FAMILY COMMUNICATION PATTERNS AND MENTAL WELL-BEING OF CHINESE INTERNATIONAL STUDENTS DURING COVID-19 PANDEMIC: EXAMINING EFFECTS OF FAMILY MOBILE COMMUNICATION

by

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(Under the Direction of John Soloski)

ABSTRACT

This study examines the relationship between family communication patterns, family mobile communication, and Chinese international students' mental well-being in the United States. Two-hundred-and-thirty-seven respondents recruited by snowball sampling method completed an online survey that assessed their family conformity and conversation orientations, COVID-19 related influences and adjustment, family mobile communication behaviors, and mental health status. Most Chinese international students report negative impacts of the pandemic in both daily lives and aggravated mental distress. Near half of the respondents report not adjusted well to the pandemic, increased family mobile communication frequency, and depression and anxiety symptoms. Results indicated that conformity orientation predicts a more severe impact from the pandemic, lower family mobile communication satisfaction, and all three mental illnesses. Conversation orientation positively predicts family mobile communication frequency and satisfaction and is an important protective factor for Chinese international students' mental well-being.

INDEX WORDS: Chinese international students, Family communication patterns, Family mobile communication, Mental well-being, COVID-19 influence and adjustment

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DEDICATION

This thesis is dedicated to my parents, whose patience, support and generosity are the foundation of all of my accomplishments. I wouldn't be here without your inspiration.

I also dedicate this work to Zhuoya, the best private cook, tennis coach, driving instructor, and boyfriend. Thank you for accompanying me through the extended quarantine.

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CHAPTER 1

INTRODUCTION

The outbreak of novel severe acute respiratory syndrome coronavirus 2 (SARS-CoV2) in December 2019 and the ensued pandemic (COVID-19, officially named by the World Health Organization) has raised unprecedented challenges in all aspects of life. Global confirmed cases reached near 100 million, with 2.1 million death from COVID-19 (WHO, 2021). The U.S. has the highest cases (25 million), with one in every 13 citizens testing positive for the virus (Wilkinson, 2021). Prolonged quarantine and social distance restrictions disrupted the economy, increased unemployment, and interfered with social routines globally (Plomecka et al., 2020; Rauch et al., 2020). Researchers and health organizations also emphasize the COVID-19 associated psychological distress and adverse impact on individuals' mental well-being (Ho et al., 2020; Khan et al., 2020; Plomecka et al., 2020; Xiong et al., 2020; Serafini et al., 2020).

Along with the maturation from adolescence into emerging adulthood and the accompanying challenges, mental health problems including anxiety, stress, and depression are prevalent among college students worldwide (Kruisselbrink-Flatt, 2013; Moreno et al., 2015; Pedrelli et al., 2015; Regehr et al., 2013). Scholars especially call for closer attention to further research and coping measures against the negative impact of COVID-19 on the already at-stake mental health issues of Chinese international students, who considered one of the vulnerable populations during the pandemic (Chen et al., 2020; Rajkumar, 2020; Zhai & Du, 2020; King et al., 2020). Since the pandemic's eruption, international Chinese students in America are burdened with additional challenges, including fear of the virus, lack of social support, the

sudden switch to online classes, and COVID-19 related harassment and discrimination (Chen et al., 2020; Chirikov & Soria, 2020; Khan et al., 2020; Toquero, 2020).

Accounting for 35% of the total, Chinese international students make up the largest body of international students studying in the United States (IIE, 2021). Chinese international students contribute significantly financially to the American host institutions and contribute $15.9 billion to the U.S. economy in the 2019/20 academic year (IIE, 2020). They also play a vital part in enriching cultural diversity On the U.S. campus and become potential members of future workforces (Bevis & Lucas, 2007; Msengi et al., 2011).

Family communication is integral in the family systems and contributes significantly to emerging adults' mental well-being (Ghali, 2009), especially during stressful times like the pandemic. Chinese international students need parental support and adaption for successful family functioning (Aquilino, 2006; Lopez et al., 1988; Wechter, 1983). According to family communication patterns theory, conversation orientation refers to "the degree to which families create a climate in which all family members are encouraged to participate in unrestrained interactions about a wide array of topics" (Koerner & Fitzpatrick, 2002a, p. 85). Conformity orientation is the degree to which a family stresses "homogeneity in attitude, values, and beliefs" (Koerner & Fitzpatrick, 2006, p. 55) and "the extent to which communication reflects obedience to the family's hierarchy" (Keating et al., 2013). The conversation and conformity orientations that families possess can lead to differentiated information processing, communication, behavioral, and psychosocial outcomes (Koerner and Schrodt, 2014). Communication technology development is changing how family members communicate, especially during the COVID 19 pandemic. Warren and Aloia (2018) proposed that families develop different behaviors and norms when integrating mobile technologies into their ongoing communication.

Since the outbreak of the COVID-19 pandemic, researchers have identified its adverse effects on student mental health globally. However, there remains a gap in how the Chinese international student population is dealing with COVID and its related issues such as social isolation (Bu et al., 2020; Guo et al., 2020; Husky et al., 2020; Isumi et al., 2020; Odriozola-González et al., 2020). In the face of the pandemic, how family communication patterns can be used to understand and predict family mobile communication and Chinese international students' mental wellness requires empirical examination.

This thesis aimed to obtain insight into how family communication patterns relate to COVID-19 related influences and adjustment, family mobile communication, and Chinese international students' mental well-being. A self-reported survey collected data from a snowball sampled population of two-hundred-and-thirty-seven Chinese international students studying in the United States during the pandemic.

This thesis proposes that family communication patterns can be used to understand and predict how students perceived and adjusted to the pandemic's impact, engaged in family mobile communication, and vary in their mental health status. Conversation orientation can be related to better utilization and satisfaction of family mobile communication and acts as the protective factor for mental well-being. On the other hand, conformity orientation can predict the more severe impact of the pandemic, lower mobile communication satisfaction, and worse mental well-being outcomes. This study is carried out in hope to underscore the importance of supportive and positive family communication and the critical situation of Chinese international students' mental well-being. This thesis concludes that parents need to cultivate a family communication atmosphere that encourages free expression, open emotional sharing, and strengthens resilience and coping skills.

In Chapter 2, the author reviews related literature of concepts supporting this study. Chapter 3 formulates the hypothesis and research questions developed from the past research. Chapter 4 and Chapter 5 describe the method and results of this study. Chapter 6 concludes by discussing the findings, limitations, and look at potential implications.

CHAPTER 2

LITERATURE REVIEW

This chapter provides a review of the existing literature on the concepts of family communication patterns, family mobile communication, Chinese international students' mental well-being, and challenges they experience when they pursue their study in the United States, especially during the pandemic.

The chapter starts with underscoring the importance of family communication for emerging adults' mental health. Secondly, it examines relevant family communication patterns theory, how conversation orientation and conformity orientation, as the most important independent variables in this study, are associated with how families communicate via mobile communication, how Chinese international students are being influenced by and adjust to the pandemic, and how their long-term mental well-being status is. The third section discusses the significance of family mobile communication and how family communication patterns manifest themselves in the usage, satisfaction, and pandemic-related family mobile communication changes. The fourth part discusses emerging adults' mental health during the pandemic and the Depression, Anxiety, and Stress Scale (DASS-21). The last section demonstrates the adjustment challenges of Chinese international students in America and highlights the mental well-being implications for them during the pandemic.

2.1 The Importance of Family Communication

According to the transactional communication and family systems perspective, communication plays a central role in family systems across one's life span (Willoughby &

Arnett, 2013). Family communication is the foundation of family life and its functioning. Family members connect and create shared meanings through communication, thus enacting their relationships and defining their families (Miller-Day, 2017). According to Vangelisti, family communication is much more than sending messages to each other (2012, p.X). Families are based on, formed, and maintained through communication. Family communication's essential functions include establishing roles, maintaining rules, performing functions, and sustaining behavioral patterns. Communication is, thus, a complex and essential issue for the parent-child relationship and an integral part of creating a sense of parent-child connectedness (Youniss & Ketterlinus, 1987; Hall-Lande et al., 2007; Lezin et al., 2004). For family members, their connection formed through family communication is an integral part of the family identity. During family communication, the reassurance of awareness, presence, expression of identity, and conveying affection are more important than the information contents (Kirk et al., 2010; Neustaedter et al., 2013).

Young adulthood or emerging adulthood are also known as the age of identity exploration, the age of instability, the age of self-focused, the age of feeling in-between, and the age of possibilities (Arnett, 2004). When they pursue an education in the United States, young adults face competing challenges and responsibilities—for them, connecting and sustaining contact with families at home may be even more challenging than native American students. While going through emerging adulthood, they are also in the process of renegotiating their place in the family and form their identities, which necessitates parents' open and flexible reasoning and communication (Steinberg, 1994). Lefkowitz (2005) found that emerging adults have more open and higher-quality communication with parents despite contacting them less than before. When individuals experience positive family communication and have a good social support

network, they tend to have higher coping skills against stressful situations and experience higher personal well-being (Danziger, & Offer, 2005; Lansford et al., 2005). The well-being of emerging adults and their parents tend to have reciprocal effects (Knoester, 2003). Thus, maintaining healthy family communication is essential for Chinese international students' well-being, especially during times of stressful situations such as the pandemic.

2.2 Family Communication Patterns Theory (FCPT)

2.2.1 Development and Instruments of Family Communication Patterns Theory.

Communication is the foundation by which the family system is defined, developed, and maintained (Miller-Day, 2017). Family communication patterns theory suggests families function based on shared "social reality" of interactions within the family, and their communication behavior can be predicted through the two types of co-orientation (McLeod & Chaffee, 1972; Burleson et al., 1995; Dorrance Hall et al., 2017; Wang et al., 2019). Koerner and Schrodt (2014) propose that Family Communication Patterns Theory as one of the only "grand theories" in family communication that has a wide range of applications on the fundamental and universal communication behavior patterns.

Family Communication Patterns Theory attempts to explain how families and children process external information in the form of mass media. Based on Newcomb's (1953) concept of co-orientation, McLeod and Chaffee (1972) propose that families process mass media messages through the ways they communicate with family members. They conclude that children's perception of reality and socialization can reflect how parents communicate with their children. Co-orientation discusses the situation in which two or more individuals focus their cognitive attention on the same object in their physical or social environment (Mullis, 2017). Based on their cognition and their perception of the other persons' cognition, they reach congruent or

incongruent beliefs and attitudes about the object of focus. Different families use co-orientation attributes, which are agreement, congruence, and accuracy, to create shared attitudes and beliefs about the social reality or their evaluation of an object (Hesse et al., 2017).

Family members achieve co-orientation when they reach agreement in their attitudes and beliefs about social objects and are in congruence and accurate of the perception of their agreements. They achieve co-orientation through two psychosocial processes: intersubjectivity (the similarity of codes that communicators use for symbols) and interactivity (the symbol encoding and decoding process of communicators) (Fitzpatrick & Ritchie, 1994; Koerner & Fitzpatrick, 2002). Family communication patterns facilitate these psychosocial processes and reflect how families draw upon "the cognitive schemas, interpersonal scripts, and behavioral transition" when they encode and decode symbols (Koerner & Fitzpatrick, 2014). Interpersonal and family communication researchers use the two orientations of concept-orientation and socio-orientation to predict how parents socialize their children to process and understand the mass media messages.

While concept-orientation emphasizes family members' discussion of the object's attributes and how individuals in the family conceptualize the object to form a shared belief of the object, it suggests that the family-discussed ideas and concepts have a more significant influence on the information processing and decision making of children. On the other hand, socioeconomic-orientation stresses the process of using the perception of one family member to define the object for all family members. It indicates that social roles and relationships are of greater influence on children's decision-making (Koerner & Fitzpatrick, 2002). McLeod and Chaffee's (1972) FCP instrument has been widely applied in media effects research.

Fitzpatrick and Ritchie (1990) redefined and relabeled their Revised Family Communication Patterns instrument (RFCP) with two co-orientations that McLeod and Chaffee (1972) developed. The reconceptualization focuses on the behavioral features of family communication and its psychosocial outcomes. It emphasizes family communication behaviors that are associated with the two continuous dimensions of agreement achievement, conversation orientation (the original concept-orientation) and conformity orientation (the original socio-orientation) (Koerner & Schrodt, 2014). The Revised Family Communication Patterns instrument (RFCP) contains 26 items in two 5-point Likert scales measuring conversation and conformity orientation. There are 11 revised original FCP items and an additional 15 items that increase its reliability and validity (Ritchie & Fitzpatrick, 1990). RFCP has two separate versions for parents and children for their perception of their familial communicative behaviors. Family communication patterns shape the ways that families communicate, create a general family communication environment that indicates their shared values, and guide relational cognition and interpersonal communication behaviors, and thus, can be used to predict and explain familial behavioral and psychosocial outcomes (Koerner & Fitzpatrick, 2002; Koerner & Schrodt, 2014). Family communication pattern also predicts the communication pattern with others as an individual pursue friendship and partnership (MacMillan & Copher, 2005).

2.2.2 Conversation Orientation. Conversation orientation refers to "the degree to which families create a climate in which all family members are encouraged to participate in unrestrained interactions about a wide array of topics" (Koerner & Fitzpatrick, 2002a, p. 85). It results in the family's values freely, openly, and honestly sharing heterogeneous and diverse ideas/attitudes/beliefs and co-making family decisions about various topics as important ways to educate and socialize children (Ritchie & Fitzpatrick, 1990; Koerner & Fitzpatrick, 2014; Zhang,

2007; Keating, 2016). When families dwell on the higher end of the conversation dimension, all family members embrace frequent, spontaneous, and lengthy interactions and conversations without much restraint on the topics as open and frequent communication is indispensable to the healthy functioning of the family (Koerner & Fitzpatrick, 1997). Parents encourage a supportive communication climate that allows children to view things from all sides and feel safe to express their own thoughts and feelings (Shearman & Dumlao, 2008). Children from high conversation orientation families actively participate in the decision-making process of their families (Odenweller & Harris, 2018).

On the other hand, families with low conversation orientation tend to initiate less frequent interaction and refrain from deep conversations, private feelings, or personal activities (Schrodt et al., 2007). They also avoid lengthy discussions about familial activities and decisions (Odenweller & Harris, 2018). Members of low conversation orientations engage in more superficial conversation topics and may perceive many topics as emotionally-charged, uncertain, and demanding in nature (Keating et al., 2013). They do not routinely share their feelings and daily activities as they do not believe frequent interaction is essential to family functioning and children's socialization (Keaten & Kelly, 2008). When families engage in familial activities, they do not discuss their activities in detail nor do they contribute opinions in family decision-making processes (Koerner & Fitzpatrick, 2002).

2.2.3 Conformity Orientation. Conformity orientation is the degree to which a family stresses "homogeneity in attitude, values, and beliefs" (Koerner & Fitzpatrick, 2006, p. 55) and "the extent to which communication reflects obedience to the family's hierarchy" (Keating et al., 2013). Koerner and Cvancara (2002) argue that the features of high and low conformity orientation in families act in similar ways to those in cross-cultural studies of collectivist and

individualist cultures. Families with high conformity orientation adopt a strict hierarchical family structure, emphasize obedience to parents, and avoid conflicts. They take precedence over family interests and needs over individual family members (Odenweller & Harris, 2018; Schrodt et al., 2007). High-conformity parents are more strict with family norms and rules of behavior, intervene more frequently, and expect deference and shared values in their children. Parents are also expected to make family decisions, while children are expected to show obedience (Koerner & Cvancara, 2002). Those from high conformity orientation families stress family cohesion and interdependence. High conformity orientation is also associated with the belief in a traditional family structure (Koerner & Fitzpatrick, 1997a). According to Koerner and Cvancara's (2002) study on the influence of conformity orientation, high conformity orientation leads to family members favoring family relationships over outside individuals, supporting each other with resources such as space and money, and coordinating schedules to maximize family time.

When families are low on conformity dimension, they believe in individuality, autonomy, and less cohesive and hierarchically organized family structures (Schrodt et al., 2007; Keating, 2016). They value relationships outside the family just as much as familial relationships, prefer personal space, and subordinate family interests to personal interests (Koerner & Fitzpatrick, 2014). Low conformity orientation families promote equality among family members and value personal growth even at the expense of disrupting the family structure (Koerner & Cvancara, 2002). They encourage uniqueness among family members ((Fitzpatrick, 2004)). Odenweller and Harris (2018) illustrate the features of low conformity orientation families as follows: "empower children to formulate their own attitudes, values, and beliefs; stress individuality of its members; discourage children's blind obedience to authority; view relationships external to the family as equally important to familial relationships."

2.2.4 Family Communication Patterns Outcomes. Family communication patterns predict parenting styles, parental conflict styles, and individual privacy orientation and lead to various information processing, communication behavioral, and psychosocial outcomes (Koerner & Fitzpatrick, 2014; Schrodt et al., 2008). Huang (1999) proposes that FCP plays an essential role in cultivating children's personality characteristics and guides the development of "cognitive mapping of a situation" outside the family that they carry into their adulthood. Researchers apply FCP to the context of both physical and mental health (Asbury & Woszido, 2016; Hamon & Schrodt, 2012; Rosland et al., 2012; Schrodt & Ledbetter, 2007; Zarnaghash et al., 2013).

Previous studies suggest that high conversation is related to various positive psychosocial traits. Those from a high conversation family demonstrate higher self-acceptance and respect, better inter-personal communication skills, more remarkable change and stress management, and more empathetic mentality and behaviors in relationships (Huang, 1999; Sillars et al., 2005; Schrodt et al., 2007). Conversation orientation generates positive child outcomes such as lower conflict avoidance, ability and motivation in support seeking outside the family, better stress and change management, high intellectual flexibility and low listening anxiety in adult children, and fewer mental health symptoms (High & Scharp, 2015; Schrodt & Ledbetter, 2008; Sillars et al., 2005; Rudi et al., 2015). Koerner and Fitzpatrick (2002) propose that conversation orientation leads to better acquisition of conflict communication skills and more tools to mitigate interpersonal conflict's negative consequences.

According to Odenweller and Harris (2018), although high conformity orientation is not inherently harmful, it may result in family members' potential undesirable characteristics. Conformity orientation creates a difference in regulatory behaviors and confirming behaviors in daily family conversations (Koerner & Fitzpatrick, 2002). When families score high in

conformity orientation, they tend to produce more advice, interpretation, and questions, while families of low conformity orientation produce more confirmation, reflection, and acknowledgment. Members may harbor a certain level of hostility from unresolved conflicts and vent negative feelings when interacting (Segacknowledgmentck, 1991). High-conformity parents disapprove of children's independent identity, leading to higher conflict avoidance, lack of empathy, and ineffective inter-personal communication (Avtgis, 1999; Koerner & Cvancara, 2002; Rudi et al., 2015). Other adverse child outcomes include verbal and physical aggression of adult children, perceived stress, low self-esteem, destructive conflict management, increased communication anxiety, racial prejudice, decreased parental understanding, and emotional drinking behaviors (McLeod et al., 1972; Koerner & Fitzpatrick, 1997; Huang, 1999; Zhang, 2007; Sillars et al., 2005; Shimkowski, 2016; Odenweller & Harris, 2018).

2.2.5 Family Types. The two dimensions of conversation and conformity orientation in family communication patterns theory are crucial to family functioning. According to Koerner & Fitzpatrick (2002a), it is essential to know both the family's conformity and conversation orientation to predict its communication patterns. They identified four family types characterized by specific family schemata: consensual, pluralistic, protective, and laissez-faire (Fitzpatrick & Ritchie, 1994). These different types of family communication patterns, in turn, result in different communication behaviors, socialization of children, and psychosocial outcomes. However, most families exhibit behaviors associated with more than a single-family type, as only families who score extremes on both conversation and conformity dimensions fit into the four family types (Koerner & Fitzpatrick, 1997).

2.2.5.1 Consensual Families. Consensual families are high in both conversation and conformity orientation. They engage in open communication and explore new ideas but are under pressure to

reach agreements and preserve the hierarchical family structure. Family members are expected to honor family values and needs above individual aspirations (Koerner & Fitzpatrick, 2002b). Parents from consensual families believe in traditional gender roles of male leadership and feminine traits of expression, warmth, and nurturance (Fitzpatrick et al., 1996, p. 384). They try to explain why children should follow family roles and obey parental decisions (Koerner & Fitzpatrick, 2002a). Children in consensual families either are obliged to adopt the parental views even in adulthood or escape into fantasies. Most boys in the family tend to exhibit low self-restraint and may develop uncooperative behaviors (Fitzpatrick et al., 1996).

2.2.5.2 Pluralistic Families. Pluralistic families are high in conversation orientation but low in conformity orientation. Family communications are open, unrestrained, and participated by all members. Parents are "committed to female equality and believe that personal preference rather than role prescriptions should determine an individual's behavior" (Fitzpatrick et al., 1996, p. 385). Their discussions can foster family members' communication competence and independent ideas (Fitzpatrick, 2004). Parents encourage independent views and participation in their children's family decision-making (Koerner & Schrodt, 2014). Without the pressure to conform, pluralistic families engagement in positive and successful conflict resolution strategies (Koerner & Fitzpatrick, 1997). Children from pluralistic families are well socialized to be independent, confident in making their own decisions, and value family conversations (Koerner & Schrodt, 2014).

