Online and Offline Adaptation among Transnational Newcomers: Technology-mediated Social Exchange and Trust Development

by

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To everyone who left their home to pursue their dreams.

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ABSTRACT

Transnational newcomers, i.e., foreign-born populations who move to a new country, rely on social media technologies to support their adaptation, but little research has investigated technology designs' influences on their networking and resource-seeking. My dissertation aimed to explore this research space and contribute insights to address transnational newcomers' needs in their social media technology uses. I started my research by adapting Social Exchange Theory (SET) to explore transnational newcomers' social media technology use for networking and resource-seeking in my first and second studies. I explored a wider range of social media technologies and investigated *one-on-one* interactions between transnational newcomers and local individuals through *people-nearby applications (PNAs)* such as Tinder and Bumble. These two studies' results suggest that *trust* is a critical theme in transnational newcomers' social media technology use, and their *perceived shared identity* and *social support* are two predictors of trust in local communities. I also found that transnational newcomers often participated in *local consumer-to-consumer (C2C) e-commerce* to fulfill resource needs and network with local communities.

In my third and fourth studies, I extended the prior two studies by investigating how this population participated in local C2C e-commerce and *community commerce*, a special type of local C2C e-commerce that emphasizes the sense of community. Based on the *social commerce affordance framework*, I examined a community commerce platform's technical features' effects on transnational newcomers' trust in local

communities. The results suggest that the social-connecting and metavoicing affordances were most likely to affect transnational newcomers' trust in local communities.

Building on the prior four studies, I conducted an online survey to model transnational newcomers' trust development in local-community-based Facebook groups in my fifth study. I employed path analysis to test a model consisting of hypotheses among social-connecting affordance, metavoicing affordance, shared identity, social support, and trust in local communities. The results suggest that the social-connecting affordance has a strong direct effect on transnational newcomers' trust in local communities. Transnational newcomers' perceived shared identity and social support are also significant mediators between social-connecting affordance and trust. The results reveal opportunities to foster transnational newcomers' trust in local communities by improving ways members connect in local-community-based Facebook groups.

My dissertation surfaces four key themes of transnational newcomers' social media technology use for adaptation: (1) indirect exchanges as a comfortable way of interacting, (2) informational and instrumental resources as key social supports, (3) social support and shared ethnicity as keys to trust and engagement, and (4) challenges on platforms: Lurker and free-rider perceptions. I closed my dissertation with takeaways and reflections on methodologies, theoretical frameworks, community collaborations, and future research. My dissertation makes practical contributions by recommending design implications to enhance social media technology's support in transnational newcomers' adaptation, and theoretical contributions to move research domains such as human-computer interaction, immigration studies, and social exchange forward.

CHAPTER I

Introduction

1.1 Research Motivation

Millions of immigrants live in countries that are not their countries of birth. In the last decade, the number of immigrants has increased every year. According to the United Nations, there were 281 million international immigrants in mid-2020 (*Migration Data Portal*, 2021). Immigrant populations bring economic and cultural benefits to their destination countries, especially those countries that receive large numbers of immigrants such as the United States (U.S.), Canada, and countries in the European Union (E.U.) (*Blad and Couton*, 2009; *Bodvarsson and den Berg*, 2009; *Brahim and Grenier*, 2017; *Münz et al.*, 2006). Nevertheless, migrating to a new country does not guarantee a stable life. Transnational newcomers, i.e., immigrants who are new to a country, need time to socially and psychologically adjust to the host country. Various external and internal factors might impact migrants' *adaptation*. Challenges such as economic stress, social isolation, and language differences slow newcomers' adaptation to their host country. Newcomers could suffer from problems related to well-being, employment, and education if they are unable to smoothly adapt to their new environment (*Khullar and Chokshi*, 2019; *McCauley*, 2017; *Perreira et al.*, 2016; *Rong and Preissle*, 1998).

