, 10926 LNCS*, 532–546.  
[https://doi.org/10.1007/978-3-319-92034-4\\_40](https://doi.org/10.1007/978-3-319-92034-4_40)
- Tang, J., Inkpen, K., Luff, P., Fitzpatrick, G., Yamashita, N., & Kim, J. (2023). Living through a crisis: How COVID-19 has transformed the way we work, live, and research. *Computer Supported Cooperative Work (CSCW)*, 32, 211–213. <https://doi.org/10.1007/s10606-022-09452-5>
- Thurber, C. A., & Walton, E. A. (2012). Homesickness and adjustment in university students. *Journal of American College Health*, 60(5), 415–419.  
<https://doi.org/10.1080/07448481.2012.673520>
- Tibau, J., Stewart, M., Harrison, S., Tatar, D., & Tech, V. (2019). FamilySong: Designing to enable music for connection and culture in internationally distributed families. *In*

- Proceedings of the 2019 on Designing Interactive Systems Conference (DIS '19)*, 785–798.  
<https://doi.org/10.1145/3322276.3322279>
- Tong, S., & Walther, J. B. (2011). Relational maintenance and CMC. *Computer-Mediated Communication in Personal Relationships*, 53(9), 1689–1699.
- Ukani, A., Mirian, A., & Snoeren, A. C. (2021). Locked-in during lock-down: Undergraduate life on the internet in a pandemic. *In Proceedings of the 21st ACM Internet Measurement Conference (IMC '21)*, 480–486. <https://doi.org/10.1145/3487552.3487828>
- Vitak, J. (2014). Facebook makes the heart grow fonder: Relationship maintenance strategies among geographically dispersed and communication-restricted connections. *Proceedings of the ACM Conference on Computer Supported Cooperative Work, CSCW*, 842–853.  
<https://doi.org/10.1145/2531602.2531726>
- Walker, D., & Myrick, F. (2006). Grounded theory: An exploration of process and procedure. *Qualitative Health Research*, 16(4), 547–559. <https://doi.org/10.1177/1049732305285972>
- Walton-Roberts, M. (2015). Femininity, mobility and family fears: Indian international student migration and transnational parental control. *Journal of Cultural Geography*, 32(1), 68–82.  
<https://doi.org/10.1080/08873631.2014.1000561>
- Wintre, M. G., Kandasamy, A. R., Chavoshi, S., & Wright, L. (2015). Are international undergraduate students emerging adults? Motivations for studying abroad. *Emerging Adulthood*, 3(4), 255–264. <https://doi.org/10.1177/2167696815571665>
- Wolin, S. J., & Bennett, L. A. (1984). Family Rituals. *Family Process*, 23(3), 401–420.  
<https://doi.org/10.1111/J.1545-5300.1984.00401.X>
- Wong, J. W. E. (2017). ‘So that she feels a part of my life’: How international students connect to home through digital media technologies. In L. Tran & C. Gomes (Eds.), *International*

*Student Connectedness and Identity* (Vol. 6, pp. 115–135). Springer, Singapore.

[https://doi.org/10.1007/978-981-10-2601-0\\_7](https://doi.org/10.1007/978-981-10-2601-0_7)

Worrall, A., Ballantyne, E., & Kendall, J. (2019). “You don’t feel that you’re so far away”:

Information sharing, technology use, and settlement of international student immigrants.

*Proceedings of the Association for Information Science and Technology*, 56(1), 306–315.

<https://doi.org/10.1002/PRA2.25>

Yang, L., & Neustaedter, C. (2018). Our house: Living long distance with a telepresence robot.

*In Proceedings of the ACM on Human-Computer Interaction*, 2(CSCW), 190:1--190:18.

<https://doi.org/10.1145/3274459>

Yau, A., Marder, B., & O’Donohoe, S. (2020). The role of social media in negotiating identity

during the process of acculturation. *Information Technology & People*, 33(2), 554–575.

<https://doi.org/10.1108/ITP-09-2017-0305>

Yu, L., & Guo, Z. (2022). Exploring the interaction between intercultural communication and

social media of international students in China: Take WeChat as an example. *In*

*Proceedings of the 13th International Conference on Education Technology and Computers*

*(ICETC ’21)*, 5(2021), 432–436. <https://doi.org/10.1145/3498765.3498833>

Yuan, C. W. T. (2015). *The influences of dual social network site use and social capital*

*development on sociocultural adaptation* [PhD Dissertation, Cornell University].