2.2.5.3 Protective Families. Protective families score low on conversation orientation but high on conformity orientation. They emphasize obedience and have little concern in engaging all members in the conversations. Protective parents believe in male domination in society. Parents expect "boys to be less self-restrained and expect girls to be both self-restrained and socially

adept" (Fitzpatrick et al., 1996, p. 386). The responsibility of making family decisions fall on the parents, and they refrain from explaining their reasons to children (Koerner & Schrodt, 2014). Family members usually avoid conflict and place family interests and norms first. As a result, tensions usually persist in families with the lacking of family communication and conflict resolution skills (Koerner & Fitzpatrick, 1997). Families engage in communication to inform family norms rather than express individuals' ideas (Fitzpatrick, 2004). Children from protective families are susceptible to the influence and persuasion of outside authorities.

2.2.5.4 Laissez-faire Families. Laissez-faire families are low in both conversation and conformity orientation. There are few communicative interactions, low involvement, and a limited number of family communication topics (Koerner & Fitzpatrick, 2002a). Parents in the family may have little in common and thus expose children to inconsistent gender role models and conflict styles (Fitzpatrick et al., 1996). Members of the family tend to be independent and emotionally divorced rather than interdependent. They make their individual decisions with no value placed on family discussions (Koerner & Schrodt, 2014). Due to the low scoring on both conversation and conformity orientation, family members avoid conflict and direct communication altogether (Koerner & Fitzpatrick, 1997). Moreover, during rare cases of conflict, they lack family support and emotional involvement and emphasize individual desires. Children from these families are more likely to question parental decisions and be influenced by external social groups (Fitzpatrick, 2004).

2.3 Family Mobile Communication

When Chinese international students leave their homeland to pursue an education in America, mobile communication becomes the only means for them to engage in family conversation and interactions. Their family communication patterns are thus manifested in the

ways that they appropriate different means and frequencies of family mobile communication. Their family communication routines continue to both maintain original patterns and evolve, especially during challenging times like the pandemic. It is important to learn about their usage, satisfaction, and pandemic related changes of family mobile communication.

2.3.1 Family Mobile Communication as a Facilitator. According to Kang and Jung (2014), mobile communication is “embedded in users’ daily communicative practices through telephony, web access, and applications (apps)." While becoming more dispersed and consequently changing how they communicate, families are increasingly using communication technologies to mediate, support, and extend their relationships (Little et al., 2009). Researchers have been studying whether mobile communication increase closeness among family members or pushes them further apart. Previous research on interpersonal and family communication showed mixed results. Neustaedter et al. (2013) claim that mobile communication's social, cultural, and technological issues are becoming increasingly rich and complex. For families relying on mobile communication, they need to understand what is available, utilize them, and adapt them to their existing communication routines and practice. Mobile communication can cause family disconnection and distract family members from their quality time and lead to dissatisfaction with interpersonal connection (Mesch, 2006; Caron & Caronia, 2007; PadillaWalker et al., 2012; Villegas, 2013; Chitakunye & Takhar, 2014). However, it also gives family members who are geographically apart means of connections, constant availability, and a sense of shared presence (Licoppe, 2004; Wei & Lo, 2006; Baldassar, 2008; Chen & Katz, 2009; Axelsson, 2010; Yu et al., 2017).

Family mobile communication can play an essential role in promoting family connectedness and maintaining family relationships (Vancea & Olivera, 2013; Furukawa &

Driessnack, 2013). Bacigalupe and Lambe (2011) claim that the ever-developing low-cost mobile technologies enable "the maintenance and (re)creation of family bonds, despite geographical distance." Mobile communication development, especially mediated face-to-face communication platforms, enlarges communication affordance and enables new possibilities for everyday communication behaviors, conquering space and time problems, and create more spontaneous and frequent conduits for family communication when face-to-face interaction is not viable (Wellman et al., 2003; Licoppe, 2004; Lanigan, 2009; Yu et al., 2017). Cao et al. (2010) also suggest that communication tools nowadays can, in some sense, render distance irrelevant for families who are living in different regions, countries, or even continents. When families are geographically apart, and across many time zones, frequent mobile communication can act as relational investment and commitment indicators (Warren & Aloia, 2018). It gives family members more opportunities to interact and contributes to family closeness (Williams & Merten, 2011). Appropriating mobile communication is also positively related to warmth, support, family cohesion, and communication quality in the family (Carvalho et al., 2015; Kanter et al., 2012). Family mobile communication can even be a way for articulating and communicating family values. Through family behaviors such as regular scheduled mobile communication, family connectedness, identity, and values are being constructed and articulated (Ames et al., 2010).

While emerging adults utilize technology in their communication more than any other age cohort, mobile communication is particularly essential for them to communicate with parents when they leave home (Willoughby & Arnett, 2013). Mobile communication technologies make it possible for family members to actively engage in their physical and symbolic dimensions to renew, strengthen, reshape family ties, and reduce the isolation effects of being far away (Kaur &

Shruti, 2016). Chen and Katz (2009) find that when students leave home for college, mobile communication facilitates the continuation of family life and promotes parent-child connectedness. For those experiencing long-term separation, like Chinese international students, mobile communication technology becomes the only choice to cultivate meaningful family relationships (Francisco, 2015). Lim indicates that when international students cease communicating with their families for even one week, most students suffer from this loss of contact (2016). Without the emotional support of their parents and not knowing about their families' well-being, they feel sad, distressed, and vulnerable during their adaptation to the host country. Family mobile communication can act as an important facilitator when it comes to maintaining the family relationship for Chinese international students. With the proper appropriation of mobile communication, though geographically apart, Chinese international students' families can exchange the same forms of care and support as non-dispersed families (Baldassar et al., 2006).

2.3.2 Features of Family Mobile Communication. Vital development of technology enables more and more advanced mobile communication. Wilding (2006) argues that the new communication medium tends to complicate rather than substitute people's existing communication patterns. Similarly, media niche theory proposes that when older and newer technologies fulfill the same need, they compete with each other; when they fall into different niches, they complement each other (Dimmick et al., 2010). With the all-pervading online chatting tools like WeChat and Q.Q. in China, there emerge various ways of mobile communication, including asynchronous methods such as instant messaging, voice message, and synchronous methods of audio chat and video chat. Family communication is carried by the medium of mobile communication and shaped by the medium. The medium itself is the message

and affects how communications are interpreted (McLuhan, 1964; Zhou et al., 2017). There are various features and objectives of mobile communication. Major functions of mobile communication of college students include sharing recent experiences, complaining, asking for advice, and fulfilling family roles from a distance (Chen & Katz, 2009).

Similarly, when studying parents' and children' communication via mobile devices, Warren and Aloia (2018) classified them into four categories: to express support, coordinate schedules, share content, and handle conflict. They also found a positive association between the frequency of mobile communication and all four categories. The frequency, objectives, and the content of communication that the international Chinese students' families engage not only rely on the medium and mode of mobile communication technology that they take upon but also depend on how the family members desire to maintain and enhance their levels of contact and communication (Madianou & Miller, 2012; Bonner, 2009). When choosing and using communication tools, families that are geographically apart may consider the qualities of synchronous and asynchronous, accessibility and convenience, the capability of communicating social cues, and the balance between co-presence and privacy (Smith et al., 2012).

The various emerging mobile communication media, together with old-fashioned phone calls and text messages, can be divided into synchronous and asynchronous methods. Synchronous mobile communication methods (such as phone calls, audio calls, and video calls) offer simultaneous and immediate interactions and shape a sense of connected presence (Licoppe, 2004). Cao et al. (2010) found that most families prefer synchronous mobile communication methods to share information about daily life and maintain emotional contact. Asynchronous mobile communication methods (such as text messages, voice messages, and emails), on the other hand, are more flexible in timing and can be used to share non-urgent

information and coordinate future synchronous communication. For Chinese international students studying in the United States, asynchronous communication can be useful for communications outside the time difference communication window. Families may also use instant messages to engage in synchronous conversations. With the use of stickers, picture, and video sharing as complementary, instant messages can also be used to share daily routine and important information.

While the various mobile communication technologies are being integrated into Chinese international students and their families' lives, they may appropriate the means of communication in different scenarios. Cao et al. (2010) shed some light on utilizing different family mobile communication methods. Phone calls and audio calls can be conveniently used while walking or multitasking (Chen & Katz, 2009). Text messages can be the most non-interruptive when an immediate response is not expected, and availability is not determined. Phone calls, audio calls, and video calls become handy when it comes to long, deep, and content-rich conversations or familial group communication as more social cues can be delivered with facial expressions, gestures, and showing rather than merely telling (Ames et al., 2010). While video calls are more capable of real-time interactivity, delivering closeness, and creating a sense of co-presence (Kirk et al., 2010), they are less convenient and need coordination beforehand.

2.3.3 Mobile Communication Prevalence. China is high in mobile phone ownership. According to the Ministry of Industry and Information Technology of China's 2018 report, mobile phone ownership reached 1.57 billion. There are 112.2 mobile phones per one hundred people and a total of 1.31 billion wireless networks (3G and 4G) users in China. The widespread use of mobile phones and internet accessibility enable ubiquitous and simultaneous mobile communication for Chinese families. Similar to its global counterparts of WhatsApp, Line,

Kakao Talk, and Facebook Messenger, WeChat is the most popular instant messaging APP in China. WeChat transforms family relationship maintenance from offline to the online environment. It also creates a public, private, and parochial space (O'Hara et al., 2014, Wang et al., 2016). It offers mobile communication functions of instant text messages, voice messages, audio and video calls, and group chats. Its features also include Moments, Subscriptions, WeChat Pay, Mini Programs, and WeChat Channel for videos. WeChat has become an all-encompassing ecosystem for communication, entertainment, shopping, and transactions. The presence of WeChat substantially reduces the costs for information acquisition and mobile communication. The penetration rate of WeChat in China among young users is 97.6% in 2017, while that of the 16-64 year olds population reached 78% in 2020 (Iqbal, 2020). Thriving in the largest Internet-using country, 1.1 billion active WeChat users send 45 billion messages daily, including 410 million audio and video chats (WeChat Annual Data Report, 2018).

WeChat is a must-have app for Chinese international students to connect with family and friends both back home and in host countries. In research on Chinese international students' WeChat utilization and psychological well-being, Pang (2018) found that all 212 participants own a WeChat account, with 81.1% of them using WeChat for over three years. Park (2016) discovered in her qualitative research on Chinese international students in America that the use of WeChat is interwoven into their daily lives. She argues that it becomes "a major hub of access to Chinese identity and social and cultural participation." Similarly, Zhou (2017) proposes that rather than merely being a communication tool, "WeChat is home" for overseas Chinese students in the United States as it embeds "nuanced messages of belongingness and homeland."

2.3.4 Family Mobile Communication during COVID-19. Mobile communication technology is changing the ways family members communicate, especially during COVID-19, when global

mobility is suspended (Acuto, 2020). Worldwide quarantine reinforced the need for mobile communication for medical and business sectors (Fang et al., 2020; Xu et al., 2020) and families who are geographically apart (Chen et al., 2020). Hu et al. (2020) argue that the pandemic severely disrupted taken-for-granted infrastructures and transnational education mobility. Chinese international students and their parents have to collaborate to navigate and recenter their familyhood around the unprecedented levels of risks compared to regular times (Ma, 2020). With the overload of (mis)information, proper parent-child communication can broker and validate information to clarify the reality and risks. The constant changing travel/education/quarantine policies, hostile social environment, and immense stress concerning accommodation, safety, and schooling also entail timely communication and family functioning adjustments for Chinese international students and their families (Hu et al., 2020). Chinese international students' psychological stress and concrete needs during the pandemic require reassurance and parental support from their parents (Liu et al., 2020).

Various means of mobile communication such as QQ and WeChat have become the lifeline of Chinese international students emotionally to contact their families back in China (Fischer, 2020; Lu, 2020). When President Trump proposed a U.S. ban on WeChat, Chinese international students and Chinese diaspora across the United States expressed their concern and anxiety (Ahn, 2020; Lu, 2020; Duan & Wong, 2020). While writing family emails or crossing the "Great Fire Wall" can be mission impossible for elderly family members back in China, WeChat remains the essential channel for Chinese international students' family mobile communication in the United States (Lu, 2020). Huang (2020) also wrote that WeChat is the only link for many Chinese living in the United States to connect with loved ones, especially during this pandemic when physical travel is not an option. However, research regarding the

WeChat utilization of Chinese international students in America during the COVID-19 pandemic remains lacking and deserves further attention.

2.4 Emerging Adult Mental Well-being during the Pandemic

Mental health is "a state of well-being in which an individual realizes his or her own *Emerging* contribution to his or her community" (WHO, 2018). Depression, anxiety, and stress are the most common mental health disorders for young adults (Ibrahim et al., 2013; Mortier et al., 2017; Regehr et al., 2013; Zhou et al., 2013). College students are in the vulnerable transition to adulthood which marks exposure to transitional stressors, increased autonomy, the development of multiple identities, homesickness, loneliness, academic pressure, and financial burdens (Aldiabat et al., 2014; Arnett, 2007; Beiter et al., 2015; Jones & Abes, 2013; Moeller & Seehuus, 2019; Qualter et al., 2015). Center for Collegiate Mental Health (CCMH, 2018) reports 62% listed anxiety and 50% listed depression among approximately 60,000 college students seeking mental health services at college counseling centers in 2017. Its 2019 report demonstrates an increase in average rates of student self-reported anxiety and depression over the past eight years, while "anxiety and depression continue to be the most common general or top concerns experienced by students" (CCMH, 2020).

The critical conditions of emerging adults' mental health issues have attracted both societal attention and scholarly research (Buchanan, 2012; Conley et al., 2017; Deckro et al., 2002; Levin et al., 2016; Xiao et al., 2017). Without proper treatment, these issues can lead to detrimental behaviors and outcomes such as cognitive vulnerabilities, negative learning ability, poor academic performance, higher dropout rates, decreased socio-emotional functioning and well-being, substance abuse, risky sexual behavior, and increased suicidal ideation (Aldiabat et al., 2014; Gao et al., 2020; Hovenkamp-Hermelink, 2019; Moeller & Seehuus, 2019). The

mental well-being of college students affects their academic success, future career, and life quality.

When unique challenges from COVID-19 coincide with college experience and "important developmental milestones" (Moeller & Seehuus, 2019), college students are prone to be affected by increased mental health burdens. Research has confirmed that the student population is at higher risk for developing mental health disorders (Xiong et al., 2020; Wang et al., 2020). Stressful events during the pandemic, such as getting infected and facing a family member's illness or death, can be detrimental to mental well-being (Ho et al., 2020). Other challenges for college students include fear of contracting the virus, quarantine, switching to online classes, and an overall sense of uncertainty (Sahu, 2020). Recent studies show that fear, stress, anxiety, and depression symptoms are prevalent and on the rise among college students during the pandemic worldwide (Husky et al., 2020; Martínez-Lorca et al., 2020; Wang et al., 2020; Odriozola-González et al., 2020). Liu et al. (2020) demonstrate in their research on young adult mental health that the majority of participants have high loneliness, low resilience, and low distress tolerance.

2.4.1 Depression, Anxiety, and Stress Scales 21 (DASS-21). Depression, anxiety, and stress are significant psychological well-being indicators (Teh et al., 2015). Liu et al. (2019) list the common symptoms for depression, anxiety, and stress: "depression is typically characterized by melancholy, frustration, and anguish, while anxiety refers to unnecessary tension for objective things and interpersonal relationships; general distress is the common feature for both depression and anxiety." The Depression Anxiety Stress Scales-21 (DASS-21) is a widely recognized and effective measurement of psychological well-being. It is a short version derived from the basic DASS questionnaire (Liu et al., 2019). Previous studies prove the reliability and validity of the

Chinese version of DASS-21 and validate its use for assessing the mental well-being among Chinese university students (Gong et al., 2010; Wang et al., 2016).

To measure the severity of the three related negative emotional states, DASS-21 utilizes three self-report scales, each measured with seven items. Specifically, "the depression scale assesses the state of dysphoria, hopelessness, devaluation of life, self-deprecation, lack of interest/involvement, anhedonia and inertia; the anxiety scale assesses autonomic arousal, skeletal muscle effects, situational anxiety, and subjective experience of anxious affect; the stress scale is sensitive to levels of chronic non-specific arousal, and it assesses difficulty relaxing, nervous arousal, and being easily upset/agitated, irritable/over-reactive and impatient" (Lovibond & Lovibond, 1995).

2.5 Chinese International Students in the United States during the Pandemic

2.5.1 Demographics. The number of Chinese international students studying abroad has been increasing since the Reform and Opening-Up, from 780 students and scholars in 1978 to approximately 662,100 international students in 2018 (Lian & Wallace, 2018; Yan & Berliner, 2011). China is now the largest country of origin for international students, with the United States as the most popular destination (Textor, 2019, Yu & Moskal, 2019). According to the Institute of International Education's Open Doors Data, the total number of Chinese international students in the United States increased from 59,939 to 372,532 between 2000/01 and 2019/20, making China the largest source of international students coming into the country. Over 90% percent of Chinese students who choose to study overseas are family-funded, and 84.46% of students choose to return to China after graduation (Ministry of Education, 2017). Undergraduate and graduate students respectively make up 39.8% and 36.8% of the total enrollment (IEE, 2020). The most popular major is Business and Management. It reached 29% in 2012/13

academic year but declined to 17.2% in 2019/20 academic year (IEE, 2020). Over 40% of students choose to study STEM-designated majors after the STEM OPT extension, while social sciences and liberal arts majors are on the rise (New Oriental, 2020). In the 2019/20 academic year, 21.2% of Chinese international students enroll in Math/Computer Science, and 17.5% major in Engineering (IEE, 2020).

2.5.2 Motivation and Decisions for Studying Abroad. Brzezinski (1994) argues that Chinese international students pursue higher education in the United States for the reasons of gaining prestige, intrinsic personal attractions, and getting into a fairer system. More recent research suggests that higher quality of education, international/intercultural experiences, immigration prospects and improved employment, social and peer pressure are the top reasons for Chinese students to study abroad (Chao et al., 2017; Center for China and Globalization, 2019). Chinese international students want to escape the Chinese learning system and embrace critical and innovative thinking (Chao & Hegarty, 2014). Bodycott's (2009) study corresponds with previous findings that Chinese parents put great emphasis on their children's education, expecting they will have better future and greater financial security. A large number of families consider studying abroad as an alternative when children fail to achieve the grades required to enroll in an elite Chinese university (Forbes-Mewett et al., 2010). With the rapid development of the economy and the One Child Policy, more families are willing and financially capable of sending their children abroad (Chung et l., 2018; New Oriental, 2019).

Xia et al. (2005) report parents and children jointly make the decisions to pursue an international higher education. Chirkov et al. (2008) propose that for East Asians, the motivation for studying abroad is highly influenced by the expectations of others and the desire "not to lose face." According to the self-determination theory (SDT), it is a fundamental need for humans to

strive for autonomy and master their behavior. Yang et al. (2017) discovered that when the motivation for studying abroad is self-determined, international students tend to have higher levels of life satisfaction and positive acculturation and are less likely to experience culture shock in America. Self-determined students act autonomously and in congruence with their more profound sense of self and integrated values, gain higher self-efficacy, and are better prepared to engage actively and build positive social ties in the unfamiliar situation (Deci & Ryan, 2000; Hanus & Fox, 2015; Weinstein & Ryan, 2010).

2.5.3 Adjustment Challenges. International students are faced with more challenges and stressors than native students, both in their daily life and academic experiences (Zhang & Zhou, 2010). There are fundamental distinctions between China and the United States in political ideology, social structure, language, culture, and education systems. When Chinese international students pursue their studies in America, the cross-cultural experience is often the first and foremost challenge for them (Ye, 2006; Hendrickson et al., 2011). Navigating their ways towards acculturation and adaptation during this intercultural journey unavoidably comes with encountering multiple personal and sociocultural stressors when coming to an English-speaking country (Lian & Wallace, 2018; Yan & Berliner, 2013; Yang, 2018;). The linguistic and cultural disorientation can be unpredictable and uncertain (Tananuraksakul & Hall, 2011). They participate less frequently in recreational programs, intramural sports, and other campus activities (Cho & Price, 2016). Even diet changes after coming to the United States are challenging for international students (Yan, 2020). According to Wang et al. (2007), these adjustment challenges work in an additive and interactive fashion. Andrade (2007) argues that unsuccessful adjustment to the new social environment can be detrimental to international students' psychological well-being and lead to stress, homesickness, and loneliness. Examining

literature from 2009 to 2018 of undergraduate international student psychosocial adjustment in United States universities, Brunsting et al. (2018) report various emotional outcomes, including depression, anxiety, post-traumatic stress symptoms, suicidal ideation, and intentions to seek counseling.