Social networks and resources from these networks play an important role in transnational newcomers' adaptation. Having social networks in the host country mitigates newcomers' social isolation and stress, which supports newcomers' mental wellness (*Searle and Ward*, 1990). Social networks could further lead to local resources that might benefit newcomers' prospects for employment, education, and other aspects of life. Recent studies found that social media technologies play an important role in newcomers' network development in their adaptation process (*Dekker and Engbersen*, 2014; *Komito*, 2011). Transnational newcomers use online forums and social media technologies such as Facebook, WhatsApp, and Telegram to get in touch with their ethnic communities in the host country (*Damian and Van Ingen*, 2014; *Dekker and Engbersen*, 2014; *Guberek et al.*, 2018; *Komito*, 2011; *Lášticová*, 2014; *Nikkhah et al.*, 2018, 2020; *Rao and Hemphill*, 2016). These communities often benefit newcomers by providing access to local information and settlement resources that could support their adaptation. Social media technologies also facilitate newcomers' interactions with the mainstream communities, e.g., local-born populations in the host country. Browsing general websites of the host country and using social media technologies such as Facebook and NextDoor allow newcomers to get in touch with the mainstream communities and access cultural and language resources (*Chen*, 2010; *Chen and Choi*, 2011; *Damian and Van Ingen*, 2014; *Erdem*, 2018; *Farzan et al.*, 2017).

Although past research suggests that social media technologies play an important role in newcomers' social network development and resource-seeking in the host country, little of this literature emphasizes the role of technologies. Limited research has investigated these social platforms' design to address transnational newcomers' needs for adaptation. My dissertation explores this research space. More specifically, my dissertation explores how transnational newcomers used two types of social media technologies — social network sites (SNS) and local consumer-to-consumer (C2C)

e-commerce platforms — in their adaptation process, and what needs were left unaddressed by these platforms. I focused on these platforms because of their potential to support users in accessing local communities. I also focused on them because because past research (including my own) suggests that transnational newcomers use these platforms to interact with local communities during their adaptation process. In addition to SNS and C2C e-commerce platforms, I studied people-nearby applications' (PNAs') effects on general newcomers' (including short-term travelers and domestic migrants) networking and resource-seeking. Although my study on PNAs did not focus on transnational newcomers, it did provide insights of how PNAs could benefit newcomers.

My dissertation contributes to the following research domains. First, my dissertation contributes new knowledge to human–computer interaction (HCI) research by promoting understanding of the *networking* and *resource-seeking* of transnational newcomers, who are voluntary immigrants, through social media technologies. HCI research that studied immigrants' networking and resource-seeking has mainly focused on *forced immigrants* such as refugees and asylum seekers (*Almohamed and Vyas*, 2016, 2019; *Almohamed et al.*, 2017, 2018; *Baranoff et al.*, 2015; *Brown and Grinter*, 2016; *Talhouk et al.*, 2016). In comparison to forced immigrants, *voluntary immigrants* have been less studied by HCI scholars. Although HCI scholars have explored topics such as voluntary immigrants' social identity transitions (*Dosono and Semaan*, 2019, 2020; *Lingel et al.*, 2014) and parenting (*Brown and Grinter*, 2012; *Wong-Villacres et al.*, 2019a,b), scholars have paid little attention to voluntary immigrants' networking and resource-seeking through technologies, with the exception of a few studies (*Nikkhah et al.*, 2018; *Rao and Hemphill*, 2016). In addition to HCI research on immigrants, my research also provides insights to enrich related domains such as general newcomers to online communities such as Wikipedia or Reddit (*Hsieh*

et al., 2013; *Tausczik et al.*, 2018). My dissertation fills this open research space and makes practical and theoretical contributions.

Second, in addition to transnational newcomers' use of social media technologies for networking and resource-seeking, I identified the trust predictors in this process and examined these predictors through statistical analyses. My dissertation thus contributes to research on trust development through social exchange by uncovering how a special population develops trust across the online–offline borderline.

1.2 Theoretical Framing

I used Social Exchange Theory (SET) to frame my dissertation studies. The SET was first developed by *Homans* (1961, 1974), *Blau* (1964), and *Emerson* (1962, 1976), separately at about the same time, to frame social behaviors. Although their versions of SET were inspired by different paradigms (i.e., from sociology, psychology, and economics), the core value across the three versions of SET was viewing human social behaviors as social exchanges. By framing social interactions as social exchanges, scholars brought the concepts of *cost* and *value* to analyze social interactions and relationships. SET provides a theoretical basis to analyze social actors' interaction processes, the resources exchanged in-between, and the relationships developed from the exchanges. Although SET frames these aspects of exchange, it does not specify the social actors' identities. A social actor involved in a social exchange could be an individual or a group. With these characteristics, SET is thus flexible to frame social interactions among different types of social actors in varying contexts, for example, interactions between junior members of a community and senior members (*Bauer and Green*, 1996; *Flynn*, 2005) or clients and companies (*King*, 2019).