[https://www.proquest.com/dissertations-theses/influences-dual-social-network-site-use-](https://www.proquest.com/dissertations-theses/influences-dual-social-network-site-use-capital/docview/1730367268/se-2)

[capital/docview/1730367268/se-2](https://www.proquest.com/dissertations-theses/influences-dual-social-network-site-use-capital/docview/1730367268/se-2)

Yuan, C. W. T., & Fussell, S. R. (2017). A tale of two sites: Dual social network site use and

social network development. *Computers in Human Behavior*, 74, 83–91.

<https://doi.org/10.1016/j.chb.2017.04.011>

- Zhang-Wu, Q. (2018). Chinese international students' experiences in American higher education institutes: A critical review of the literature. *Journal of International Students*, 8(2), 1173–1197. <https://doi.org/10.32674/JIS.V8I2.139>
- Zhao, X. (2019). Disconnective intimacies through social media: Practices of transnational family among overseas Chinese students in Australia. *Media International Australia*, 173(1), 36–52. <https://doi.org/10.1177/1329878X19837684>
- Zhou, J. (2015). International students' motivation to pursue and complete a Ph.D. in the U.S. *Higher Education*, 69(5), 719–733. <https://doi.org/10.1007/S10734-014-9802-5>
- Zhou, R., Wen, Z., Tang, M., & Disalvo, B. (2017). Navigating media use: Chinese parents and their overseas adolescent children on WeChat. *In Proceedings of the 2017 ACM Conference on Designing Interactive Systems*, 1025–1037. <https://doi.org/10.1145/3064663.3064701>

## Appendix A. Consent Form

(Signed electronically by all participants)

We are asking you to participate in a research study titled “Technology and Living Abroad”. We will describe this study to you and answer any of your questions. This study is being led by PhD student **Negar Khojasteh**. The Faculty Advisor for this study is Susan R. Fussell, who is a professor in the department of Information Science at Cornell University.

### What the study is about

The purpose of this research is to better understand international students’ experience of studying abroad.

### What we will ask you to do

During the interview, we will ask you about your experience of studying abroad, technology you use to be in touch with family and friends back home and feelings of homesickness. The interview will take 40 to 60 minutes.

### Risks and discomforts

We do not anticipate any risks from participating in this research.

### Benefits

We hope to learn more about challenges that international students face during their time abroad and your response will potentially help us as well as other researchers in the field to work toward solving those challenges and designing better tools.

### Compensation for participation

As compensation you can choose between to receive either **\$15 or 2 Sona credits**.

### Audio/Video Recording

Please sign below if you are willing to have this interview recorded (Audio only). You may still participate in this study if you are not willing to have the interview recorded.

- I do not want to have this interview audio recorded.
- I am willing to have this interview audio recorded:

**Signed:**

**Date:**

### Privacy/Confidentiality/Data Security

We will not use the recordings for any purpose other than research. All audio files will be stored on password protected hard-drives and will be deleted after analysis. There won’t be any identifier (such as names, emails, netIDs) attached to the audio files and we save the files with participant ID such as



P1, P2, etc. Identifying information will be kept on a separate document and only the PI of this study and the faculty member will have access to that.

Please note that email communication is neither private nor secure. Though we are taking precautions to protect your privacy, you should be aware that information sent through e-mail could be read by a third party.

Your confidentiality will be kept to the degree permitted by the technology being used. We cannot guarantee against interception of data sent via the internet by third parties.

### **Sharing De-identified Data Collected in this Research**

De-identified data from this study may be shared with the research community at large to advance science and health. We will remove or code any personal information that could identify you before files are shared with other researchers to ensure that, by current scientific standards and known methods, no one will be able to identify you from the information we share. Despite these measures, we cannot guarantee anonymity of your personal data.

### **Future use of Identifiable Data or Specimens Collected in this Research**

Identifiers might be removed and the de-identified information or biospecimens used for future research without additional consent.

### **Taking part is voluntary**

Your involvement is voluntary, you may refuse to participate before the study begins, discontinue at any time, or skip any questions that may make you feel uncomfortable, with no penalty to you, and no effect on the compensation earned before withdrawing, or their academic standing, record, or relationship with the university or other organization or service that may be involved with the research.

You will receive your compensation regardless of number of questions you answer or skip.

### **Follow up studies:**

We may contact you again to request your participation in a follow up study. As always, your participation will be voluntary, and we will ask for your explicit consent to participate in any of the follow up studies.

May we contact you again to request your participation in a follow up study?