2.5.3.1 Acculturation Stress. The Social Science Research Council (1954) define the term "acculturation" as the following:

> Culture change that is initiated by the conjunction of two or more autonomous cultural systems. Acculturative change may be the consequence of direct cultural transmission; it may be derived from non-cultural causes, such as ecological or demographic modification induced by an impinging culture; it may be delayed, as with internal adjustment following upon the acceptance of alien traits or patterns; or it may be a reactive adaptation of traditional modes of life (p.974).

Chinese international students go through acculturation, adjustment, and adaptation involving varying instances of cultural learning, maintenance, and synthesis (Chun et al., 2011). Physical and psychological changes also happen during this stressful process, including climate, communication styles, social norms, and the new society's values (Berry, 2005). Amaya (2007) proposes that "acculturation is thus not simply the coercive shaping of (one's) subjectivity, but a process of self-formation manifested in the social." Acculturative stress can manifest in physical, social, and psychological problems during the cultural relocation and self-formation into western society (Berry et al., 1987). Chinese international students experience more psychological problems than American students (Sandhu & Asrabadi, 1994) and more acculturation stress than their European counterparts (Yeh & Inose, 2003). Chinese international students' adaptation to the American social and academic atmosphere includes cultural distance, culture shock, language barriers, communication differences, and also mental well-being problems as alienation, loneliness, feeling of loss and uncertain, anxiety, and depression (Lee et al., 2004; Wei et al.,

2007; Yan & Berliner, 2011). Chavajay and Skowronek (2008) report that international students can experience unacceptance and racial discrimination against in the host culture.

2.5.3.2 Berry's Stress & Coping Framework: Cultural & Individual Level. It is essential to examine the acculturation effect at both the (collective) cultural level and the individual (psychological) level (Graves, 1967). The effect of acculturation was first studied to understand how European colonialism might impact indigenous people (Hallowell, 1945). Researchers studied immigrants and sojourners' acculturation and the culture changes in their group (Berry, 2003). Individual-level acculturation indicates the psychological change in an individual in cross-cultural experiences. Berry's (1997) stress-and-coping framework includes both cultural level and individual level acculturation in the cross-cultural experience which is characterized as a significant life event. The framework consists of situational variables from the cultural level and personal variables from the individual level of acculturation. Acculturation experience brings along stress, demands appraisal of experience, and stressors. When affective, behavioral, and cognitive coping responses occur, it is followed by immediate effects of stress and long-term outcome of personal adaptation. Situational and personal variables influence both the stress and coping process. Factors include age, gender, education, motivation and expectation, language proficiency, and personality. Factors during acculturation include the length of time, coping strategies and resources, social support, and social attitudes of prejudice and discrimination (Yan & Berliner, 2011).

2.5.3.3 Cultural Distance and Cultural Shock. Cultural distance measures the differences between the home culture and the host culture on their physical and social characteristics (Hofstede, 1980; Babiker et al., 1980). According to Berry (1992), cultural distance is a crucial factor in acculturation orientation and outcomes. Different dimensions of cultural distances

include power distance, uncertainty avoidance, individualism/collectivism, masculinity/femininity, indulgence, and pragmatism (Hofstded, 2010). The further the host country is from the home country in terms of cultural distance, the more challenging it is for international students' cross-cultural adjustment (Wang, 2009; Guan et al., 2018; Redmond, 2020). Samovar and Porter identify China and the United States as "having maximum cultural distance" (1991, as cited in Yan & Berliner, 2011). Wang (2009) found that “high perceived cultural distance has a stronger and more direct impact on one’s sociocultural adjustment than on the psychological adjustment." To better overcome the cultural barrier, Guan et al. (2018) suggest that students actively participate in, explore, and learn about the host culture to understand the existing differences better and develop their adaptive resources. Positive attitudes also ameliorate the adjustment to the host culture (Kim, 2011).

Tsai et al. (2000) provide an ethnographic descriptions of Chinese and American cultural orientations. Chinese culture is intrinsically collectivist, emphasizes interpersonal relationships, obedience to authority, and emotional moderation and control. In contrast, American culture values individualism supports defiance of authority and open emotional expression. During the initial encounter with America, Chinese international students can be struck with enormous cultural shock and feel excluded (Yan & Berliner, 2018). Being "precipitated by the anxiety that results from losing all familiar signs and symbols of social intercourse," culture shock is a normal reaction to unfamiliar environments and a natural process of adaptation to the host culture (Oberg, 1960, p.167). Culture shock is the maladaptive psychological reactions and mental disorders in reaction to the change of cultural environment. It can negatively impact international students' psychological and sociocultural adaptation (Harvey & Park, 2012, Presbitero, 2016).

2.5.3.4 International Student Security. Marginson (2012, p. 208) defines international student security as the "maintenance of a stable capacity for self-determining human agency." As non-citizens in the countries where they study, international students are faced with unique challenges. Personal safety, economic status, accommodation and health services, interacting with academic and governmental authorities, language proficiency, interpersonal relations, and cultural barriers all interfere with their sense of security in daily life (Deumert et al., 2005; Marginson, 2012, p.207; Paltridge et al., 2010; Sawir et al., 2012). When considering attending overseas higher education, security is a significant factor for Chinese families. In 2008, the Chinese government claimed that Australian officials failed to provide adequate protection for Chinese overseas students' safety and well-being. This diplomatic announcement was followed by a significant decline of Chinese international students in Australia (Marginson et al., 2010). While being concerned for their children's safety and well-being, Chinese parents are balancing risk against opportunity when sending their children to study overseas (Forbes-Mewett et al., 2010).

2.5.3.5 Academic Stress. Academic stress such as the pressure to succeed in different teaching environments, perfectionism, self-criticism, and high expectations from their family contribute to heightened Chinese international students' psychological distress (Hua & Gao, 2021; Komisarof & Hua, 2015; Lo et al., 2011; Rice et al., 2012; Sawir et al., 2012). Han et al. (2013) report over 40% of the respondents associated their depressive symptoms with academic stress. According to Koul and Fisher (2005), international students from different cultural backgrounds have different perceptions of the learning environment. The traditional Chinese education system mainly utilizes the traditionally behaviorist-oriented teaching approaches with a teacher-centered lecture method and is examination-oriented (Huang, 2012; Zhang & Zhou, 2010; Gu, 2006; Zhu et al.,

2009). When encountering the Western education environment, which is guided by the social-constructivist learning approach, Chinese international students may feel challenged by the demand of critical thinking, group work, and speaking during class (Karuppan & Barari, 2011; Edwards & Tonkin, 1990; Zhang & Zhou, 2010). Chinese international students tend to stay quietly within their own cohort and learn by rote rather than by interacting and communicating with native students and other international students (Wang, 2016; Jiang, 2014; Jiao, 2006; Cheng & Erben, 2012). Zhao and Bourne (2011) argue that the content of learning materials is situated in American culture and makes it difficult for Chinese international students to grasp at the first encounter, especially when it comes to social sciences.

2.5.3.6 Language Barrier. Ching et al. (2017)'s research concluded that self-reported English language proficiency is related to many aspects in the lives of Chinese international students in the United States, including communication effectiveness (Jiang, 2014; Wang, 2016; Xue, 2013), academic performance (Xue, 2013), psychological well-being (Yeh & Inose, 2003) and transnational adjustment ability (Cheng & Erben, 2011; W. Wang, 2009; Yeh & Inose, 2003). The language barrier can be a significant hindrance for Chinese international students to successfully study in and adjust to an English-oriented environment (Flannery & Wieman, 1989 Wu (2018) proposes that international students face a two-fold-challenge of adjusting to an English-speaking environment and overcoming the “presumed linguistic incompetence by native speakers." Researchers demonstrate that regardless of English proficiency, non-native English students experience communication barriers during their adjustment to the foreign environment (Tananuraksakul & Hall, 2011). Growing up with an education that emphasizes English grammar, reading, and writing, Chinese international students, struggle in many communication situations despite their high performance on English language proficiency tests such as the Test

of English as a Foreign Language (TOEFL) and International English Language Testing System (IELTS) (Wu, 2018; Wang, 2016; Xue, 2013). Both listening comprehension and oral communication are difficult with low-language proficiency and a "cultural deficiency" (Yan & Berliner, 2018). According to Ching et al. (2017), international students may also require more time when it comes to reading and writing, which hinders their academic performance. Deficiency in English and non-native accents make Chinese international students fear disappointment and "losing face" and could lead to stereotypes and discrimination associated with lower social status, intelligence, and education (Tananuraksakul & Hall, 2011; Fuertez et al., 2002). Lack of English proficiency also leads to low confidence, reduced feeling of dignity and security, social anxiety, and stress during their adjustment and transition in the United States (Wang, 2009; Redmond, 2000; Tananuraksakul & Hall, 2011). Effective intercultural communication can boost cross-cultural adjustment and the sense of well-being, while English competency is a significant predictor of acculturation stress (Yeh & Inose, 2003).

2.5.3.7 Financial Stressors, Identity Anxiety, and Career Concerns. Lee (2013) reports that Chinese international students face financial stressors and career concerns during their study in the United States According to Yan and Berliner (2013), financial difficulties lead to social and academic restraints. Over 90% percent of Chinese international students are funded by their families (Ministry of Education, 2017). Their academic experiences involve a sizeable financial investment by families, and this puts pressure on them to succeed (Ching et al., 2017). Though there is a portion of Chinese international students from wealthy family backgrounds, in 2020, 44% of students come from families without significant wealth (New Oriental, 2020). Sherry et al. (2009) report that while international students are only allowed to work on campus, high tuition cost compared to local students. and the International Student Insurance put a severe

financial strain on most international students. There are only limited financial aid and scholarship programs available for international students in the United States, and opportunities to work on campus and assistantships are limited (Wan, 2001). Yan and Berliner's research demonstrates that Chinese international students in the social science majors face more pressure financially than their counterparts in the natural sciences as there are fewer research assistantships and teaching assistantships available (2011). These situations make international students financially vulnerable by significantly reducing their employment opportunities (Lee, 2013).

Marbang et al. (2020) propose that immigration policy is a critical issue for international students to consider during their adaptation. Over 40% of Chinese international students choose to study STEM-designated majors for the Optional Practical Training (OPT) extension (Optional Practical Training (OPT) is an opportunity for international students under an F-1 visa to work in the United States for 12 months. After this, STEM students (Science, Technology, Engineering and Mathematics) can extend this period up to 24 months and can consider staying permanently in the United States (New Oriental, 2020; Amuedo-Dorantes et al., 2019). To maintain their legal international student status, students have to know enrollment and employment rules and keep close attention on the three important documents of a -326- passport, visa, and an I-20 which all have different expiration dates. International students are at risk of falling into an undocumented status if any of these documents expire (Marbang et al., 2020). According to Yan (2017), Chinese international students also fear that they will be refused visas to return to school after traveling outside the United States or paying short visits back home.

With the Trump administration's dismissive attitudes towards immigrants, surveys show that international students feel less optimistic about their prospect of studying in the United

States (Johnson, 2018). Chinese international students consider their F-1 student visas a notable hindrance to finding future jobs in the United States (Yeh, 2000). The changes in policies posed challenges such as increased difficulties in obtaining a United States visa, decreased Optional Practical Training (OPT) opportunities, limiting job opportunities, and restriction on H1-B visas (Choudaha, 2018; Elturki et al., 2019; Institute of International Education, 2019). The strict legal restrictions of Optional Practical Training (OPT) and H-1B visa make it hard for Chinese international students to find internships, to legally work in the United States, and to transition to permanent resident status (Johnson, 2018).

The pressure of succeeding after the family financial investment, the unwelcoming and uncertain immigration policies, the fear of losing legal documented status, the long separation from their families in China, the anxiety of not being able to find assistantship and internship, and dwindling job opportunities all added up to Chinese international students' psychological distress and impacted their mental well-being (Yan, 2020).

2.5.4 General Mental Well-Being of Chinese International Students in the United States. International students may be at particular risk for stress, anxiety, and depression. Asian students report higher anxiety levels than European international students or students with permanent U.S. residency (Fritz et al., 2008). Tsuda et al. (2007) found that students from less individualistic cultures and countries have higher levels of depression compared with their counterparts from more individualistic cultures. Han et al. (2013) reported 45.4% of depression and 29.2% of anxiety symptoms in surveyed Chinese international students at Yale University. The more recent Lian and Wallace study (2020) found a depression rate of 77.9% and an anxiety rate of 74.3% among Chinese international students in 2019. Other researchers also found high levels of

psychological distress, anxiety, and depression in their studies of Chinese international students (Lu et al., 2014; Liu et al., 2019; Xu et al., 2020; Wei et al., 2007; Zhang & Goodson, 2011).

When Chinese international students experience acculturation stress and other adjustment stressors, they refrain from sharing their experiences with their peers and their social circle back home for fear of losing face and burdening others with their problems (Heppner et al., 2006). They are taught to be "quiet, studious, and not to draw attention to themselves" (Yan, 2017). They may also consider seeking psychological counseling as shameful and have the tendency to downplay their psychological problems (Wilton & Constantine, 2003). International students often feel anxious about pursuing counseling. Language barriers also prevent them from identifying and discussing their concerns and needs (Anthur, 1997). Keeping negative emotions to themselves may make them more vulnerable to psychological problems (Wei et al., 2007).

2.5.5 Mental Well-being Implications for Chinese International Students during the Pandemic. The COVID-19 outbreak and subsequent quarantine measures increase various psychological problems and mental health issues, including stress, anxiety, depression, frustration, uncertainty, and suicidal ideation (Talevi et al., 2021; Serafini et al., 2020; Tasnim et al., 2020; Tang et al., 2020; Liu et al., 2020). Facing potential losses of loved ones, changing life routines, and losing a sense of security, almost everyone can experience related anxieties (Lebow, 2020). Additionally, the world-wide COVID-19 pandemic can cause collective trauma that persists across generations and change how different nations see one another (Watson et al., 2020; Saul, 2013, Hirschberger, 2018). Chinese international students in the United States not only face unique adverse situations, but their already existing challenges tend to be exacerbated during the pandemic. International students are considered one of the most vulnerable populations during the pandemic, along with medical workers, the homeless, the elderly,

pregnant women, those with chronic diseases, and migrant workers (Rajkumar, 2020). Scholars also press for further research and the need for coping measures because of the impact of COVID-19 on Chinese international students' mental well-being (Chen et al., 2020; Zhai & Du, 2020).

Uncertain and ever-changing policy and visa restrictions during the pandemic interfere with Chinese international students' entrance into the United States (Berger, 2020; Esqiovel, 2020). International students report that managing immigration-related issues are stressful for them (Chirikov & Soria, 2020). Many students consider deferring or taking a gap year in reaction to the pandemic (Cheng, 2020). Travel bans and visa restrictions make staying in the host countries or returning to the home country a major dilemma (Hu et al., 2020; Ma & Miller, 2020; Ma et al., 2020). Accommodation, food, and personal safety become challenges when the universities close their campuses (Serafini et al., 2020). International students who depend on on-campus jobs, in turn, lose their income (Bhojwani et al., 2020). Extended stays and excessively pricy airline tickets also pose financial challenges for the students and their families (Zhao, 2020). Language barriers are also a concern for attaining accurate and up-to-date information on COVID-19 and accessing social support services and medical help. Chinese international students facing graduation are anxious about securing a job during the pandemic (Chirikov & Soria, 2020). Living far away from their families and lacking adequate social support, the pandemic and quarantine make them feel more isolated (Chen et al., 2020). They fear contracting the virus themselves and are concerned about their families' health (Khan et al., 2020; Zhao, 2020).

Watson et al. (2020) argue that “describing the coronavirus as the Chinese virus is demeaning and reinforces the very nature of racism.” Chirikov and Soria (2020) report that one-

fourth of all international students in their survey are concerned with xenophobia, harassment, or discrimination. According to He et al. (2020), people of Chinese or Asian descent have been the primary target of discrimination and social exclusion during the pandemic. Racism and xenophobia towards Chinese international students pose a threat both to their physical safety and mental well-being (Ma & Zhan, 2020; Ng, 2020). Research shows that actively carrying out precautionary measures such as frequent handwashing and mask-wearing lower the risk of infection and ameliorate the psychological distress levels (Wang et al., 2020). However, with 73% of American adults holding an unfavorable view of China, the simple act of wearing masks became stigmatized before the CDC and the White House revised their guidelines to advocate mask-wearing (Silver et al., 2020). Chinese international students experience "stare and scare" and physical threats during the pandemic when they are simply wearing masks while walking on the street (Ma & Zhan, 2020). Mittelmeier and Cockayne (2020) found in their Twitter data analysis that Chinese international students experience perceived stereotypes and witnessed COVID-19 related racism. Over 20% of Chinese international students experienced instances of intimidating, hostile, or offensive behavior based on their national origin (Chirikov & Soria, 2020). Politicians such as Donald Trump reinforces the stigmatization of COVID-19 and discrimination against Chinese people (He et al., 2020). Unwelcoming messages on social media and news may also amplify the anxiety and stress symptoms (Wang et al., 2020) and further impact the mental well-being of Chinese international students.

In response to COVID-19, most universities in the United States shifted to online classes or shifting to a combination of in-person and online classes and canceled face-to-face campus events (Toquero, 2020). However, only by taking the combination of in-person and online courses can Chinese international students meet nonimmigrant student status requirements (ICE,

2020). The closing of university campuses and quarantine measures affect college students' mental health, causing higher rates of stress, anxiety, and depression (Cao et al., 2020; Husky et al., 2020; Odriozola-González et al., 2020). There are significant changes in multiple aspects of students' daily routines and behaviors, including socializing, personal hygiene, technology use, shopping, and driving (Browning et al., 2021). The pandemic also impacts the students' diet, exercise, and sleep which, in turn, may deteriorate their physical health (Chen et al., 2020; Romero-Blanco et al., 2020; Tang et al., 2020).

Chinese international students face the fear of contracting the virus with in-person classes and feel isolated with online learning. Online and hybrid classes tend to reduce the education value and lessen the foreign life experience for international students while the tuition remains high (Warnke, 2021). Shifting to virtual classrooms can contribute to the perceived level of boredom, stress, and emotional disorders characterized by mood swings among university students (AlAteeq et al., 2020; Irawan et al., 2020). The majority of university students express concerns for online classes regarding learning effectiveness, equipment and internet access, access to labs, and lack of face-to-face interactions with the instructor (Adnan & Anwar, 2020, Novikov, 2020). Nambiar (2020) concludes that both teachers and students perceive online learning to be less effective and structured than in-person classes in terms of social presence, interaction, satisfaction, and overall quality. Though Chirikov and Soria (2020) found in their survey that both undergraduate and graduate international students from China adapt better to remote online instruction than domestic students and international students from other countries, shifting to online may pose additional challenges for those who are weak in terms of English proficiency. King et al. (2020) argue that while families make substantial financial sacrifices for overseas education, Chinese international students may feel profound shame and guilt if they do

not achieve good academic performance. Isolated and studying at home in the host country also poses challenges for international students' self-discipline and motivation and leads to stress for adjusting to the online learning environment (Aristovnik et al., 2020).

During the pandemic, quarantine measures and social distancing policies make it harder for Chinese international students to pursue regular local social engagement to help transition to their new leaning environment (Chang et al., 2020). Thus, social media becomes the primary way for Chinese international students to acquire information about the pandemic. Frequent social media use and exposure to information both in English and Chinese not only increase the possibility of intake of fake news/reports/disinformation but also can put them in the possible feedback loop of information overload and anxiety (Xiong et al., 2020, Chang et al., 2020). Li et al. (2020) argue that seeing other community members suffer from the pandemic on social media and news about COVID-19 also contributes to sadness and anxiety. Chinese international students are more susceptible to be trapped in a double-bind situation caused by the conflicting messages from friends, family, and government authorities during the pandemic and thus experience elevated levels of fear and anxiety (Lau et al., 2009; Ma & Miller, 2020).

CHAPTER 3

RESERCH QUESTIONS AND HYPOTHESES

Mobile communication has become prevalent in families today, especially those geographically separated (Yu et al., 2017; Storch & Ortiz Juarez-Paz, 2019; Dorrance Hall et al., 2017). Text and instant message allow for asynchronous, textual information; voice message is asynchronous yet verbal; phone call and audio chat provide synchronous, verbal communication; video chat provides "virtual co-presence," that includes verbal, nonverbal communication, visual cues, and contexts of the communication (Francisco, 2013; Furukawa & Driessnack, 2013; Rudi et al., 2015; Yon, 2016).