However, not all exchanges, or social behaviors, can be categorized as social exchanges. Many exchanges belong to the "economic exchange." To distinguish between social exchanges and economic exchanges, Blau provided the following defini-

tion: "*[Social exchange] refers to voluntary actions of individuals that are motivated by the returns they are expected to bring and typically do in fact bring from others*" (*Blau*, 1964, p. 91). This statement defines that the returns in social exchanges are uncertain, unlike in economic exchanges, which have returns that can be expected, typically based on written agreements. More detailed propositions of social exchange are provided in Chapter II.

Because social exchanges are based on costs and values, the outcome of an exchange could be either gains and losses after calculating the costs and values. Social exchanges thus are accompanied with uncertainties and risk of losses, which are potential negative outcomes of social exchanges. Social actors are likely to choose behaviors that lead to gains and avoid negative outcomes of exchanges (*Homans*, 1974, Ch. 2). Thus, social actors are likely to participate in an exchange only when their perceived risks and uncertainties of the exchange are low. Trust is thus relevant to SET researchers' because it is an antecedent of an actor's perceived risks and uncertainties in the social exchange. Furthermore, trust is an outcome of social exchanges (*Emerson*, 1976). Understanding how trust between social actors influences the exchange and how the exchange affects trust between two actors is thus central in past SET literature, e.g., *Cheshire and Cook* (2004) and *Molm et al.* (2000).

SET has been used widely in past research to frame newcomers' transitions to organizations, such as a company or a social group. For example, past research adapted SET to frame newcomers' interactions with colleagues as leader-member exchange (LMX) and team-member exchange (TMX) to understand their adaptation to a company (*Banks et al.*, 2014; *Garg and Dhar*, 2014; *Lam*, 2003; *Sluss and Thompson*, 2012). As mentioned in the prior paragraph, SET accounts for factors such as trust, power structure, and commitment to a relation, and it thus becomes appropriate to examine newcomers' interaction and relationships within an organization. In these studies, newcomers' interactions with other members (e.g., managers

or peer members) are framed as social exchange, and SET helps to analyze how these interactions affect newcomers' development in these organization.

In the context of transnational newcomers' transition, networking and resource seeking through local communities in the host country is critical to the newcomers' trust development in these communities. These social exchanges, therefore, could influence transnational newcomers' adaptation to the host country, including their relationship with local residents and even their well-being, education, and employment. Along this line, my dissertation studies adapted SET to understand how transnational newcomers utilized social technologies to participate in social exchanges with local communities, and how these exchanges influenced their trust in and adaptation to local communities.

An interesting point I found during my literature review was that few immigration studies utilized the social exchange theory to frame transnational newcomers' adaptation process or transition to a new country. As I consulted with scholars working on immigration topics from sociology and social work, they confirmed this trend. Instead of social exchange, past immigration studies tended to use the concept of *social resources*, *social support*, or more broadly *social capital*, to frame immigrants' resource-seeking.

A possible explanation of this limited usage of SET in immigration research is that SET has a key assumption that humans are rational. This key assumption of SET could result from its origin of behavioral economics. However, this view of rationality is less accepted in domains such as sociology. Instead, human behaviors could be viewed irrational, such as such as altruism or reciprocity. In Chapter II (Literature Review) and Chapter VIII (Discussion and Conclusion), I will discuss more about the selection of theoretical frameworks, and pros and cons of choosing SET to frame my research.

1.3 Research Questions & Study Overview

My dissertation's research goals were to understand social technology's role in transnational newcomers' adaptation and to identify socio-technical factors that can support their adaptation process. The overarching research question of my dissertation is, "*How do social technologies support transnational newcomers' social network development and resource-seeking in the host country, and what needs are not addressed by existing technologies?*"

To answer the overarching research question, this dissertation covers five studies. In the following paragraphs, I describe the studies and the research questions that each of the studies answered.