- Yes- email address:**  
 **No**

### **If you have questions:**

The main researcher conducting this study is Negar Khojasteh a graduate student at Cornell University. Please ask any questions you have now. If you have questions later, you may contact Negar at [nk586@cornell.edu](mailto:nk586@cornell.edu). If you have any questions or concerns regarding your rights as a subject in this study, you may contact the Institutional Review Board (IRB) for Human Participants at 607-255-5138 or access their website at <http://www.irb.cornell.edu>. You may also report your concerns or complaints anonymously through Ethicspoint online at [www.hotline.cornell.edu](http://www.hotline.cornell.edu) or by calling toll free at 1-866-293-3077. Ethicspoint is an independent organization that serves as a liaison between the University and the person bringing the complaint so that anonymity can be ensured.

If you'd like to receive a copy of this form, please ask the researcher to get one today.

**Statement of Consent:**

I have read the above information and have received answers to any questions I asked. I consent to take part in the study.

Your Signature \_\_\_\_\_ Date \_\_\_\_\_  
\_\_\_\_\_

Your Name (printed) \_\_\_\_\_  
\_\_\_\_\_

## Appendix B. Interview Protocol

Hi! My name is Negar, and I am a PhD candidate in the department of Information Science. Thank you so much for joining me today! I work with Sue Fussell and I study how people use technology to communicate and collaborate remotely. The goal of this study is to understand how international students use technology to communicate and stay connected with their family and friends. The interview will last around 40 to 50 minutes and please let me know if you would like to take a break during the session.

One reminder before we start. This study is approved by Cornell IRB, and I want to reassure you that your responses will be kept confidential. In the future publications of this work, I will use IDs such as P1, P2, etc. and your name will never be attached to the quotes and responses that I will use in the publications. I also want to mention that your participation is totally voluntary and if you'd like to skip any question just let me know. Would it be ok if I record our session only for note taking purposes? You may choose to keep your video on or off. Do you have any questions before we begin? (Answer any questions then if allowed start the recording)

1. Tell me about yourself. What do you study and how long have you been at Cornell? Are you a graduate or undergraduate student?
2. Where are you from? Do your family live there? How often do you visit them?
3. Do you have any family members in the US? (Where do they live and how often do you see them?)
4. Let's talk about your communication with your parents (and siblings)
5. How often do you talk? How often do you text?
6. Who usually initiates the conversations? (Why?)
7. How do you decide when to call or text?
8. On a high level, what do you usually talk about?
9. What tools and apps do you use to communicate with them? How did you decide on which tools and apps to use?
10. Do you have a group chat? (If yes, tell me more about the group chat, what you talk about there)
11. Do you or your family members share photos or videos? tell me more.

Now, let's talk about activities and experiences.

12. When you visit your family, what are some of the activities you do together?
13. How about when you are in Ithaca? Do you do any activities online? (If yes, probe with details of activity, frequency, story of the most recent time they did it.)
14. Is there anything else that you and your family do online that is more than just talking to each other? If there are, please describe them in more details.

Great! Now let's talk about your communication with your friends and let's focus on friends who are not in Ithaca and at Cornell. As we talk about your friends, I will ask you clarification questions to make sure I know whether we are talking about friends back home or other friends. Thinking about your close friends tell me:

15. How often do you talk? How often do you text?
16. Who usually initiates the conversations? (Why?)
17. How do you decide when to call or text?
18. On a high level, what do you usually talk about?
19. What tools and apps do you use to communicate with them? How did you decide on which tools and apps to use?
20. Are there any online activities you do with this friend or a group of friends?
21. Is there anything else that you and your friend do that is more than just talking to each other?

Thank you so much! I want to ask you a couple of questions about homesickness and then the pandemic, but I understand that these topics could be stressful or emotional for some people so before I ask these questions I wanted to check in and make sure it is ok if we talk about homesickness. (Skip if the student prefers to skip)

22. Tell me about your experience with the feelings of homesickness.
23. How often do you get homesickness? What triggers homesickness for you? What do you do when you feel homesick?

We are almost done! I have a couple of questions about your experience as an international student during the COVID-19 pandemic.

24. Tell me about your experience and tell me what happened when the university got shut down. What did you do?
25. How did you feel during that time?
26. In your opinion, did the pandemic impact your communication or relationship with your family or close friends we talked about today? (if yes, in what ways?)

I asked all my questions. Is there anything else you would like to talk about related to what we discussed today?

Thank you so much for all the insights you shared with me today. You are always welcome to reach out to me by emailing me at [nk586@cornell.edu](mailto:nk586@cornell.edu) for any further comments or questions.