The technology domestication framework posits that families adopt information and communication technologies (ICTs) and transform them into symbolic values of the family systems by attaching personal meanings (Pham & Lim, 2016; Silverstone et al., 1992). Warren and Aloia (2018) proposed that families variy in integrating mobile technologies into their ongoing communication environments and norms, and patterns. Extending uses and gratification theory (UGT; Katz et al., 1974) and media richness theory (Ishii et al., 2019) to the study of family mobile communication of Chinese international students, families of different preferences in conversation, and conformity orientation of family communication patterns may use different technologies and means of family mobile communication based on their technological capability to fulfill different family communication needs and reinforce their orientations (Ledbetter, 2010; Rudi et al., 2015).

Chinese international students from conformity orientation families may avoid asynchronous textual and verbal communication (text/instant message and audio message) and communicate less frequently to avoid conflict. In comparison, their parents may initiate synchronous mobile communication to monitor their daily routine and mental status. Those from conversation orientation families may utilize all means of mobile communication to keep intimate interactions with parents and enjoy the virtual co-presence of video calls (Horst & Miller, 2005).

RQ1: Do different conversation and conformity orientation levels result in varied usage frequency of different family mobile communication technologies?

RQ2: What is the relationship between Chinese international students' conversation orientation and family mobile communication frequency?

While family communication pattern impacts the communication technology choices in one's family, it may also influence who will initiate the family mobile communication. In conformity orientation families, out of the need to reinforce rules, parents would initiate more conversations and intervene through mobile communication (Chib et al., 2014). In conversation orientation families, when students are faced with pressure and challenges, they may initiate more communication in search of parental support. According to Koerner and Fitzpatrick (2004), family members can be affected by the change of one member of the family, and they will have to adjust to restate the sense of balance. During the pandemic, with increased pressure and stress for all family members to update daily activities and share the latest information on COVID-19 and related policy changes, both Chinese international students and their parents may choose to increase their mobile communication frequency.

RQ3: Does the pandemic lead to more frequent family mobile communication?

Communication is essential in effective family functioning throughout the life course (Noller & Fitzpatrick, 1993). Cell phones and other means of mobile communication are important in the family communication of emerging adults and their parents even across continents and time zones (Lee et al., 2009), but they also raise concerns of control issues in the parent-child relationship (Miller-Ott et al., 2014). Mobile communication technologies require their users to manage their competing needs for connection and autonomy (Katz & Aakhus, 2002, p.316). Researchers give communication technologies the nicknames of the "electronic tether" and the "type of umbilical cord between parent and child" (Hofer, 2008; Ling, 2004, p.100). Overinvolved parents and helicopter parenting may use the technology to closely monitor their children (Ramsey et al., 2013).

The adolescence-emerging adulthood transition brings about an upsurge in parent-child conflict. Laursen and Collins (1994) contend that these conflicts have the potential power to strengthen the parent-child relationship, as they provide "a much-needed vehicle for communication." However, the effect may vary in families with different types of communication patterns. Christenson (1987) proposed different conflict communication patterns when dealing with the negotiation of differences. Some take active and constructive communication in family relationships, which predicts the successful transition, while others may demand, withdraw, or withhold communication (Smith et al., 2008).

Family communication orientations influence family outcomes through manifested communication behaviors (Fitzpatrick & Ritchie, 1994; Koerner & Cvancara, 2002). Aloia (2020) found that family communication orientations significantly influenced emerging adults' satisfaction with parent-child communication and relationships. Families with different family communication patterns take on different communication strategies, which lead to different

levels of parent-child communication satisfaction. Adolescents and emerging adults from families with conversation orientations feel that they can talk to their parents more frequently and openly about a range of issues, including general areas of their routine, feelings, and interests, also sensitive issues such as sex and substance use without any limitation or sanctions (Markham et al., 2010; Miller-Day, 2017; Ryan et al., 2010). Parents value their children's ideas and feelings and are willing to exchange ideas and create shared meanings inside the family systems, thus promoting parent-child communication satisfaction. Conformity orientation families stress the homogeneity of attitudes, values, and beliefs and are more controlling of views and ideas (Miller-Day, 2017). Parents are less accepting of different ideas and expect the child to be obedient. Conformity orientation families interact less frequently and have less open communication, leading to lower parent-child communication satisfaction.

RQ4: How do varied usage frequency of different mobile communication technologies affect family mobile communication satisfaction?

H1: Conversation orientation leads to Chinese international students' higher family mobile communication satisfaction.

H2: Conformity orientation leads to Chinese international students' lower family mobile communication satisfaction.

The communication patterns of college students with their families have implications on their transition adjustments and maladaptive outcomes (Sarigiani et al., 2013; Gentzler et al., 2011; Segrin et al., 2012; Murphy et al., 2010). Ramsey et al. (2013) report that college students who engage in more frequent communication with their parents report greater relationship satisfaction and support. However, too frequent contact and too little communication with parents indicate adjustment difficulties (Hofer & Moore, 2011). According to Hofer's (2008)

research, college students who contact most frequently with parents and whose parents continues to regulate their behaviors and academic activities have the lowest satisfaction of college experience and family relationship.

H3: For high conformity orientation level students, more frequent communication leads to lower family mobile communication satisfaction.

In the pandemic, families of Chinese international students face unparalleled risky situations and stress compared to normal times (Ma, 2020). Parental support and communication become critical for students to negotiate a successful adjustment to the COVID-19 related situations (Liu et al., 2020). As the Family Stress Model posits, COVID-19 associated stress is linked to more negative family dynamics and worse levels of both parent and child well-being (Daks et al., 2020). According to Keating et al. (2013), families that are open about challenging situations tend to be more resilient. They are apt in open emotional sharing and be more adept at solving problems collaboratively. They also can form a more robust unit in times of crisis. For Chinese international students, those from high conversation families are less likely to hesitate or feel guilty for talking openly about their feelings during the pandemic and the ways they desire to be supported.

Those from low conversation orientation families may be more reluctant to share their feelings and needs with their family. Chinese international students from families high in conformity orientation may put the family relationship and the whole family's well-being over their personal feelings. However, they may also talk about the pandemic under the demand of parents to maintain harmony.

H4: Conversation orientation is positively related to the frequency of talking about COVID-19 related issues in family mobile communication.

RQ5: What is the relationship between Chinese international students' family conformity orientation and the frequency of talking about COVID-19 related issues in their family mobile communication?

H5: There will be a positive association between the conversation orientation and the COVID-19 related adjustments.

H6: There will be a negative association between the conformity orientation and the COVID-19 related adjustments.

RQ6: Is conformity orientation positively related to Chinese international students' worrying about families back in China?

Research found that females and newcomers to universities are more susceptible to impacts in daily routine and psychological well-being on COVID-19 related challenges (Romero-Blanco et al., 2020; Xiao et al., 2020; Browning et al., 2020). For Chinese international students who arrive in the United States, their adaptative challenges, acculturation stress, and cultural shock are complicated by the pandemic. Language barriers and little social support can lead to limited information and worse adaptation to the pandemic situation (Chen et al., 2020). When schools closed and moved to online courses, it became even more challenging for them to navigate accommodation and academic needs. The lockdown and quarantine may also exacerbate the challenges they are faced with.

H7: Chinese international students who stayed in the U.S. less than two years report more severe daily routine and regular study influence.

H8: Chinese international students who stayed in the U.S. less than two years are less successful in their COVID-19 related adjustments.

Various studies after the pandemic began emphasize the negative impact on the mental well-being of the students and a rise in psychological disorders such as depression, anxiety, and stress (Husky et al., 2020; Martínez-Lorca et al., 2020; Wang et al., 2020; Odriozola-González et al., 2020). In the study of mental health status and change in living rhythms among college students in China, Chen et al. (2020) report that shifts in daily routines during the pandemic are significantly associated with depressive symptoms. Factors of resilience, social support, and adaptive coping strategies are critical protective factors for mental well-being during the pandemic (Ye et al., 2020). When Chinese international students come from families of high conversation orientation, they are accustomed to openly expressing their feelings and needs, thus obtaining better resilience and social support as protection. Students who are flexible and adapt better to pandemic-related life changes are also protected against mental well-being's adverse outcomes.

RQ7: The COVID-19 pandemic causes Chinese international students to feel more stressed/anxious/depressed than usual.

H9: The impact on daily routines is positively related to the students' feeling more stressed/anxious/depressed than usual.

H10: Conversation orientation is negatively related to the students' feeling more stressed/anxious/depressed than usual.

RQ8: Is conversation orientation positively related to the mental well-being of Chinese international students during the pandemic?

H11: Students who report better adjustments to the pandemic do not feel more stressed/anxious/depressed than usual.

Previous research shows that conformity orientation has implications on the self-definition and mental well-being of family members. The actual-self is the presentation of the attributes that someone (yourself or another) believes you actually possess. The ideal-self is your representation of the attributes that someone (yourself or another) would like you, ideally, to possess. And the ought-self is your representation of the attributes that someone (yourself or another) believes you should possess. Self-discrepancy theory suggests that when there are discrepancies between the actual-self and the ideal-self, the individual is susceptible to depression; when there are discrepancies between the actual self and the ought-self, the individual can experience anxiety (Higgins, 1989). According to Koerner and Fitzpatrick (2002), low conformity orientation families tend for their members to independently define themselves rather than defining themselves in relation to their families. Family members tend to compare their actual-self to their ideal-self, which could lead to depression inclination. High conformity families, on the other hand, encourage their members to define themselves according to their family roles and demands. Thus, high conformity family members tend to compare their actual-self to their ought-self and become more anxious. The pandemic-related challenges may limit the development of students' actual-self and thus hinder the realization of both the ideal-self and the ought-self. The subsequent self-discrepancy can lead to Chinese international students' problems regarding their mental well-being.

H12: Low conformity level predicts greater depression in Chinese international students compared to high conformity level.

H13: High conformity level predicts greater anxiety in Chinese international students compared to low conformity level.

CHAPTER 4

METHODOLOGY

4.1 Sample and Procedure

The study uses quantitative data and engages with demographic information, family communication patterns, COVID-19 related challenges and adjustments, family mobile communication, and Chinese international students' mental well-being. Participants were recruited from Chinese international students who are currently studying in the United States during the pandemic. The recruitment process used snowball sampling by sending WeChat recruiting messages to target individuals and group chats of CSSA (Chinese Students and Scholars Association), which is composed of the majority of Chinese international students from different universities. Recruitment materials included a recruitment letter that explained the research goals of looking into the family communication patterns, family mobile communication, and mental well-being of Chinese international students during the pandemic. There was a link to the survey for those individuals who decided to participate. The solicitation of participants started on January 12, 2021 and ended on February 16, 2021.

After reading a letter of informed consent, research participants completed their anonymous questionnaire hosted by https://ugeorgia.qualtrics.com/. It took participants approximately 10–15 minutes to complete the survey. All materials used in this study were reviewed and approved by the Institutional Review Board of the University of Georgia. The original and translated versions of the recruitment letter, the letter of informed consent, and a copy of the full questionnaire are provided in Appendix A, Appendix B, and Appendix C. As an

incentive to participate, participants could choose to enter a drawing for a $50 gift card whether or not they choose to finish the survey.

Three-hundred-and-ninety-four individuals accessed the link. Three-hundred-and-six individuals completed a portion of the questionnaire. However, sixty-nine participants did not complete significant portions of the questionnaire and were excluded from the analysis. The final sample consists of 237 participants who are Chinese international students currently in America.

4.2 Measures

The questionnaire consisted of four instruments: (a) The Measurement of COVID-19 related Influences and Adjustment, (b) Measurement of Family Communication Patterns (FCPs), (c) Measurement of Family Mobile Communication, and (d) Measurement of Mental Wellbeing-Depression Anxiety Stress Scales-21 (DASS-21).

4.2.1 Measurement of COVID-19 related Influences and Adjustment. The Measurement of COVID-19 related Influences and Adjustment is a 9-item 5-point Likert scales (1 = *strongly disagree* to 5 = *strongly agree*). Participants were asked to think about how COVID-19 influenced their daily routines and mental wellbeing, and also their adjustment to the challenges they faced related to COVID-19. The first eight questions measure eight dimensions of experienced COVID-19 related influences: (a) impacts on daily routines, (b) impact on regular study, (c) fear of contracting, (d) worry about families back home, (e) hard to go back to China, (f) more stressful than usual, (g) more anxious than usual, and (h) more depressed than usual. The last question measures the adjustment (i) adjustment to COVID-19 and related complications. The first eight questions combine into one COVID-19 related influence overall measure.

4.2.2 Measurement of Family Communication Patterns (FCPs). For the measure of participants' perceptions of family communication behaviors, the study adopted the Revised Family Communication Patterns (RFCP) instrument, which consists of two 5-point Likert scales (1 = *strongly disagree* to 5 = *strongly agree*) measuring conversation and conformity orientation (Ritchie & Fitzpatrick, 1990). The RFCP is a 26-item measure comprising two dimensions: conversation orientation and conformity orientation. Ritchie and Fitzpatrick (1990) report an acceptable internal consistency of a test-retest coefficient close to 1.0 for conformity orientation and a range from .73 to .93 for conversation orientation. Conformity orientation consists of 11 items like "When I am at home, I am expected to obey my parents' rules" and "My parents often say things like "There are some things that just shouldn't be talked about." Conversation orientation consists of 15 items like "My parents encourage me to challenge their ideas and beliefs" and "I really enjoy talking with my parents, even when we disagree."

4.2.3 Measurement of Family Mobile Communication. The questions look at the frequency of family mobile communication, the frequency of utilizing various mobile communication technologies, communication quality, mentioning COVID-19 and related issues, and the change of family mobile communication frequency after the pandemic outbreak. A portion of the items is adapted from the study of Warren and Aloia (2018), Kennedy et al. (2008), and Lenhart et al. (2011). The frequencies are measured using five 7-point Likert scales (1 = *never*, 2 = *once in a while*, 3 = *every few weeks*, 4 = *1-2 times a week*, 5 = *3-5 times a week*, 6 = *about once a day*, 7 = *several times a day*) and shown in Table 2.

Family communication satisfaction used a 5-point Likert scale (from 1 = *totally unsatisfied* to 5 = *totally satisfied*). Mentioning COVID-19 and related issues used a 5-point Likert scale (from 1 = *never* to 5 = *almost every time*). Change of family mobile communication

frequency was measured using a 5-point Likert scale (from 1 = *significantly decreased* to 5 = *significantly increased*).

4.2.4 Measurement of Mental Wellbeing-Depression Anxiety Stress Scales-21 (DASS-21). Depression Anxiety Stress Scales-21 (DASS-21, Psychology Foundation of Australia) is a widely recognized and effective measurement of psychological well-being, often utilized by clinicians and psychologists (Lovibond and Lovibond, 2004). To measure the severity of the three related negative emotional states of depression, anxiety, or stress, DASS-21 utilizes three self-report four-point Likert subscales. Each consists of seven items. Each item measures the prevalence of symptoms of depression, anxiety, or stress over the previous week and scores from 0 (*did not apply to me at all over the last week*) to 3 (*applied to me very much or most of the time over the past one week*) (Lovibond & Lovibond, 1995). As it is a short version derived from the basic DASS questionnaire with 42 items, the final score of each subscale (depression, anxiety, or stress) must be multiplied by two (×2) with a minimum total score of zero and a maximum total score of 42 (Brown et al., 1997; Ronk et al., 2013).

The depression subscale includes items 3, 5, 10, 13, 16, 17, and 21; the anxiety subscale includes items 2, 4, 7, 9, 15, 19, and 20; the stress subscale contains items 1, 6, 8, 11, 12, 14, and 18 (Gomez, 2016). Each of the subscale scores is divided into five categories. Depression: normal (0–9), mild depression (10–12), moderate depression (13–20), severe depression (21–27), and extremely severe depression (28–42); anxiety: normal (0–6), mild anxiety (7–9), moderate anxiety (10–14), severe anxiety (15–19), and extremely severe anxiety (20–42); and stress: normal (0–10), mild stress (11–18), moderate stress (19–26), severe stress (27–34), and extremely severe stress (35–42) (Lovibond & Lovibond, 1995).

CHAPTER 5

ANALYSES AND RESULTS

5.1 Preliminary Analysis

This study uses SPSS version 24 (IBM, Armonk, NY, USA) to calculate the descriptive and multivariate analyses. When exploring the normality of different variables, there is only the variable of conformity orientation that is normally distributed (p=.199), and thus is being examined using ANOVA when comparing across groups. Other variables are being compared across groups using non-parametric test. Multiple linear regression is being used to examine overall COVID-19 influence, overall family mobile communication frequency, and family mobile communication satisfaction. Linear regression and ordinal logistics regression are also used for the research questions and the hypotheses.

5.1.1 Demographic Characteristics. The demographic characteristics of participants are presented in Table 1.

Table 1

Demographic Characteristics of Participants

Variables	Groups	Frequency (%)
Gender	Male	98 (41.4)
	Female	134 (56.5)
	Other	5 (2.1)
Age	18-20	41 (17.3%)
	21-23	81 (34.2%)
	24-26	63 (26.6%)

	27 +	52 (21.9%)
Education	Bachelor	117 (49.4%)
	Master's	80 (33.8%)
	Doctorate	40 (16.9%)
Years of Stay	Less than 1 year	26 (11%)
	1 - 2 years	74 (31.2%)
	3 - 5 years	89 (37.6)
	6 + years	48 (20%)
Last back Home	Less than 6 months	58 (24.5%)
	6 months - 1 year	40 (16.9%)
	1 - 3 years	126 (53.2%)
	3 + years	13 (5.5%)
Siblings	I'm the only child	187 (78.9%)
	1 sibling	39 (16.5%)
	2 or more siblings	11 (4.6%)

5.1.2 COVID-19 related Influences and Adjustment. The descriptive statistics for COVID-19 related influences and adjustment is shown in Table 2. The combined "COVID-19 overall influence" variable ranges from 14.00 to 40.00 and have an acceptable Cronbach's Alpha Based on Standardized Items (α= .789).

Table 2.

Descriptive Statistics for COVID-19 related Influences and Adjustment

	Descriptive			
	Mean	SD	Mode	Median
Impact on Daily Routine	3.64	1.031	4	4
Impact on Study	3.62	1.078	4	4

Fear for Contracting COVID-19	4.17	1.004	5	4
Worry about Families	3.54	1.223	4	4
Hard to go back Home	4.38	0.872	5	5
Stress Change	3.77	1.069	4	4
Anxiety Change	3.70	1.093	4	4
Depress Change	3.30	1.244	4	3
Overall COVID-19 Impact	30.14	5.492	__	__
COVID-19 related Adjustment	3.57	0.907	4	4

5.1.3 Family Communication Patterns (FCPs). The current study yielded a satisfying Cronbach's Alpha for both conformity orientation (M=2.942, SD= .726, α= .872) and conversation orientation (M=3.377, SD= .784, α= .933). Participants are split by the mean value into low/high levels of both conversation and conformity orientation. Four different family communication styles can be derived using the mean splits on both dimensions of conformity and conversation orientation. Nevertheless, this study only focuses on the two dimensions for the limited sample size. Low conversation orientation includes one-hundred-and-six (44.7%) participants. High conversation orientation includes one-hundred-and-thirty-one (55.3%) participants. Low conformity orientation includes one-hundred-and-twenty-two (51.5%) participants. High conformity orientation includes one-hundred-and-fifteen (48.5%) participants.

5.1.4 Family Mobile Communication. The frequencies for family mobile communication variables are shown in Table 3.

Table 3.

Family Mobile Communication Frequency

	Frequency						
	Never	*Once in a while*	*Every few weeks*	*1-2 times a week*	*3-5 times a week*	*About once a day*	*Several times a day*
Family Mobile Communication Frequency	0.0%	6.3%	8.0%	39.2%	20.7%	17.3%	8.4%
Text & Instant Message	1.3%	8.9%	5.5%	25.7%	26.2%	20.8%	11.4%
Voice Message	27%	37.6%	5.9%	8.4%	10.5%	4.6%	5.9%
Audio Chat	8.0%	24.5%	11.4%	32.9%	12.2%	8.9%	1.7%
Video Chat	8.0%	17.7%	17.4%	34.7%	13.1%	7.2%	1.7%

For family communication satisfaction (M=3.86, SD= .719), only five (2.1%) participants describe their family mobile communication satisfaction as unsatisfied, and one (0.4%) participant reports totally unsatisfied. Fifty-nine (24.9%) participants express neutral feelings. Over half (132, 55.7%) participants are satisfied, and thirty-eight (16.0%) participants are totally satisfied with their family mobile communication. Two missing data accounts for 0.8% of the total sample population.

For raising COVID-19 and related issues, three (1.3%) participants never mention COVID-19 and related issues in the mobile communication with their families. Thirty-eight (16.0%) report occasionally mentioning, and 16 (6.8%) participants report a neutral occurrence of mentioning. One-hundred-twenty-six (53.2%) participants state often mentioning. Meanwhile, fifty-four (22.8) participants talk with their families about COVID-19 almost every time during mobile communication.