1.3.1 Study 1: Examining Newcomers' Participation in 1-1 Interactions on People-nearby Applications

Study 1 comprised a series of semi-structured interviews with users of people-nearby applications (PNAs) (N=14) (*Hsiao and Dillahunt*, 2017b). This study was initiated to understand how PNAs broadly influence users in developing new connections. Along the study process, I found that PNAs can be specifically beneficial to newcomers such as travelers, domestic migrants, and immigrants. PNAs provide a channel for newcomers to get a sense of the local community and have opportunities to meet local populations. I also conducted a follow-up online survey (N=142) to understand how individuals going through life transitions were motivated to use PNAs (*Hsiao and Dillahunt*, 2017a). The survey's findings suggest that relocation could be one motivation for people to seek new connections through PNAs, and this pushed me to dig deeper into the newcomer experience. In my dissertation, I focused on the interviews with PNA users in Study 1 who were newcomers to answer the following research questions:

- RQ1-1: What types of resources do newcomers receive and provide in local social exchanges through PNAs?
- RQ1-2: What forms of local social exchange occur between newcomers and locals through PNAs?
- RQ1-3: What key challenges are associated with newcomers' PNA use?

As noted, Study 1 did not focus on transnational newcomers. Instead, some participants shared their experience using PNAs as newcomers. These findings inspired me to continue exploring how social technologies are used by newcomers, especially those who experience cross-country migration, when they move to a new place.

1.3.2 Study 2: Exploring Transnational Newcomers' Local Social Exchange through Social Media Technology

Following Study 1, I narrowed the target populations from broad newcomers to immigrants. Immigrants have distinct social contexts that other newcomers do not always face, for example cultural and language differences, legal identity issues, and lack of documented long-term employment. Immigrants use technologies for various reasons through their adaptation (*Acharya*, 2016), such as reconnecting to their home countries (*Dekker and Engbersen*, 2014; *Lášticová*, 2014), developing new social networks (*Damian and Van Ingen*, 2014; *Dekker and Engbersen*, 2014; *Komito*, 2011), and adjusting their social identities (*Benítez*, 2006; *Lingel et al.*, 2014; *Lorenzana*, 2016).

While past literature suggested that technologies have an important role in immigration, limited research has examined how different socio-technical factors influence immigrant adaptation. Thus, instead of focusing on PNAs here, I studied broad social technologies that recent immigrants used to support their adaptation to the host country (*Hsiao and Dillahunt*, 2018).

The dataset of Study 2 consists of semi-structured interviews (N=18) with recent immigrants and long-term immigrants. The research questions I answered from Study 2 were similar to the questions I addressed in Study 1, but the Study 2 questions were focused on transnational newcomers:

- RQ2-1: What types of resources do transnational newcomers request and provide in local social exchanges with the mediation of technology?
- RQ2-2: What forms of local social exchange occur in immigrants' use of social technologies?
- RQ2-3: What key challenges are associated with immigrants' participation in local social exchanges?

1.3.3 Study 3: Exploring Transnational Newcomers' Shared Identity in 1-N Interactions on Local C2C E-commerce Platforms

In Study 2, I found that transnational newcomers use social media technologies to participate in local consumer-to-consumer (C2C) transactions with ethnic communities and the mainstream communities. These C2C transactions gave transnational newcomers opportunities to access local information, items, and services, and allowed them to meet new people. These transactions mirrored past research that found that immigrants relied on transactions within local networks for their adaptation; however, now these transactions cross the online–offline borderline.

Therefore, I conducted Study 3 to explore transnational newcomers' participation in local C2C e-commerce and socio-technical factors that might affect their participation in local C2C e-commerce. Study 3 focused on transnational newcomers' trust development in C2C e-commerce because I found shared identity to be a key predictor of trust in Study 2. In Study 3, I answered the following research questions with 12 transnational newcomers who used local C2C e-commerce for local resource transactions:

- RQ3-1: What are the determinants of transnational newcomers' shared identity in local C2C e-commerce?
- RQ3-2: How do the shared identity determinants affect transnational newcomers' trust in local C2C e-commerce?

1.3.4 Study 4: Examining Transnational Newcomers' Participation in 1-N Local Social Exchanges on Community E-commerce Platforms

Study 3 suggested that transnational newcomers are more likely to develop trust and engagement in local communities on C2C e-commerce platforms that allow interactions such as making posts about their neighborhoods or sharing local news. These platforms, which we framed as community commerce platforms (*Moser et al.*, 2017), emphasize community-building among users more than typical local C2C e-commerce platforms.