For change of family mobile communication frequency, four (1.7%) participants report decreased frequency, and only one person (0.4%) experienced significantly decreased frequency of family mobile communication. Approximately half (49.4%) of the participants said their mobile communication frequency with families is about the same since the onset of COVID-19. Eighty-four (35.4%) and thirty-one (13.1%) participants respectively described their family mobile communication as increased and significantly increased during the pandemic.

5.1.5 Mental Wellbeing-Depression Anxiety Stress Scales-21 (DASS-21). The results for mental well-being variables are shown in Table 4.

Table 4.

Mental Wellbeing-Depression Anxiety Stress Scales-21 (DASS-21)

	Descriptive		Level				
	Mean	SD	Normal	Mild	Moderate	Severe	Extremely Severe
Depression	11.41	10.48	52.3%	14.8%,	14.3%,	5.1%	12.2%
Anxiety	9.44	8.85	50.6%	8.9%	19.4%	6.8%	13.5%
Stress	13.92	10.22	64.1%	9.3%	10.5%	9.3%	4.6%

5.2 Differences between Gender Groups

The gender frequency in the respondents is male (41.4%), female (56.5%), and other (2.1%). The "other" category is too small of a sample and thus is being excluded from group comparisons.

5.2.1 Gender and COVID-19 Related Influences/Adjustment. As none of the COVID-19 related influences and adjustment variables are normally distributed, the difference between gender is being examined using Kruskal-Wallis test. The results are shown in Table 5.

Table 5.

Gender and COVID-19 Related Influences/Adjustment

	Gender	Mean	SD	P value
Impact on Daily Routine	Male	3.57	0.984	.399
	Female	3.66	1.063	
Impact on Study	Male	3.55	1.104	.451
	Female	3.67	1.071	
Fear for Contracting COVID-19	Male	4.04	1.045	.049*
	Female	4.29	0.956	
Worry about Families	Male	3.30	1.262	.006**
	Female	3.75	1.155	
Hard to go back Home	Male	4.40	0.743	.419
	Female	4.37	0.955	
Stress Change	Male	3.57	1.075	.015*
	Female	3.90	1.054	
Anxiety Change	Male	3.50	1.133	.024*
	Female	3.84	1.042	
Depress Change	Male	3.13	1.297	.177
	Female	3.38	1.191	
Overall COVID-19 Impact	Male	28.9898	5.26904	.005**
	Female	30.7985	5.66984	
COVID-19 related Adjustment	Male	3.66	0.941	.156
	Female	3.54	0.855	

*. $p < .05$, two-tailed. **. $p < .01$, two-tailed.

Overall, females are more vulnerable to COVID-19 related challenges. They fear more than males about for contracting the virus, worry more about their families back in China, experience more COVID-19 related stress and anxiety, and experience more severe COVID-19 related influences than males.

5.2.2 Gender and Family Mobile Communication. The gender difference for family mobile communication is examined using Chi-square test. There is a significant gender difference in items of: family mobile communication frequency (p=0.030), text and instant message frequency (p=0.002), voice message frequency (p=0.003), family mobile communication satisfaction (p=0.028). There is no significant gender difference in family audio chat frequency, family video chat frequency, frequency of mentioning COVID-related issues, and the change of family mobile communication frequency since the COVID-19 eruption.

For family mobile communication frequency, females have more frequent family mobile communication than males: 11.9% females communicate with their families several times a day compared to only 4.1% of males; 20.9% females communicate with their families about once a day compared to 13.3% of males; over half of the females (53.3%) communicate with their families at least three to five times a week compared to 38.8% of males.

The percentage of females utilizing more frequent mobile communication means of text and instant message is higher: 3.1% of males never use texts and instant messages to communicate with families while all females utilize this means of mobile communication. 34.4% of females text or send instant messages to families at most one to two times a week compared to 49.5% of males. 24.6% of females and 18.6% of males communicate with their families three to five times a week. 25.4% of females and 15.3% of males communicate with their families about once a day. 15.7%, of females compared to 6.1% of males communicate with their families several times a day.

Voice message frequency is low on both gender: 36.7% of males and 17.2% of females never use voice messages; 26.2% of females and 15.3% of males send voice messages at least three to five times a week to families.

When examining the family mobile communication satisfaction across genders, the unsatisfaction rate is low across both genders: only two female respondents reported totally unsatisfied and unsatisfied, while two males respond unsatisfied with their family mobile communication. The analysis shows that 20.9% and 59.0% of females versus 10.2% and 53.1% of males report totally satisfied and satisfied with their family mobile communication; 18.7% of females are neutral in their satisfaction compared to 33.7% in males. After comparing the mean of family mobile communication satisfaction, female satisfaction (M=3.99, SD=0.704) is significantly higher (p=0.014) than male satisfaction (M=3.72, SD=.673).

5.2.3 Gender and Family Mobile Communication Patterns. There is no significant gender difference in both conversation orientation and conformity orientation.

5.2.4 Gender and Mental Well-Being. There is no significant gender difference in depression (p=.505), anxiety (p=.342), and stress symptoms (p=.547). The detailed descriptive and level percentage table for gender and mental well-being is in Appendix D.

5.3 Zero-Order Correlations

Spearman correlation analysis is conducted to identify associations between variables including COVID-19 related influences and adjustment, family communication patterns, family mobile communication, and mental well-being of Chinese international students in the U.S. during the pandemic. The detailed zero-order correlations among variables are listed in Appendix E.

5.3.1 Correlation within COVID-19 related Influences and Adjustment. Within the COVID-19 related influences variables, the reported “overall COVID-19 impact” is positively correlated with a moderate effect with “impact on daily routine” ($r=.571$, $p < .01$), “impact on study”, ($r=.635$, $p < .01$), “fear for contracting COVID-19”($r=.589$, $p < .01$). The reported “overall

COVID-19 impact" exhibits a weak positive correlation with "worry about families" ($r=.399$, $p < .01$), "hard to go back home" ($r=.384$, $p < .01$). The reported "overall COVID-19 impact" also has a strong positive correlation with "stress change" ($r=.851$, $p < .01$), "anxiety change" ($r=.789$, $p < .01$), and "depression change" ($r=.736$, $p < .01$). According to the correlations, those who suffer more impact on their daily routine and study and feel more fear towards contracting the virus are more likely to report higher overall COVID-19 impact. A self-reported higher overall COVID-19 impact score can mean a strong possibility of experiencing more stress, anxiety, and depression during the pandemic.

There is a weak to moderate positive correlation between "impact on daily routine" and "stress change" ($r=.412$, $p < .01$), "impact on daily routine" and "anxiety change" ($r=.366$, $p < .01$), "impact on daily routine" and "depression change" ($r=.302$, $p < .01$). This conclusion corresponds with the study of Stanton et al. (2020) that psychological distress including depression, anxiety, and stress are all significantly associated with changes in health behavior. When Chinese international students' daily routine of sleep, diet, and exercise are being disrupted, they are more vulnerable to be influenced by stress, anxiety, and depression. There is also a near moderate positive correlation between" "impact on study" and "stress change" ($r=.491$, $p < .01$) "impact on study" and "anxiety change" ($r=.469$, $p < .01$) "impact on study" and "depression change" ($r=.413$, $p < .01$). This is in line with Chinese international students' emphasis on their studies. Fear for contracting COVID-19 is positively correlated with both "worry about families" ($r=.351$, $p < .01$) and "hard to go back home" ($r=.286$, $p < .01$), though both a weak correlation.

For "COVID-19 related adjustment", it has a negative yet minor correlation between "impact on daily routine" ($r=-.244$, $p < .01$), "impact on study" ($r=-.277$, $p < .01$), "fear for

contracting COVID-19" ($r=-.235$, $p < .01$), and "hard to go back home" ($r=-.190$, $p < .01$). These correlations are well expected as either these negative impacts can influence one's adjustment to the pandemic; those who are weak in adjustment can perceive these negative outcomes to be more profound. "Stress change" ($r=-.373$, $p < .01$), "anxiety change" ($r=-.342$, $p < .01$), and "depression change" ($r=-.403$, $p < .01$) are negatively correlated with "COVID-19 related adjustment". When Chinese international students report increased stress, anxiety, and depression symptoms, they are more likely to also report worse adjustment to the pandemic. The overall COVID-19 impact is also negatively correlated with one's adjustment to the pandemic ($r=-.429$, $p < .01$).

There also is a strong correlation between "stress change" and "anxiety change" ($r=.829$, $p < .01$), "stress change" and "depression change" ($r=.726$, $p < .01$), and "anxiety change" and "depression change" ($r=.773$, $p < .01$). These findings are in accordance with previous studies that showed psychological distresses are often associated (Gorman, 1996; Fan et al., 2015). When there is an increase in stress level, anxiety levels and depression level also go up (Bergdahl & Bergdahl, 2002; Kurebayashi et al., 2012).

5.3.2 Correlation between COVID-19 related Influences/Adjustment and Family Communication Patterns. There is no significant correlation between conversation orientation and COVID-19 related influences and adjustment except a weak correlation with "hard to go back home" ($r=.131$, $p < .01$). However, conformity orientation exhibits weak positive correlation with multiple items: conformity orientation and "impact on daily routine" ($r=.141$, $p < .01$), conformity orientation and "impact on study" ($r=.166$, $p < .01$), conformity orientation and "stress change" ($r=. 194$, $p < .01$), conformity orientation and "anxiety change" ($r=.187$, $p < .01$), conformity orientation and "depression change" ($r=.235$, $p < .01$), and conformity

orientation and the overall pandemic impact (r= .191, p < .01). These findings correspond with previous studies of conformity orientation leading to various negative behavioral and psychological outcomes (McLeod et al., 1972; Koerner & Fitzpatrick, 1997; Huang, 1999; Zhang, 2007; Sillars et al., 2005; Shimkowski, 2016; Odenweller & Harris, 2018).

5.3.3 Correlation between COVID-19 related Influences/Adjustment and Mental Well-Being. The correlations between COVID-19 related influences/adjustment and mental well-being variables yield some expected results. All three mental well-being variables have a weak significant correlation with "impact on daily routine", "impact on study", "hard to go back home". The "stress level" is positively related with "worry about families" (r=.154, p < .05). All three mental well-being variables exhibit a moderate significant correlation with "stress change", "anxiety change", and "depression change". These correlations may suggest that those with existing mental well-being challenges are more susceptible to suffer from increased psychological distress.

Besides, the significant positive correlation between mental well-being variables and "overall COVID-19 impact" is expected: "depression level" and "overall COVID-19 impact" (r=.341, p < .01), "anxiety level" and "overall COVID-19 impact" (r=.439, p < .01), "stress level" and "overall COVID-19 impact" (r=.503, p < .01). Chinese international students who report higher overall impact from the pandemic tend to score higher in all three depression, anxiety, and stress tests. Those who report more severe psychological distress also tend to report more impact from the pandemic.

There is a significant negative correlation between mental well-being variables and "COVID-19 related adjustment": "depression level" and "COVID-19 related adjustment" (r=-.238, p < .01), "anxiety level" and "COVID-19 related adjustment" (r=-.249, p < .01), "stress

level" and "COVID-19 related adjustment" (r=-.262, p < .01). This finding corresponds with previous research. Resilience and adaptive coping strategies are critical protective factors for mental well-being during the pandemic (Ye et al., 2020).

5.3.4 Correlation between COVID-19 related Influences/Adjustment and Family Mobile Communication. There is no significant correlation between overall "family mobile communication frequency" and COVID-19 related influences/adjustment, "text & instant message frequency" and COVID-19 related influences/adjustment, "audio chat frequency" and COVID-19 related influences/adjustment, and "video chat frequency" and COVID-19 related influences/adjustment. However, "voice message frequency" has a weak positive correlation with two COVID-19 related influences/adjustment items: "fear for contracting COVID-19" (r=.134, p < .01) and "worry about families" (r=.154, p < .01). These correlations indicate that Chinese international students who fear contracting the virus and worry about family members back home tend to engage in more frequent family voice message chats.

Mentioning COVID-19 and related information in family mobile communication is positively correlated with "fear for contracting COVID-19" (r=.261, p < .01) and the feeling of hard to go back home (r=.221, p < .01). This is in accordance with previous studies that during the pandemic when Chinese international students and their families are faced with unprecedented risks compared to regular times, they tend to engage in timely communication to navigate everchanging information and to provide familial support (Hu et al., 2020; Liu et al., 2020; Ma, 2020).

Mentioning COVID-19 and related information in family mobile communication is also positively correlated with psychological changes and the impact of pandemic: "mentioning COVID-19" and "stress change" (r=. 254, p < .01), "mentioning COVID-19" and "anxiety

change" (r=.202, p < .01), "mentioning COVID-19" and "depression change" (r=.138, p < .05), and "mentioning COVID-19" and the overall pandemic impact (r= .234, p < .01). When Chinese international students suffer from COVID-19 related challenges and intensified psychological distress, they tend to talk more frequently about the pandemic and related issues in their family conversations.

Family mobile communication frequency change is positively correlated with "impact on study" (r=.142, p < .05), "fear for contracting COVID-19" (r=.171, p < .01), "worry about families" (r=.195, p < .01), "stress change" (r=.243, p < .01), "anxiety change" (r=.232, p < .01), "depression change" (r=.184, p < .01), and "overall COVID-19 impact" (r=.255, p < .01). All the previous variables is associated with an increased family mobile communication frequency.

The is only one significant correlation between family mobile communication satisfaction and COVID-19 related influences/adjustment: "impact on study" and "family mobile communication satisfaction" (r=-.149, p < .01). However, there are no significant correlation between COVID-19 related adjustment and family mobile communication. This suggests that family mobile communication choice and frequency does not interfere with Chinese international students' adjustment to the pandemic and related issues.

5.3.5 Correlation within Family Communication Patterns. There is a moderate negative correlation between conversation orientation and conformity orientation (r=-.496, p < .01). In this case, families scoring high in conformity orientation tend to have lower conversation orientation scores and vice versa.

5.3.6 Correlation between Family Communication Patterns and Mental Well-Being. There is a negative correlation between conversation orientation and depression (r=-.255, p < .01), conversation orientation and anxiety (r=-.209, p < .01), conversation orientation and stress

(r=-.216, p < .01). Conformity orientation is positively correlated with depression (r=.200, p < .01), anxiety (r=.273, p < .01), and stress (r=.259, p < .01). Conversation orientation is inversely associated with these mental health symptoms.

5.3.7 Correlation between Family Communication Patterns and Family Mobile Communication. The significant correlation between family communication patterns and family mobile communication frequency is expected. Conversation orientation and family mobile communication frequency has a moderate positive correlation (r=.427, p < .01). Conformity orientation and family mobile communication frequency has a weak negative correlation (r=-.185, p < .01). The higher the conversation orientation score, the more likely a Chinese international student engages in more frequent family mobile communication. Inversely, the higher the conformity orientation score, the lower the family mobile communication frequency is. Conversation orientation is also positively correlated with all four means of family mobile communication: "text & instant message frequency" (r=.488, p < .01), "voice message frequency" (r=.231, p < .01), "audio chat frequency" (r=.303, p < .01), and "video chat frequency" (r=.309, p < .01). Conformity orientation is negatively correlated with "text and instant message frequency" (r=-.161, p < .05).

Family communication patterns is also associated with Chinese international students' family mobile communication satisfaction. Conversation orientation has a moderate positive correlation with family mobile communication satisfaction (r=.406, p < .01). Conformity orientation, on the other hand, exhibits a negative correlation (r=-.174, p < .01). However, neither family communication orientation is significantly correlated with the mentioning of COVID-19 and change in family mobile communication frequency.

5.3.8 Correlation within Mental Well-Being Variables. There is a strong significant correlation between all three mental well-being variables: “anxiety level” and “depression level” ($r=.752$, $p < .01$), “stress level” and “depression level” ($r=.781$, $p < .01$), and “anxiety level” and “stress level” ($r=.845$, $p < .01$). These correlations indicate that depression, anxiety, and stress may often be co-occurring in Chinese international students in United States. These are related across all categories of mental illness.

5.3.9 Correlation between Mental Well-Being and Family Mobile Communication. There is a significant negative correlation between “depression level” and family mobile communication variables: overall “family mobile communication frequency” ($r=-.215$, $p < .01$), “text & instant message frequency” ($r=-.171$, $p < .01$), and “video chat frequency” ($r=-.140$, $p < .05$). Anxiety level has a significant yet slight negative correlation with “family mobile communication frequency” ($r=-.135$, $p < .05$). Stress level is negatively associated with both “family mobile communication frequency” ($r=-.176$, $p < .01$) and “text and instant message frequency” ($r=-.155$, $p < .05$). Family mobile communication satisfaction is negatively correlated with depression level ($r=-.135$, $p < .05$) and stress level ($r=-.160$, $p < .05$).

It is interesting that there is a positive correlation between anxiety level and “mentioning COVID-19” ($r=.174$, $p < .01$) stress level and “mentioning COVID-19” ($r=.173$, $p < .01$). Those who speak more frequently about COVID-19 and related issues in family mobile communication are also the ones that exhibit higher levels of anxiety and stress. This result can have two possible explanations. Either Chinese international students who have anxiety and stress symptoms speak about their concerns more frequently with families, or mental distress of anxiety and stress can be easily triggered when COVID-19 related issues are frequently mentioned in family mobile communication.

5.3.10 Correlation within Family Mobile Communication. There is a strong positive correlation between overall frequency and "text and instant message frequency" (r=.733, p < .01). Overall frequency is also positively correlated with the frequency of other means of family mobile communication: "voice message frequency" (r=.255, p < .01), "audio chat frequency" (r=.388, p < .01), and "video chat frequency" (r=.427, p < .01). All frequencies of different means of family mobile communication are positively correlated with one another. Family mobile communication satisfaction has a weak correlation with frequency of all means of family mobile communication and overall frequency. This is the indication that those who are more satisfied with their family mobile communication also tend to utilize all means of family mobile communication more frequently. Neither overall frequency nor other frequency of family mobile communication is significantly correlated with mentioning information related to the pandemic. The change of family mobile communication frequency is positively correlated with overall frequency (r=.129, p < .05), "voice message frequency" (r=.165, p < .05), "audio chat frequency" (r=.199, p < .01), and "video chat frequency" (r=.142, p < .05).

5.4 Multiple Linear Regression regarding Overall COVID-19 Influence, Family Mobile Communication Frequency, and Family Mobile Communication Satisfaction

5.4.1 Multiple Linear Regression regarding Overall COVID-19 Influence. Table 6 presents the stepwise multiple linear regression regarding overall COVID-19 influence considering independent variables of demographics and family communication patterns.

Table 6.

Multiple Linear Regression regarding Overall COVID-19 Influence

	Unstandardized B	Std. Error	Standardized Beta	t	p
Constant	20.227	2.042		9.906	P<0.001

Gender	1.438	0.714	0.128	2.013	0.045
Years in the U.S.	1.012	0.381	0.168	2.655	0.008
Conformity Orientation	1.650	0.493	0.212	3.349	0.001

R^2=.095, Adjusted R^2=.083, F=7.945

The multiple linear regression shows that for Chinese international students, gender, years in the U.S., and conformity orientation are the predictors for overall COVID-19 influence they experience. The 3 predictors comprise 8.3% of the covariance. Excluded variables include age, education, last time back home, number of siblings, and conversation orientation.

5.4.2 Multiple Linear Regression regarding Family Mobile Communication Frequency.

Table 7 presents the stepwise multiple linear regression regarding family mobile communication frequency considering independent variables of demographics, family communication patterns, overall COVID-10 influence, and COVID-19 related adjustment.

Table 7.

Multiple Linear Regression regarding Family Mobile Communication Frequency

	Unstandardized B	Std. Error	Standardized Beta	t	p
Constant	3.487	0.762		4.577	P<0.001
Gender	0.364	0.151	0.144	2.411	0.017
Number of Siblings	-0.347	0.140	-0.149	-2.481	0.014
Conversation Orientation	0.604	0.099	0.366	6.092	P<0.001

R^2=.190, Adjusted R^2=.180, F=17.868

The multiple linear regression shows that for Chinese international students, gender, number of siblings, and conversation orientation are the predictors for family mobile communication frequency. The 3 predictors comprise 18% of the covariance. Excluded variables

include age, education, years in the U.S., last time back home, conformity orientation, overall COVID-10 influence, and COVID-19 related adjustment.

5.4.3 Multiple Linear Regression regarding Family Mobile Communication Satisfaction.

Table 8 presents the stepwise multiple linear regression regarding family mobile communication satisfaction considering independent variables of demographics, family communication patterns, overall COVID-10 influence, and COVID-19 related adjustment.

Table 8.

Multiple Linear Regression regarding Family Mobile Communication Satisfaction

	Unstandardized B	Std. Error	Standardized Beta	t	p
Constant	1.820	0.292		6.243	P<0.001
Gender	0.274	0.084	0.193	3.255	0.001
Conversation Orientation	0.355	0.055	0.384	6.489	0.000
COVID-19 related Adjustment	0.115	0.047	0.146	2.460	0.015

R^2=.203, Adjusted R^2=.193, F=19.306

The multiple linear regression shows that for Chinese international students, gender, conversation orientation, and their adjustment to the pandemic are the predictors for family mobile communication frequency. The 3 predictors comprise 19.3% of the covariance. Excluded variables include age, education, years in the U.S., last time back home, conformity orientation, number of siblings, and overall COVID-10 influence.

5.5 Test of Hypotheses

The test of hypotheses is re-organized into 7 different sections of topics for clarity: (1) COVID-19 related influence and adjustment, (2) family mobile communication, (3) family

communication patterns, (4) mental well-being, (5) family communication patterns and COVID-19 related influence and adjustment, (6) family communication patterns and family mobile communication, and (7) family communication patterns and mental well-being. The variables may overlap with the ones appeared in previous sections. The list of complete results of research questions and hypotheses are in Appendix F.

5.5.1 COVID-19 related Influences and Adjustment. This measurement aims to measure the extent and magnitude to which Chinese intentional students in America are being influenced by the pandemic and their overall adjustment to the challenge it poses. This section contains 10 variables. Eight variables measures different dimensions of experienced COVID-19 related influences including (a) impacts on daily routines, (b) impact on regular study, (c) fear of COVID-19, (d) worry about families back home, (e) hard to go back to China, (f) stress change, (g) anxiety change, and (h) depression change. These eight variables combine into one overall COVID-19 related influence variable. The last variable is adjustment to COVID-19 and related complications. RQ7, H7, H8, H9, and H11 is based on variables in this section.

Research Question 7. RQ7 asked whether students feel more stressed/anxious/depressed than usual during the pandemic. The variables of stress change, anxiety change, and depression change are examined in this research question. The frequencies of all three mental distress change are shown in Table 9.

For all participants, 64.5% reported increased stress, 63.7% reported increased anxiety, and 48.1% reported increased feeling of depression. Respondents experience more severe stress and anxiety change compared to depression change. 13.9% report no increased stress, 15.2% reported no increased anxiety, and 30.8% reported no increased depression. Overall, a large portion of Chinese international students' mental well-being suffer from the pandemic and

aggravated mental distress levels. This result demonstrates the devastating impact of COVID-19 and related complications on the mental well-being of Chinese international students in America.

Table 9

Frequencies of Stress/Anxiety/Depression Change

	Stress Change	Anxiety Change	Depression Change
Strongly Disagree	2.5%	4.2%	7.6%
Disagree	11.4%	11.0%	23.2%
Neutral	21.5%	21.1%	20.7%
Agree	35.4%	38.4%	27.8%
Strongly Agree	29.1%	25.3%	20.3%

Hypotheses 7 & 8. H7 stated that Chinese international students who stayed less than two years report higher impact on their daily routine. H8 stated that there are also differences in their COVID-19 related adjustment. The variable of "years of stay in the United States" is being recoded into "1=less than two years" and "2=more than two years".

The difference in "impact on daily routine", "impact on study", and "COVID-19 related adjustment" is examined by Kruskal-Wallis test. There is a significant difference between students who stayed in the U.S. less than two years and more than two years in "impact on daily routine", p=.001. Table 10 presents the frequencies of "impact on daily routine" of Chinese international students who stayed less than two years and more than two years.

For students who stayed less than two years, the percentage of "agree" and "strongly agree" of "impact on daily routine" is 49% compared to 72.3% of students who stayed more than

two years. Students who stayed less than two years in the United States report less impact on their daily routines compared to those who stayed longer. Thus, Hypothesis 7 is not supported.

However, there is not significant difference in "impact on study", p=.419, or "COVID-19 related adjustment", p=.055. Chinese international students who stayed in America less than two years and more than two years do not experience varied level of impact on study and COVID-19 related adjustment. For students who stayed less than two years, the percentage of "agree" and "strongly agree" of "impact on study" is 58% compared to 61.3% of students who stayed more than two years; the percentage of "agree" and "strongly agree" of "COVID-19 related adjustment" is 66% compared to 47.4% of students who stayed more than two years. Thus, Hypothesis 8 is not supported.

Table 10.

Frequencies of "Impact on Daily Routine" of Students who Stayed less than Two Years and more than Two Years

	Less than 2 Years		More than 2 Years	
	Frequency	Percent	Frequency	Percent
Strongly Disagree	6	6%	3	2.2%
Disagree	11	11%	14	10.2%
Neutral	34	34%	21	15.3%
Agree	36	36%	66	48.2%
Strongly Agree	13	13%	33	24.1%
Total	100	100%	137	100.0%

Z=11.462, p=.001

Hypothesis 9. H9 posited a positive association between the impact on daily routine and one's increased feeling of stress/anxiety/depression. This hypothesis was examined via linear regression using stress/anxiety/depression change as the dependent variable. Results are provided in Table 11.

Analysis showed that there was a significant positive association between impact on daily routine and stress change (β = .413, p < .01), anxiety change (β = .372, p < .01), and depression change (β = .298, p < .01). However, the predicted variance is low for all three regression. This result demonstrates that for those who report their daily routine being influenced by the pandemic, they are also more likely to feel more stressful, anxious, and depression during the pandemic. The hypothesis is supported.

Table 11

Linear Regression of Daily Routine Impact and Stress/Anxiety/Depression Change

	B	SE B	ß	R	R^2 adjusted	p value
Stress Change	.428	.062	.413	.413	.167	P<.001
Anxiety Change	.394	.064	.372	.372	.134	P<.001
Depression Change	.359	.075	.298	.298	.085	P<.001

Hypothesis 11. H11 stated a negative association between "COVID-19 related adjustment" and one's increased feeling of stress/anxiety/depression. This hypothesis was examined via linear regression using stress/anxiety/depression change as the dependent variable. Results are provided in Table 12.

Analysis showed that a significant negative association between impact on daily routine and stress change (β = -.449, p < .01), anxiety change (β = -.422, p < .01), and depression change (-.561, p < .01). The results suggest that when respondents are more successful in their pandemic

adjustment, they also tend to be less likely to experience increased stress, anxiety, and depression. The hypothesis is supported.

Table 12

Linear Regression of COVID-19 related Adjustment and Stress/Anxiety/Depression Change

	B	SE B	ß	R	R^2 adjusted	p value
Stress Change	-.449	.071	-.381	.381	.142	P<0.001
Anxiety Change	-.422	.074	-.350	.350	.119	P<0.001
Depression Change	-.561	.082	-.409	.409	.164	P<0.001

5.5.2 Family Mobile Communication. The measure or family mobile communication contains 8 variables: overall family mobile communication frequency, four different family mobile communication technologies frequencies (text and instant message, voice message, audio chat, video chat), family mobile communication satisfaction, mentioning COVID-19 and related issues, and change of family mobile communication frequency. Different means of family mobile communication technologies have varied technological capabilities when it comes to exchanging conversations and interactions. They may also lead to the different choice of technologies and variations in the satisfaction of family mobile communication. RQ3 and RQ4 are completely based on these variables.

Research Question 3. RQ3 asked whether there will be an increase of family mobile communication frequency of Chinese international students as a result of the pandemic. When examining the variable of "family mobile communication frequency change", 49.4% of the participants reported their family mobile communication frequency remained about the same. 35.5% of the participant reported increased frequency and 13.1% reported significantly increased frequency, combining into a total of 48.5%. Only 1.7% and 0.4% of the participants respectively

reported decreased and significantly decreased frequency. For the research question, about half of the students remained with the same family mobile communication frequency while the other half surveyed Chinese international students increased their family mobile communication frequency.

Research Question 4. RQ4 probed the relationship between the frequency of using different family mobile communication technology and students' family mobile communication satisfaction. There appears to be a weak positive correlation between family mobile communication satisfaction and all frequency of different family mobile communication technologies: "text and instant message frequency" ($r=.285$, $p < .01$), "voice message frequency" ($r=.189$, $p < .01$), "audio chat frequency" ($r=.207$, $p < .01$), and "video chat frequency" ($r=.277$, $p < .01$). These results indicate that for all family mobile communication technologies, students who utilize more frequent consumptions also tend to be more satisfied with their family mobile communication.

5.5.3 Family Communication Patterns. Family communication patterns consist conversation and conformity orientation, two of the most important independent variables. Conversation orientation is the degree to which all family members are encouraged to engage in free interaction about various topics. Conformity orientation refers to the degree to which a family obeys familial hierarchy and emphasizes homogeneous ideas. In RQ2, RQ5, RQ6, RQ8, H1, H2, H4, H5, and H6, both conversation orientation and conformity orientation are used as continuous variables. In RQ1, H3, H12, and H13, the two orientations are each separately divided into high level and low level.

5.5.4 Mental Well-Being. This measurement uses Depression Anxiety Stress Scales-21 to separately measure the prevalence of symptoms of depression, anxiety, or stress over the previous week. Depression, anxiety, and stress are treated as three dependent variables.

5.5.5 Family Communication Patterns and COVID-19 related Influences and Adjustment. Family communication is especially important during risky times like the COVID-19 pandemic for Chinese international students who are studying in the United States. Scoring high in conversation orientation enables respondents to openly talk about challenging situations and share their feelings, which can be essential for negotiating a successful adjustment to the pandemic and maintaining their mental health. For respondents from conformity orientation families, they tend to put family relationship before personal feelings and feel obliged to obey parents' suggestions. H5 and H10 explore the relationship between conversation orientation and COVID-19 related influences and adjustment. RQ6 and H6 discuss how conformity orientation is related to COVID-19 related influences and adjustment.

Research Question 6. RQ6 asked about whether conformity orientation is associated with concerns for families back in China. This hypothesis was examined via linear regression using "worry about families back home" as the dependent variable. Results are provided in Table 13.

Analyses indicated no significant effect for the association between conformity orientation and "worry about families back home" (β = .126, p = .253). Thus, conformity orientation does not affect one's worried feelings for their families in China.

Table 13

Linear Regression of Conformity Orientation and Worry about Families back Home

	B	SE B	ß	R	R^2 adjusted	p value

Conformity Orientation	.126	.110	.075	.075	.001	.253

Hypothesis 5&6. H5 posited a positive association between conversation orientation and the COVID-19 related adjustments. H6 stated a negative association between conformity orientation and the COVID-19 related Chinese international students' adjustments. This hypothesis was examined via linear regression using "COVID-19 related adjustment" as the dependent variable. The results are provided in Table 14.

Analyses showed no significant effect for the association between neither conversation orientation and COVID-19 related adjustment (β = .044, p =564), nor conformity orientation and COVID-19 related adjustment (β = -.049, p =.548). Thus, Chinese international students' family communication orientations do not affect one's pandemic related adjustments. Both hypotheses are not supported.

Table 14

Linear Regression of Conversation Orientation and COVID-19 Related Adjustment

	B	SE B	ß	R	R^2 adjusted	p value
Conversation Orientation	.044	.075	.038	.038	-.003	.564
Conformity Orientation	-.049	.081	-.039	.039	-.003	.548

Hypothesis 10. H10 stated a negative association between conversation orientation and one's increased feeling of stress/anxiety/depression. This hypothesis was examined via linear regression using stress/anxiety/depression change as the dependent variable. Results are provided in Table 15.

Analysis showed a non-significant negative association between impact on daily routine and stress change (β = -.015, p =.821), anxiety change (β = -.044, =.501), or depression change (β = -.119, p =.067). The results means that whether one scores high or low on their conversation orientation does not interfere with their feeling increased of stress/anxiety/depression during the pandemic. The hypothesis is not supported.

Table 15

Linear Regression of Conversation Orientation and Stress/Anxiety/Depression Change during the Pandemic

	B	SE B	ß	R	R^2 adjusted	p value
Stress Change	-.020	.089	-.015	.015	-.004	.821
Anxiety Change	-.061	.091	-.044	.044	-.002	.501
Depression Change	-.189	.103	-.119	.119	.010	.067

5.5.6 Family Communication Patterns and Family Mobile Communication. Families tend to choose varied frequencies and technologies of mobile communication to fulfill differentiated needs and reinforce their orientations. Different family communication patterns can influence the diversity of topics and satisfaction for Chinese international students. RQ1, RQ2, RQ5, H1, H2, H3, H4 discuss the relationship between family communication patterns and family mobile communication. RQ1 probes the relationship between the two orientations and frequencies of different family mobile communication technologies. RQ2, H1, and H4 are about conversation orientation. RQ5, H2, and H3 discuss conformity orientation.

Research Question 1. RQ1 asked about the relationship between family communication patterns and the different frequency of family mobile communication technologies. All four technology items passed collinearity diagnostics (Tolerance>.1, VIF<10), test of parallel lines (p>.05), and

model fitting test (p<.05) as shown in Table 16. RQ1 is then examined via ordinal logistics regression as presented in Table 17. Family communication patterns levels are the independent variables. The four family mobile communication technologies frequencies are the dependent variables.

According to the results, there is a significant positive relationship between conversation levels and all four technologies frequency. For text and instant message frequency, the OR of high conversation level is 3.99 times as the OR of low conversation level (95CI: 2.402-6.629) which indicates that Chinese international students who are of high conversation level exhibit higher text and instant message frequency (χ^2=28.549, P<.001). For voice message frequency, the OR of high conversation level is 2.414 times as the OR of low conversation level (95CI: 1.469-3.968) which indicates that Chinese international students who are of high conversation level exhibit higher voice message frequency (χ^2=12.095, P=.001). For audio chat frequency, the OR of high conversation level is 3.959 times as the OR of low conversation level (95CI: 2.381-6.585) which indicates that Chinese international students who are of high conversation level exhibit higher audio chat frequency (χ^2=28.106, P<.001). For video chat frequency, the OR of high conversation level is 2.792 times as the OR of low conversation level (95CI: 1.701-4.581) which indicates that Chinese international students who are of high conversation level exhibit higher video chat frequency (χ^2 =16.509, P<.001).

There is a significant positive relationship between conformity orientation and audio chat frequency. The OR of high conformity level is 1.929 times as the OR of low conformity level (95CI: 1.187-3.135) which indicates that Chinese international students who are of high conformity level exhibit audio frequency (χ^2=7.023, P=.008) during family mobile communication.

These results demonstrate that Chinese international students of high conversation orientation level engage in higher frequencies of all four family mobile communication technologies compared to those who are of low level conversation orientation. As for conformity orientation, high level conformity respondents engage in more frequent audio chats with their families compared to low level ones. Conversation orientation level are more important predictors when it comes to the choice and frequency of different family mobile communication technologies for Chinese international students in the United States.

Table 16

Collinearity Diagnostics, Test of Parallel Lines, Goodness of Fit, and Model Fitting Test for Ordinal Logistics Regression of RQ1

	Collinearity Diagnostics		Test of Parallel Lines		Model Fitting	
	Tolerance	VIF	χ^2	p	χ^2	p
Text & Instant Message Frequency	.913	1.095	10.927	.363	35.782	P<.001
Voice Message Frequency	.911	1.098	18.066	.054	13.685	.001
Audio Chat Frequency	.913	1.096	12.139	.276	31.559	P<.001
Video Chat Frequency	.913	1.096	4.444	.925	17.456	P<.001

Table 17

Ordinal Logistics Regression of Family Communication Patterns Levels and Family Mobile Communication Technologies Usage Frequency

Parameter	B	SE	χ^2	p	OR	95CI

Text & Instant Message Frequency	High Conv Level	1.384	0.260	28.549	P<.001	3.990	2.402-6.629
	Low Conv Level	0	——	——	——	——	——
	High Conf Level	-0.200	0.244	0.673	0.412	0.819	0.508-1.320
	Low Conf Level	0	——	——	——	——	——
Voice Message Frequency	High Conv Level	0.881	0.253	12.095	0.001	2.414	1.469-3.968
	Low Conv Level	0	——	——	——	——	——
	High Conf Level	0.474	0.248	3.664	0.056	1.606	0.989-2.610
	Low Conf Level	0	——	——	——	——	——
Audio Chat Frequency	High Conv Level	1.376	0.260	28.106	P<.001	3.959	2.381-6.585
	Low Conv Level	0	——	——	——	——	——
	High Conf Level	0.657	0.248	7.023	.008	1.929	1.187-3.135
	Low Conf Level	0	——	——	——	——	——
Video Chat Frequency	High Conv Level	1.027	.253	16.509	P<.001	2.792	1.701-4.581
	Low Conv Level	0	——	——	——	——	——
	High Conf Level	.197	.244	.653	.419	1.218	.755-1.965
	Low Conf Level	0	——	——	——	——	——

Research Question 2. RQ2 asked about the relationship between Chinese international students' conversation orientation and overall family mobile communication frequency. RQ2 is examined via linear regression with conversation orientation as the independent variable and family mobile communication frequency as the dependent variable in Table 18.

Analyses indicated that there was a significant positive effect for the association between family conversation orientation and family mobile communication frequency, $\beta = .423$, $p < .01$. Therefore, 17.5% of the variance in family mobile communication frequency can be predicted from the variable of conversation orientation. When Chinese international students are on the

higher end of conversation orientation, they tend to have more frequent family mobile communication.

Table 18

Linear Regression of Conversation Orientation and Family Mobile Communication Frequency

	B	SE B	ß	R	R^2 adjusted	p value
Conversation Orientation	.691	.097	.423**	.423	.175	P<.001

**p < .01, two-tailed.

Hypothesis 1. H1 stated that there will be a positive association between conversation orientation and students' family mobile communication satisfaction. This hypothesis was examined via linear regression using family mobile communication satisfaction as the dependent variable. The results are provided in Table 19.

Analyses indicated that there was a significant effect for the association between family conversation orientation and family mobile communication satisfaction (β = .378, p < .01). Therefore, 16.1% of the variance in family mobile communication frequency can be predicted from the variable of conversation orientation. Thus, higher conversation orientation does leads to Chinese international students' feeling more satisfied with their family mobile communication, though the effect size is small. The hypothesis is supported.

Table 19

Linear Regression of Conversation Orientation and Family Mobile Communication Satisfaction

	B	SE B	ß	R	R^2 adjusted	p value
Conversation Orientation	.378	.056	.405**	.405	.161	.000

**p < .01, two-tailed.

Hypothesis 4. H4 posited that conversation orientation has a positively association with talking about COVID-19 related issues in family mobile communication. This hypothesis was examined via linear regression using "mentioning COVID-19" as the dependent variable. Results are provided in Table 20.

Analyses showed that, unlike the hypothesis, there is no significant effect for the association between conversation orientation and "mentioning COVID-19" (β = 139, p =.06). The result means that the conversation orientation of respondents has nothing to do with their frequency of mentioning COVID-19 and related issued in their family conversations. The hypothesis was not supported.

Table 20

Linear Regression of Conversation Orientation and Mentioning COVID-19

	B	SE B	ß	R	R^2 adjusted	p value
Conversation Orientation	.157	.083	.122	.122	.011	.060

Research Question 5. RQ5 asked about the association between conformity orientation and talking about COVID-19 related issues in family mobile communication. This hypothesis was examined via linear regression using "mentioning COVID-19" as the dependent variable. Results are provided in Table 21.

Analyses indicated no significant effect for the association between conformity orientation and "mentioning COVID-19" (β = -.017, p =.853). Thus, conformity orientation does

not affect one's frequency of talking about pandemic related matters during family conversations.

Table 21

Linear Regression of Conformity Orientation and Mentioning COVID-19

	B	SE B	ß	R	R^2 adjusted	p value
Conformity Orientation	-.017	.091	-.012	.012	-.004	.853

Hypothesis 2. H2 stated that there will be a negative association between conformity orientation and students' family mobile communication satisfaction. This hypothesis was examined via linear regression using family mobile communication satisfaction as the dependent variable. The results are provided in Table 22.

Analyses indicated that there was a significant negative association between family conformity orientation and family mobile communication satisfaction (β = -.201, p =.002). However, only 3.6% of the variance in family mobile communication frequency can be predicted from the variable of conformity orientation. According to the result, the higher one scores on conformity orientation, the lower his or her satisfaction for family mobile communication is likely to be. The hypothesis is supported.

Table 22

Linear Regression of Conformity Orientation and Family Mobile Communication Satisfaction

	B	SE B	ß	R	R^2 adjusted	p value
Conformity Orientation	-.201	.064	-.201**	.201	.036	.002

**p < .01, two-tailed.

Hypothesis 3. H3 proposed that for high-conformity-level students, more frequent family mobile communication leads to lower family mobile communication satisfaction. This hypothesis was examined via linear regression using family mobile communication satisfaction as the dependent variable with split data of low and high conformity levels. The results are provided in Table 23.

Analyses showed that unlike the hypothesis, for both low and high conformity level students, the increase in family mobile communication frequency predicts higher satisfaction. High conformity level (β = .188, R^2 =.092, p < .01) even have a bigger effect than low conformity level (β = .139, R^2 =.060, p < .01). The results show that for Chinese international students, no matter high or low levels they score on conformity orientation, the more frequently they engage in family mobile communication, the higher their satisfaction will be. The hypothesis was not supported.

Table 23

Linear Regression of Conformity Orientation and Family Mobile Communication Satisfaction for Low and High Conformity Levels

	B	SE B	ß	R	R^2 adjusted	p value
Low Conformity Level	.139	.047	.260**	.260	.060	.004
High Conformity Level	.188	.053	.361**	.316	.092	.001

**p < .01, two-tailed.

5.5.7 Family Communication Patterns and Mental Well-Being. Family communication patterns are essential for the psychological development and mental well-being for Chinese international students. While conversation orientation can act as protective factor against mental distress and lead to positive psychosocial outcomes, the effect of conformity orientation is more complicated. RQ8 studies the relationship between conversation orientation and all three mental distresses of stress, anxiety, and depression. H12 and H13 tend the matters of whether conformity orientation is related to anxiety and depression symptoms.

Research Question 8. RQ8 asked whether conversation orientation is positively related to Chinese international students' mental well-being, thus, negatively related to mental distress of stress, anxiety, and depression. This hypothesis was examined via linear regression using stress/anxiety/depression as the dependent variable. Results are provided in Table 24.

Analysis showed a significant negative association between conversation orientation and stress (β = -2.389, p =.005), anxiety change (β -2.173, p =.003), or depression change (β = -3.515, p < .001). However, the R^2 is small. Conversation orientation of Chinese international students is negatively related to their reported stress/anxiety/depression. The results indicate the higher Chinese international students score on conversation orientation, the less likely that they suffer from stress/anxiety/depression symptoms. Thus, conversation orientation can act as a positive predictor for their mental well-being.

Table 24

Linear Regression of Conversation Orientation and Stress/Anxiety/Depression

	B	SE B	ß	R	R^2 adjusted	p value
Stress	-2.389	. 839	-.184	.184	.030	.005
Anxiety	-2.173	.727	-.192	.192	.033	.003

Depression	-3.515	.844	-.264	.264	.065	P<.001

Hypothesis 12. H12 stated low conformity level predict greater depression in Chinese international students compared to high conformity level. This group depression difference between low conformity level and high conformity level was examined by Kruskal-Wallis test. There is a significant difference between low conformity level and high conversation level, p =.019. However, those of high conformity level report a higher depression score (N=113, M=13.310, SD=11.603) than that of low conformity level (N=121, M=9.636, SD=9.011). According to the result, Chinese international students of high conformity level suffer more from depression compared to those of low conformity level. The hypothesis is not supported.

Hypothesis 13. H13 stated high conformity level predicts greater anxiety in Chinese international students compared to low conformity level. This group anxiety difference between low conformity level and high conformity level was examined by Kruskal-Wallis test. There is a significant difference between low conformity level and high conversation level, p =.001. Chinese international students of high conformity level report a higher anxiety score (N=113, M=11.522, SD=9.696) than that of low conformity level (N=121, M=7.508, SD=7.529). The results show that low conformity level of Chinese international students also tend to score lower on anxiety score. High conformity level, on the other hand, predicts greater anxiety symptoms. The hypothesis is supported.

5.6 Overview of Results

According to the COVID-19 related influences and adjustment section results, a large portion of Chinese international students report aggravated mental distress levels. Unlike expected, newcomers report experiencing less severe daily routine and regular study influence than those who stayed over two years. They also perform more successful adjustments to

COVID-19 and related challenges. Newcomers may be impacted less and adjust better as they did not build a stable life routine. The impact on daily routines is a positive predictor of respondents' feeling more stressed/anxious/depressed than usual, while better adjustments to the pandemic being a protective factor.

Research questions and hypotheses probed the relationship between family communication patterns and students' reported influences and adjustment to the pandemic. Unlike our research questions and hypotheses suggested, neither conversation nor conformity orientation has any statistically significant relationship with various COVID-19 related influences and adjustment dimensions.

Half of the Chinese international students increased their family mobile communication during the pandemic compared to regular times. The family mobile communication satisfaction is positively correlated with all four family mobile communication technologies' usage frequencies, including text and instant message, voice message, audio chat, and video chat. Conversation orientation positively predicts each of the following variables: usage frequency of all four technologies, overall family mobile communication frequency, and satisfaction of family mobile communication. Conformity orientation positively predicts the usage frequency of audio chats and negatively predicts family mobile communication satisfaction. Neither conversation orientation nor conformity orientation is associated with talking about COVID-19 related issues in family mobile communication. The hypothesis that more frequent family mobile communication leads to lower family mobile communication satisfaction for Chinese international students of high conformity orientation level is being rejected. More frequent family mobile communication leads to higher family mobile communication satisfaction, regardless of one's conformity orientation level.

Results also show that conversation orientation can be an efficient protective factor for mental well-being. The conversation orientation of Chinese international students is negatively related to their reported stress/anxiety/depression. The hypothesis that a low conformity level predicts more significant depression is being rejected as for conformity orientation. A high conformity level predicts both anxiety and depression.

CHAPTER 6

DISCUSSION, LIMITATIONS, AND CONCLUSION

This thesis set out to fill in the gap in how the Chinese international student population is dealing with COVID and its related issues and how their family mobile communication and mental well-being status changes. The study examined how Chinese international students' family communication patterns can be used to understand their choice, frequency, and satisfaction of family mobile communication during the pandemic. This work also studied their reported experience of COVID-19 influences and adjustment and how these changes fit into the context of their family communication and mental well-being. This chapter will highlight the key results, discuss the potential limitations of the work, and address the study's future implications.

6.1 Discussion

6.1.1 Observation about COVID-19 Related Influences and Adjustment. The research regarding how the pandemic has influenced Chinese international students remains underexplored. There is an urgent need for further research to shed light on the depth and extent of the impact and the coping measures of Chinese international students, especially regarding their mental health (Chen et al., 2020; Zhai & Du, 2020). This study showed that, on the whole, Chinese international students in America are suffering from all aspects of COVID-19 related influences.

Respondents report the highest scores in the items of "fear for contracting COVID-19" and "hard to go back home." This result is in line with the restricting travel bans enforced during the pandemic (Hu et al., 2020; Ma & Miller, 2020; Ma et al., 2020). The fear points to more

significant perceived risks regarding long-distance travel and the uneasy journey back home. Those who report a greater fear of contracting the virus also score higher in all other influence items, including the impact of daily routine/study and worry about families, experience more severe mental distress changes, and perform less successful adjustment of the pandemic. This finding suggests that it is necessary to reduce their fear level and counterbalance the negative impact of COVID-19 on their daily lives and their mental health. Thus, up-to-date information, social support, and actively carrying out precautionary measures are needed. For Chinese international students, the school system is the primary source of their information and social bonding. When students take in-person classes and access public services such as dining halls, dormitories, and bus systems, schools' strict carrying out of social distancing rules and meticulous precautionary sanitation measures can bring students peace of mind.

As the result in RQ7 suggests, a large portion of Chinese international students' mental well-being suffers from the pandemic, and they report increased mental distress levels. The impact on daily routines and study habits is positively related to students feeling more stressed/anxious/depressed than usual. On the other hand, as supported in H11, students who report better adjustments to the pandemic do not feel more stressed, anxious, and depressed. International student services need to approach international students, hear them out about their predicaments, act out corresponding coping measures, and lead adjustment and mental health suggestions or sessions.

Chinese international students new to America report less stress on daily routines and their studies from the pandemic and are more successful in their COVID-19 related adjustments than those who stayed in the United States over two years. Existing literature underscores the cultural shock and acculturation stress that newcomers of international students experience and

the accompanying physical and psychologic changes (Berry, 2005, Yan & Berliner, 2011). This study's results may stem from the lack of social contact for Chinese international students who just arrived in America (Oberg, 1960). The study's survey was hand out a year after COVID-19 emerged. Chinese international students who are new to the United States may not have had a chance to navigate their new environment and establish their life and study routine before the quarantine began and everything shifted to online mode. The adjustment to the pandemic might become part of their acculturation process. On the other hand, those who stayed in America for more than two years report that their daily routine and study were more disrupted than before the pandemic.

6.1.2 Observation about Family Mobile Communication. For transnational families, appropriating different means of family mobile communication can be vital during the pandemic, when physical travel becomes inaccessible. According to news stories and research results, WeChat has been considered the emotional lifeline for Chinese international students and their families (Fischer, 2020; Lu, 2020). This study aims to fill in the lacking of attention and research regarding how Chinese international students in America utilized different means of family mobile communication technologies during the COVID-19 pandemic.

Text and instant messages are the most frequently practiced means of family mobile communication for the study's participants. A quarter of the participants exchange text or instant family messages once a day or more frequently. Over half of the surveyed Chinese international students have audio or video chats with families at least 1-2 times a week. The use of voice messages is the least preferred.

Almost all surveyed Chinese international students report talking about COVID-19 and related issues in their family mobile communication. Over 20% of the population mention

COVID-19 in almost every conversation with their family members. This result suggests that concern about the pandemic is common and massive. Families frequently talk about the issues that disrupt their routine of life and sense of security. While most Chinese international students either attend online or hybrid classes, it is hard for them to establish a support network locally. Thus, family communication becomes the best arena for them to talk about their concerns.

RQ3 suggested that nearly half of Chinese international students increased their family mobile communication since the pandemic outbreak. Interestingly, the fear level for COVID-19 has a positive correlation with voice message frequency, mentioning COVID-19 related issues and increase in family mobile communication frequency. Worrying about families back home positively correlates with voice message frequency, video call frequency, and increased family mobile communication frequency. When students report hard to go back home, they also mention pandemic information more frequently. These findings correspond with previous literature that during the pandemic's international immobility, Chinese international students and their families back home need timely communication and functioning adjustments to navigate the unprecedented levels of risks compared to regular times (Hu et al., 2020, Ma, 2020). These findings can also add to the literature on the importance of family communication during challenges. Talking regularly about the challenges with loved ones can be an essential means to deal with demanding situations.

It is essential to highlight the preliminary zero-order correlation findings where stress/anxiety/depression changes and overall impact from COVID-19 are each positively correlated with discussing COVID-19 related issues and increased family mobile communication frequency. The reason for this result could be that with high fear levels, disrupted daily routine

and study, and experiencing heightened stress/anxiety/depression, Chinese international students use family mobile communication to acquire reassurance and parental support from back home.

Voice messages and video chats are both content-rich technology and can shape a sense of co-presence. While voice messages are asynchronous and non-interruptive, they can bring intimacy without the need to respond immediately and regardless of the time difference between China and America. Though needing both parties to be present simultaneously, video chat provides the richest content and the chance of real-time interactivity. The current study's findings support previous research that synchronous communication is preferred in maintaining close relationships (Jin & Park, 2010). Frequent conversations can provide needed love, reassurance, and co-presence when families are geographically far apart, especially during risky and challenging times.

The family mobile communication satisfaction rate is surprisingly high. Near three-quarters majority of the participants report either satisfied or extremely satisfied with their family mobile communication. Near one-quarter of the respondents expressed neutral feelings, and only six students reported dissatisfaction. RQ4 shows positive correlations between family mobile communication satisfaction and all frequency of different family mobile communication technologies. The overall family mobile communication frequency is also positively correlated with family mobile communication satisfaction. These results could have two implications: more frequent communication, no matter the technology used, contributes to students' satisfaction. Those who are more satisfied with their family mobile communication tend to have more frequent family conversations. Either way, the critical association between family mobile communication frequency and satisfaction is worth noting in parent-child communication. Future research can look into the causal relationship between communication frequency and

satisfaction. It would also be worthwhile to study the exact reasons behind the neutral feelings and dissatisfaction of Chinese international students' family mobile communication.

6.1.3 COVID-19 Related Influences and Adjustment and Family Mobile Communication. There are several important findings in zero-order correlation. When Chinese international students discuss COVID-19 more frequently in family mobile communications, they also exhibit higher fear of contracting the virus, feel hard to go back home, experience higher overall impact, and suffer from more severe stress/anxiety/depression change.

The overall family mobile communication frequency positively correlates with impact on study, fear for the virus, worry for families, increased feelings of stress/anxiety/depression, and more severe overall pandemic impact. This result indicates that families have frequent conversations to exchange necessary information during the pandemic, navigate possible solutions, and provide emotional support. When students are in heightened psychological distress, they tend to seek parental support. This is in line with previous research about family communication behaviors during perilous times (Hu et al., 2020; Liu et al., 2020; Ma, 2020).

One interesting finding is that when students experience an impact on their studies, they tend to report lower family mobile communication satisfaction. This is possibly due to the great emphasis that Chinese parents pay to their children's education (Bodycott, 2009). When the pandemic influences Chinese international students' study, they are under academic and emotional stress and more prone to engage in conflicts with their parents.

6.1.4 Observation about Gender Differences. Gender can be an essential factor influencing behavioral change, family communication, stress and coping process, and mental distress status, especially during the pandemic (Golonka, 2013; Browning et al., 2020; Chakraborty, 2020; Romero-Blanco et al., 2020; Van der Vegt & Kleinberg, 2020). Multiple linear shows that

gender being the strongest predictor for overall COVID-19 influence, overall family mobile communication frequency, and family mobile communication satisfaction.

This study shows that females are more fearful of contracting COVID-19 and exhibit increased stress and anxiety compared to male Chinese international students. This finding can be partly explained by Felmingham et al.'s (2010) research that males and females differ in their ways of fear processing, and this disparity can translate into exacerbations of mental distress. Felmingham et al. (2010) also argue that there could be higher pre-existing psychopathology levels in women. However, though there are variations between genders in stress and anxiety change, this study did not find a significant gender difference in depression, anxiety, and stress symptoms. The results did not present any significant gender difference in impact on daily routine and study. Nevertheless, the overall score difference tells that females are more vulnerable to COVID-19 related challenges. Female Chinese international students also tend to worry more about their families back home.

The significant difference between family mobile communication frequency of male and female Chinese international students is worth noting. 11.9% of females communicate with their families several times a day compared to only 4.1% of males; 20.9% of females communicate with their families about once a day compared to 13.3% of males. Females also show higher satisfaction for their family mobile communication. This finding poses future research directions for whether this difference in communication frequency is shaped by the gender norms that males should not express too many personal feelings, even to their family members.

6.1.5 Observation about Family Communication Patterns. In this study, both conversation orientation (M=3.377, SD= .784) and conformity orientation (M=2.942, SD= .726) are split by the mean value into two high and low levels. Conversation orientation scores are mostly higher

in other research where the population is predominantly Caucasian emerging adults, while conformity orientation scores are about the same (Aloia, 2019; Rudi et al., 2015; Wang et al., 2018; Schrodt et al., 2009). The conversation and conformity orientation scores for Chinese international students in the United States are similar to that of Shearman & Dumlao's (2008) American samples. In Shearman & Dumlao's (2008) study, for both conversation and conformity orientation, American young adults (conversation: M = 3.23, SD = .72; conformity: M = 2.85, SD = .64) report significantly higher scores than Japanese young adults (conversation: M = 2.91, SD = .64; conformity: M = 2.34, SD = .62). Preliminary results show that high and low conversation orientation levels respectively take up 55.3% and 44.7%. High and low levels of conformity orientation respectively take up 48.5% and 51.5% of the population.

The moderate negative correlation between conversation orientation and conformity orientation corresponds with previous studies (Koerner & Fitzpatrick, 1997; Greene et al., 2014; Sillars et al., 2014). The meta-analysis of Keating (2016) indicates an inverse conversation-conformity relationship. This negative correlation suggests that most families would be higher on one dimension than the other (Keating, 2016). Future research should examine family communication patterns difference between Chinese international students and their counterparts back home and how they vary in their daily family communication behaviors.

6.1.6 Family Communication Patterns and COVID-19 Impacts. In the research questions and hypotheses, this study expected to find a negative relationship between conversation orientation and COVID-19 related influences in H5 and a positive relationship between conformity orientation and COVID-19 related influences in H10. However, the two hypotheses predicting a positive relationship between conversation and COVID-19 related adjustments and the negative relationship between conversation and Chinese international students' increased feeling of being

stressed/anxious/depressed than usual are both rejected. The results, contrary to expectation, showed no protective effect of conversation orientation against the COVID-19 related challenges and adjustment. Even for students who come from family backgrounds that support open conversations and express feelings, the pandemic's challenges still have adverse effects on their physical and mental status.

In RQ6, this study found no significant relationship between conformity orientation and worrying about families back home. H6 predicting a negative association between the conformity orientation and the COVID-19 related adjustments is also being rejected. The results showed positive correlations between conformity orientation and the following COVID-19 related influence items: impact on daily routine, impact on study, stress change, anxiety change, depression change, and the overall pandemic impact. The finding regarding conformity orientation and COVID-19 specific influences supports previous studies of conformity orientation leading to various adverse behavioral and psychological outcomes (McLeod et al., 1972; Koerner & Fitzpatrick, 1997; Huang, 1999; Zhang, 2007; Sillars et al., 2005; Shimkowski, 2016; Odenweller & Harris, 2018).

As a crisis for families, the pandemic requires open conversations about challenging situations and emotional sharing to negotiate successful transformation to new scenarios. Though conversation orientation did not show significant protective efforts towards the challenge of the pandemic, conformity orientation did appear to be correlated with the experience of more severe influence from the pandemic both physically and mentally. High-conformity families may value family hierarchy over personal feelings and thus hinder their children's opportunity to talk about their problems and relieve the stress due to the severe changes. When conformity orientation families shy away from open conversations about challenging situations, they fail to foster young

family members' resilience. Chinese international students growing up in conformity families may be more sensitive to changes in their lives. When life-changing events like the pandemic happen, they tend to suffer from more short-term phycological distresses.

6.1.7 Family Communication Patterns and Family Mobile Communication. Conversation orientation positively predicts family mobile communication satisfaction and frequency of all technologies. Conformity orientation negatively predicts family mobile communication satisfaction and is only positively associated with audio chat frequency. These results demonstrate that family communication orientation influences family communication behaviors and outcomes (Koerner & Cvancara, 2002). Families of conversation orientation value frequent interactions, diverse topics, and personal feelings. Families of conformity orientation, on the other hand, control personal views and disregard personal feelings. Thus, these different communication habits and behaviors lead to the different satisfaction levels of Chinese international students.

Unlike expectation, neither conversation nor conformity orientation is related to mentioning COVID-19 and family mobile communication frequency change. These are two possible explanations. One is that family communication patterns are relatively stable, while family mobile communication is also formed through long-term negotiation. The other is that unusual times and challenges influence information exchange and communication frequency in family conversations no matter the respondents' family communication patterns.

6.1.8 Observation about Mental Well-Being. Mental well-being items, including depression, anxiety, and stress, are the most important outcome variables in the study. Various studies provided vital evidence that the pandemic can cause severe mental illness in all populations (Talevi et al., 2021; Serafini et al., 2020; Tasnim et al., 2020; Tang et al., 2020; Liu et al., 2020).

This study shows that surveyed Chinese international students in the United States respectively suffer from depression (47.7%), anxiety (49.4%), and stress (35.9%). The high prevalence of psychological distress in the population corresponds with previous research about Chinese international students (Lu et al., 2014; Liu et al., 2019; Xu et al., 2020; Wei et al., 2007; Zhang & Goodson, 2011). The extremely severe rate of depression (12.2%) and anxiety (13.5%) is especially alarming. Without timely and proper interference and treatment, these students can develop detrimental behaviors and outcomes.

Strong significant correlations exist among all three mental distresses. These correlations indicate that depression, anxiety, and stress may often be co-occurring. When putting mental well-being variables together with stress/anxiety/depression change variables during the pandemic, the results show another critical picture. Chinese international students who have existing mental distress symptoms are more susceptible to suffer from increased psychological distress.

According to previous research, stress is significantly associated with anxiety and depression symptoms (Bergdahl & Bergdahl, 2002; Fan et al., 2015; Kurebayashi et al., 2012). Gorman (1996) reports that anxiety and depression are often co-occurring symptoms: comorbid anxiety happens in 85% of depression patients, while comorbid depression occurs in 90% of anxiety patients. When Chinese international students are diagnosed with one existing mental illness, they are likely to suffer from multiple mental illnesses. They also tend to experience more severe mental challenges and develop aggravated symptoms due to the pandemic. This complicated and fragile nature of mental distresses should be called to the attention of parents, school systems, health experts, and decision-makers.

When examining COVID-19 related influence and adjustment, there are also other findings worth highlighting. Mental well-being variables and stress/anxiety/depression changes are all positively correlated with overall COVID-19 impact and negatively correlated with COVID-19 adjustment. On the one hand, the results show that students with existing mental complications are more vulnerable to the impact of the pandemic and are less successful in adjusting themselves. On the other hand, this underscores the importance of resilience and adaptive coping strategies. When students are equipped with better adaptive mindsets and tools, they are less likely to suffer from mental illness, whether in the short-term or the long run.

For the relationship between family communication patterns and mental well-being of Chinese international students in America, conversation orientation is negatively associated with all three mental distress while conformity orientation is positively associated. The results highlight the importance of healthy family communication and are in accordance with Schrodt et al.'s (2007) finding that family communication patterns are significant predictors for mental well-being. The way families communicate is essential for emerging adults' psychological development. When families promote open and equal conversations and allow for personal feelings to flow, they also nurture the sense of warmth, connectedness, and resilience of the children. In times of difficulty, while parental support becomes incredibly significant, these robust characteristics can also protect emerging adults against mental health degradation.

6.2 Limitations and Future Research

One chief limitation of this study concerns the length of the survey. Though the survey takes only 10 to 15 minutes to complete, it contains 71 questions. The survey link is distributed through WeChat and provides Chinese international students the convenience of accessing the survey on cell phones. Answering questions and clicking for the next ones on small screens can

lead to missing questions or accidental exits. It also makes it hard to resume the questionnaire once they got interrupted in the process. While the survey has 394 total accesses, there are only 237 valid and complete responses. Nearly 40% of all respondents either did not finish the surveyor left out multiple questions. Another limitation is that as the thesis already have a relatively large number of variables, the author had to choose to leave out some of the variables, for example, how often do the students and their parents initiate mobile communications, and separate satisfaction rate towards students' communication with their fathers and mothers.

Future research might survey both the children and parents to gather their different perceptions of family communication patterns and family mobile communication behaviors. It may be particularly beneficial to do qualitative research on family communication, COVID-19 influence, and Chinese international students' adjustments in America during the pandemic. Probing the details of their life, mental, and communication change might provide more significant insights.

One possible research direction could be how parents perceive their children's mental well-being. Physically separated and communicating via technologies, how accurately they can identify their children's mental status is worth studying. Seeking professional psychological help is still not deemed a common thing to do in China. With the severity of mental health problems for Chinese international students, it is essential to study how their parents, who are their primary providers, see and understand their mental well-being issues.

Despite the limitations mentioned above, this study provides valuable insights regarding how family communication patterns influence family mobile communication, COVID-19 related influences and adjustment, and the mental well-being of Chinese international students in America during the pandemic.

6.3 Conclusion

This thesis aimed to obtain valued insight into the importance of healthy family communication and its role in Chinese international students' mental well-being. The relationship between family communication patterns, COVID-19 related influences and adjustment, family mobile communication, and mental well-being were examined via a self-report survey. The study utilized zero-order correlation, linear regression, multiple linear regression, and ordinal logistics regression to analyze obtained data.

Communication plays a vital part in how families are based on, formed, and maintained. For emerging adults, positive family communication can provide them with good social support and higher coping skills during stressful times like the pandemic. When they go through challenging times and unexpected life events, parental support, parent-child connectedness, and resilience built through family communication become their most important reservoir of strength. For Chinese international students who study in the United States, family communication patterns, the most significant independent variables in this thesis, influence how they enact their family mobile communication, handle COVID-19 related influences and adjustment, and, most importantly, how their long-term mental well-being status is. When they are stranded in quarantine situations, the multiple overwhelming stressors can severely impact their daily lives and mental status. It is imperative to ensure that they can openly talk about the pandemic-related problems, freely express their feelings and fear, and attain the parental support they need during this challenging time in their interactions with family members. However, not all families are equipped with the ability to carry out positive and effective family communication, especially when they are geographically apart and need to deal with a global pandemic.

The two orientations of conversation orientation and conformity orientation influence family mobile communication behaviors and are key predictors for Chinese international students' COVID-19 related influences and mental distress in the United States. This study found significant results for these constructs like expected. Analyses presented evidence for positive relationships between conversation orientation and family mobile communication satisfaction, overall frequency and frequencies of various technologies, and a negative relationship between conformity orientation and family mobile communication satisfaction. Conformity orientation also tends to positively correlate with multiple pandemic-related influence items, including increased stress/anxiety/depression during the pandemic. The findings shed light on how open and equal communication styles can promote both the frequency and satisfaction of Chinese international students. Simultaneously, conformity orientation, which restricts the topics and emotional sharing, leads to lower satisfaction in their family mobile communication. More importantly, students from families of conformity orientation also tend to suffer more severe COVID-19 related challenges and exhibit aggravated mental distress.

The percentage of Chinese international students suffering from mental symptoms is alarming, especially the extremely severe rate of depression and anxiety. This is consistent with the statistics from American college students' general population that anxiety and depression continue to be the most common general or top concerns experienced by students over the past eight years (CCMH, 2020). Among the 207,818 college students seeking counseling in 2019, there has been a continuous increase in the rates of "threat-to-self," with 36.7% of severe suicidal ideation and 20.6% suicide attempts (CCMH, 2020). The critical mental well-being status of Chinese international students in America requires immediate attention and professional psychological help.

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APPENDIX A

RECRUITMENT LETTER

Dear Students:

I am a graduate student under the direction of Dr. Michael Cacciatore in Grady College of Journalism and Mass Communication at The University of Georgia. I invite you to participate in a research study entitled Family Communication Patterns and Mental Health of Chinese International Students During COVID-19 Pandemic: Examining Effects of Family Mobile Communication. The purpose of this study is to look into the family communication patterns, family mobile communication, and mental wellbeing of Chinese international students.

You're eligible to be in this study if you are of Chinese descent who is currently enrolled as an international student in the US and is above 18 years old.

Your participation will involve filling out an online survey which takes about 20-30 minutes. There are no risks anticipated. If you participate, you will be entered into a drawing for a $50 gift card. You can still be entered into the drawing even if you choose to not participate in the research.

Link to the questionnaire: https://t.co/I9NiqgH8b0?amp=1

If you would like additional information about this study, please feel free to call me at 7064614863 or send an e-mail to xj82697@uga.edu.

Thank you for your consideration!

Sincerely,

Xiaoyu Ji

APPENDIX B

CONSENT LETTER

Dear Participant,

My name is Xiaoyu Ji and I am a graduate student under the direction of Dr. Michael Cacciatore in Grady College of Journalism and Mass Communication at The University of Georgia. I am inviting you to take part in a research study.

The purpose of this study is to look into the family communication patterns, family mobile communication, and mental wellbeing of Chinese international students. You're eligible to be in this study because you are currently enrolled as an international student in the US and is above 18 years old.

If you agree to take part in this study, you will be asked to fill out an online survey via Qualtrics which takes about 20-30 minutes. There are no risks anticipated. You can choose to be entered into a drawing for a $50 gift card in the beginning of the survey whether or not you choose to finish the survey.

Participation in this research is not required to be entered in the drawing for the gift card. If you prefer to not participate in this research but would like to be entered in the drawing, please send an email to xj82697@uga.edu within two weeks of receipt of this invitation to participate.

Participation is voluntary. You can refuse to take part or stop at any time without penalty. There are questions that may make you uncomfortable. You can skip these questions if you do not wish to answer them.

Your responses may help us understand how the mental wellbeing of international students is tied to their family communication patterns and mobile family communication during the COVID-19. The information you provided could be used for future studies without additional consent.

You will be marked by a random study ID that is only used to organize the structure of the data. Your confidentiality will be maintained to the degree permitted by the technology used. Specifically, no guarantees can be made regarding the interception of data sent via the Internet by any third parties.

If you are interested in participating or have questions about this research, please feel free to contact me at 7064614863 or send an e-mail to xj82697@uga.edu. If you have any complaints or questions about your rights as a research volunteer, contact the IRB at 706-542-3199 or by email at IRB@uga.edu.

Sincerely,

Xiaoyu Ji

APPENDIX C

QUESTIONNAIRE

Survey Questionnaire for *Family Communication Patterns and Mental Health of Chinese International Students During COVID-19 Pandemic:*
Examining Effects of Family Mobile Communication

- Part 1: Demographic Information

Age:

__18-20 __21-23 __24-26 __27 and above

Gender:

__Male __Female __Other

Current Education:

__Bachelor __Master __Doctor

How long have you been studying in America?

__less than 1 year __1-2years __3-5years __6+years

How long has it been since you last time back home?

__in 6 months __in one year __1-3 years __3+ years

How many siblings do you have?

__I'm the only child __2 siblings __3+siblings

- Part 2: COVID-19 Related Influences and Adjustment (Self-created)

1=Strongly disagree, 2=Disagree, 3=Neutral, 4=Agree, 5=Strongly agree

1. COVID-19 impacts my daily routines (sleep, diet, exercise)
2. COVID-19 complicates and influences my regular study
3. I am fearful of contracting COVID-19
4. I am worried about my families back in China
5. COVID-19 makes it hard for me to go back to China
6. COVID-19 makes me stress more
7. COVID-19 puts under more anxiety
8. COVID-19 makes me more depressed than usual
9. I have adjusted well to COVID-19 and related complications

- Part 3: Family Communication Patterns (FCPs) (Taken from existing research. I'll mix the two and randomize the order), Ritchie & Fitzpatrick (1990)

1=Strongly disagree, 2=Disagree, 3=Neutral, 4=Agree, 5=Strongly agree

- Conversation Orientation

1) In our family we often talk about topics like politics and religion where some persons disagree with others.

2) My parents often say something like "Every member of the family should have some say in family decisions."

3) My parents often ask my opinion when the family is talking about something.

4) My parents encourage me to challenge their ideas and beliefs.

5) My parents often say something like "You should always look at both sides of an issue."

6) I usually tell my parents what I am thinking about things.

7) I can tell my parents almost anything.

8) In our family we often talk about our feelings and emotions.

9) My parents and I often have long, relaxed conversations about nothing in particular.

10) I really enjoy talking with my parents, even when we disagree.

11) My parents encourage me to express my feelings.

12) My parents tend to be very open about their emotions.

13) We often talk as a family about things we have done during the day.

14) In our family, we often talk about our plans and hopes for the future.

15) My parents like to hear my opinion, even when I don't agree with them.

- Conformity Orientation

1) When anything really important is involved, my parents expect me to obey without question.

2) In our home, my parents usually have the last word.

3) My parents feel that it is important to be the boss.

4) My parents sometimes become irritated with my views if they are different from theirs.

5) If my parents don't approve of it, they don't want to know about it.

6) When I am at home, I am expected to obey my parents' rules.

7) My parents often say things like "You'll know better when you grow up."

8) My parents often say things like "My ideas are right and you should not question them."

9) My parents often say things like "A child should not argue with adults."

10) My parents often say things like "There are some things that just shouldn't be talked about."

11) My parents often say things like “You should give in on arguments rather than risk making people mad.”

- Part 4: Family Mobile Communication (Self-created and partly adapted) Warren and Aloia (2018), Kennedy et al. (2008), and Lenhart et al. (2011)

(for 1-5) frequency: 0 = never, 1 = once in a while, 2 = every few weeks, 3 = 1-2 days a week, 4 = 3-5 days a week, 5 = about once a day, 6 = several times a day

(for 1-6) quality: 0 = not satisfied at all, to 6 = totally satisfied

(for 7) 1=almost every time, 2=often, 3= half of the time, 4=not very often, 5=never

(for 8) 1=significantly decreased, 2=decreased, 3=stay same, 4=increased, 5=significantly increased

1. via text and instant message
2. via voice message
3. via phone call or audio chat
4. via video chat
5. How often do you/your mother/your father initiate a family mobile communication?
6. How satisfied are you with mobile communication with your mother/father?
7. Do you mention COVID-19 related issues in your mobile communication?
8. How has your mobile communication frequency changed since the COVID-19 eruption

- Part 5: Mental Wellbeing Depression Anxiety Stress Scales-21 (DASS-21)(Taken from existing research), Henry & Crawford (2005)

0=never, 1=sometimes, 2=often, 3= almost always

- Depression symptoms related items (d): 3, 5, 10, 13, 16, 17, 21.
- Anxiety disorder related items (a): 2, 4, 7, 9, 15, 19, 20.
- Stress related items (s): 1, 6, 8, 11, 12, 14, 18.

1. (s) I found it hard to wind down.
2. (a) I was aware of dryness of my mouth.
3. (d) I couldn’t seem to experience any positive feeling at all.
4. (a) I experienced breathing difficulty.
5. (d) I found it difficult to work up the initiative to do things.
6. (s) I tended to over-react to situations.
7. (a) I experienced trembling (e.g. in the hands).
8. (s) I felt that I was using a lot of nervous energy.
9. (a) I was worried about situations in which I might panic and make a fool of myself.
10. (d) I felt that I had nothing to look forward to.

11. (s) I found myself getting agitated.
12. (s) I found it difficult to relax.
13. (d) I felt down-hearted and blue.
14. (s) I was intolerant of anything that kept me from getting on with what I was doing.
15. (a) I felt I was close to panic.
16. (d) I was unable to become enthusiastic about anything.
17. (d) I felt I wasn't worth much as a person.
18. (s) I felt that I was rather touchy.
19. (a) I was aware of the action of my heart in the absence of physical exertion.
20. (a) I felt scared without any good reason.
21. (d) I felt that life was meaningless.

Thank you for your time and effort in this study!

Very sincerely yours,

Xiaoyu Ji

APPENDIX D

DESCRIPTIVE AND LEVEL PERCENTAGE TABLE FOR GENDER AND MENTAL WELL-BEING

Descriptive and Level Percentage Table for Gender and Mental Well-Being

		Descriptive			Level				
		Mean	SD	p-value	Normal	Mild	Moderate	Severe	Extremely Severe
Depression	Male	11.438	9.899	.505	52.0%	12.2%,	17.3%,	5.1%	11.2%
	Female	10.797	10.313		53.7%	17.2%	12.7%	4.5%	11.2%
Anxiety	Male	8.479	7.844	.342	54.1%	7.1%	18.4%	8.2%	10.2%
	Female	9.851	9.319		49.3%	10.4%	20.1%	6.0%	14.2%
Stress	Male	13.184	9.507	.547	66.3%	8.2%	11.2%	11.2%	2.0%
	Female	14.183	10.467		63.4%	10.4%	9.7%	7.5%	6.0%

APPENDIX E

ZERO-ORDER CORRELATIONS

Zero-Order Correlations among Variables (Part 1)

	1	2	3	4	5	6	7	8	9	10	11	12
1. Impact on Daily Routine	——											
2. Impact on Study	.532**	——										
3. Fear for Contracting COVID-19	.211**	.286**	——									
4. Worry about Families	-0.04	0.014	.351**	——								
5. Hard to go back Home	.157*	0.091	.286**	.169**	——							
6. Stress Change	.412**	.491**	.366**	.264**	.240**	——						
7. Anxiety Change	.366**	.469**	.309**	0.11	.171**	.829**	——					
8. Depress Change	.302**	.413**	.222**	0.114	.141*	.726**	.773**	——				
9. Overall COVID-19 Impact	.571**	.635**	.589**	.399**	.384**	.851**	.789**	.736**	——			
10. COVID-19 related Adjustment	-.244**	-.227**	-.235**	-0.111	-.190**	-.373**	-.342**	-.403**	-.429**	——		
11. Conversation Orientation	-0.075	-0.105	0.03	0.058	.131*	-0.002	-0.062	-0.126	-0.048	0.041	——	
12. Conformity Orientation	.141*	.166*	0.058	0.105	-0.113	.194**	.187**	.235**	.191**	-0.013	-.496**	——

13. Depression Level	.140*	.244**	0.045	0.031	.130*	.367**	.382**	.455**	.341**	-.238**	-.255**	.200**
14. Anxiety Level	.174**	.268**	0.1	0.098	.132*	.501**	.454**	.495**	.439**	-.249**	-.209**	.273**
15. Stress Level	.211**	.289**	0.126	.140*	.158*	.526**	.507**	.563**	.503**	-.262**	-.216**	.259**
16. Family Mobile Communication Frequency	-0.127	-0.069	0.037	0.057	-0.008	0.006	-0.061	-0.116	-0.056	0.05	.427**	-.185**
17. Text & Instant Message Frequency	-0.069	-0.046	0.091	0.123	0.05	-0.01	-0.058	-0.122	-0.015	0.02	.448**	-.161*
18. Voice Message Frequency	-0.028	-0.036	.134*	.154*	0.062	0.113	0.092	0.068	0.093	-0.015	.231**	0.049
19. Audio Chat Frequency	-0.026	0.007	-0.024	-0.012	0.039	0.077	0.072	0.035	0.032	0.117	.303**	0.063
20. Video Chat Frequency	0.077	-0.104	0.058	.131*	0.109	0.042	0.028	-0.017	0.046	-0.062	.309**	-0.018
21. Family Mobile Communication Satisfaction	-0.083	-.149*	0.047	0.107	.135*	0.038	0.04	-0.102	-0.014	0.121	.406**	-.174**
22. Mentioning COVID-19	0.105	0.03	.261**	0.099	.221**	.254**	.202**	.138*	.234**	-0.104	0.079	0.029
23. Change of Frequency	0.1	.142*	.171**	.195**	0.055	.243**	.232**	.184**	.255**	-0.089	0.117	0.022

*. $p < .05$, two-tailed. **. $p < .01$, two-tailed.

Zero-Order Correlations among Variables (Part 2)

	13	14	15	16	17	18	19	20	21	22	23
13. Depression Level	——										
14. Anxiety Level	.752**	——									
15. Stress Level	.781**	.845**	——								
16. Family Mobile Communication Frequency	-.215**	-.135*	-.176**	——							
17. Text & Instant Message Frequency	-.171**	-0.111	-.155*	.773**	——						
18. Voice Message Frequency	-0.02	0.065	0.03	.255**	.360**	——					
19. Audio Chat Frequency	-0.078	0.006	0.001	.388**	.343**	.262**	——				
20. Video Chat Frequency	-.140*	0	-0.039	.427**	.415**	.272**	.359**	——			
21. Family Mobile Communication Satisfaction	-.135*	-0.109	-.160*	.272**	.285**	.189**	.207**	.277**	——		
22. Mentioning COVID-19	0.11	.174**	.173**	0.028	0.028	0.079	0.08	0.092	.278**	——	
23. Change of Frequency	0.104	.149*	.203**	.129*	0.053	.165*	.199**	.142*	0.117	.227**	——

*. $p < .05$, two-tailed. **. $p < .01$, two-tailed.

APPENDIX F

RESULT LIST OF RESEARCH QUESTIONS AND HYPOTHESES

Section	No.	RQ&H	Result
COVID-19 related Influences and Adjustment	RQ7	The COVID-19 pandemic causes Chinese international students to feel more stressed/anxious/depressed than usual.	A large portion of respondents report aggravated mental distress levels.
	H7	Chinese international students who stayed in the U.S. less than two years report more severe daily routine and regular study influence.	Not supported.
	H8	Chinese international students who stayed in the U.S. less than two years are less successful in their COVID-19 related adjustments.	Not supported.
	H9	The impact on daily routines is positively related to the students' feeling more stressed/anxious/depressed than usual.	Supported.
	H11	Students who report better adjustments to the pandemic do not feel more stressed/anxious/depressed than usual.	Supported.
Family Mobile Communication	RQ3	Does the pandemic lead to more frequent family mobile communication?	Near half (48.5%) increased their family mobile communication since the pandemic.
	RQ4	How do varied usage frequency of different mobile communication technologies affect family mobile communication satisfaction?	A weak positive correlation between family mobile communication satisfaction and all frequency of four different family mobile communication technologies.
Family Communication Patterns and COVID-19 related Influences and Adjustment	H5	There will be a positive association between the conversation orientation and the COVID-19 related adjustments.	Not supported.
	H10	Conversation orientation is negatively related to the students' feeling more stressed/anxious/depressed than usual.	Not supported.
	RQ6	Is conformity orientation positively related to Chinese international students' worrying about families back in China?	No significant relationship.
	H6	There will be a negative association between the conformity orientation and the COVID-19 related adjustments.	Not supported.

Family Communication Patterns and Family Mobile Communication	RQ1	Do different conversation and conformity orientation levels result in varied usage frequency of different family mobile communication technologies?	A significant positive relationship between conversation levels and all four technologies frequency. A significant positive relationship between conformity orientation levels and audio chat frequency.
	RQ2	What is the relationship between Chinese international students' conversation orientation and family mobile communication frequency?	A significant positive effect for the association between family conversation orientation and family mobile communication frequency.
	H1	Conversation orientation leads to Chinese international students' higher family mobile communication satisfaction.	Supported.
	H4	Conversation orientation is positively related to the frequency of talking about COVID-19 related issues in family mobile communication.	Not supported.
	RQ5	What is the relationship between Chinese international students' family conformity orientation and the frequency of talking about COVID-19 related issues in their family mobile communication?	No significant relationship.
	H2	Conformity orientation leads to Chinese international students' lower family mobile communication satisfaction.	Supported.
	H3	For high conformity orientation level students, more frequent communication leads to lower family mobile communication satisfaction.	Not supported.
Family Communication Patterns and Mental Well-Being	RQ8	Is conversation orientation positively related to the mental well-being of Chinese international students during the pandemic?	Conversation orientation of Chinese international students is negatively related to their reported stress/anxiety/depression.
	H12	Low conformity level predicts greater depression in Chinese international students compared to high conformity level. not supported	Not supported.
	H13	High conformity level predicts greater anxiety in Chinese international students compared to low conformity level.	Supported.