Study 4 thus extended Study 3 by looking into transnational newcomers' participation in community commerce platforms through interviews with 24 transnational newcomers. Study 4's goal was to understand how community commerce platforms influence newcomers' adaptation, their trust development, and the challenges that transnational newcomers might face in community commerce. Study 4 answered the following research questions:

- RQ4-1: How do a community commerce platform's affordances affect newcomers' trust in community commerce?
- RQ4-2: What challenges or concerns do newcomers have when participating in community commerce?

1.3.5 Study 5: Examining Social Support and Shared Identity's Effects on Immigrants' Trust in Local Communities

In Study 3 and Study 4, I explored the socio-technical factors that might affect newcomers' engagement and trust development in C2C e-commerce platforms. Among these socio-technical factors, shared identity and social support were the most salient factors that affected this population's trust development in community commerce platforms. Study 5 extended Study 3 and Study 4 by examining the effects of shared identity and social support on transnational newcomers' trust development, and this study used a larger sample size. This was to examine whether the findings in prior studies could generalize to larger newcomer populations and online communities that support casual interactions among offline community members.

In Study 5, I employed an online survey to assess how shared identity and social support affect transnational newcomers' trust and engagement in social media technologies for local communities, i.e., hyper-local community platforms. By collecting 400+ samples with multiple sampling techniques, I examined the following hypotheses in Study 5:

- H1a: The affordance of metavoicing has a positive effect on perceived social support,
- H1b: The affordance of metavoicing has a positive effect on perceived shared identity,
- H2a: The affordance of social connecting has a positive effect on perceived social support, and
- H2b: The affordance of social connecting has a positive effect on perceived shared identity.
- H3: Perceived social support has a positive effect on transnational newcomers' trust in their local communities, and

- H4: Perceived shared identity has a positive effect on transnational newcomers' trust in their local communities.

1.4 Thesis Statement & Contributions

In my dissertation, I conducted five studies to reveal how transnational newcomers utilize social media applications to support their adaptation process, and what needs of this population are left unaddressed. Through my research, I contribute insights for future social media technologies to better support newcomers' needs. Bearing this research goal, the thesis statement of my dissertation is:

> *Social media technologies designed to mitigate newcomers' perceived uncertainty and risks of networking development and resource-seeking (a) increase newcomers' trust and engagement in the community on the platform and (b) foster newcomers' adaptation to the local community.*

By having mixed-methods studies to understand transnational newcomers' social media technology use and their needs in adaptation, my dissertation makes the following empirical contributions:

Empirical Contributions

- Uncovers transnational newcomers' social media technology use for adaptation and interprets their social behaviors through the lens of social exchange theory;
- Design and practical implications for social media technologies and non-profit organizations to foster immigrants' trust in local communities.

Theoretical Contributions

- Unpacks the multi-faceted nature of shared identity in newcomers' social media technology use;

- Proposes *socio-technical adaptation* as a new dimension of immigrant adaptation;
- Proposes and test a theoretical model that captures immigrants' trust development in local communities.

Under the overarching contributions, each of the five studies also made empirical and theoretical contributions to the corresponding research spaces. The five studies' contributions are as follows: In Study 1, I explored how PNAs could benefit users' network development and resource-seeking. I provide insights by looking into general newcomers' PNA experiences among participants. Further, I contribute how social-matching applications that are based on geographic distances could benefit newcomers to a new place.

Study 2 provided a big picture of transnational newcomers' social technology uses. Through this research, I highlight transnational newcomers' general experiences in using social media technologies for networking and resource-seeking.

Through Study 3 and Study 4, I explored transnational newcomers' experiences in using local C2C e-commerce for networking and resource-seeking. I contribute knowledge about how transnational newcomers could benefit from local C2C e-commerce, and social psychological factors that could influence their participation. I also identify what challenges might stop them from participating in local C2C e-commerce.

In Study 5, I focused on transnational newcomers' trust development in the context of hyper-local community platforms. Through the survey analysis, I developed implications for future research and designs to support transnational newcomers in using social media technologies for their local areas, which could improve their adaptation to their new community.

1.5 Key Definitions

In this section, I provide an overview of keywords that I use throughout the dissertation. Note that the definitions presented here are brief descriptions to scope the keywords. Detailed reviews and discussions of these terms are covered in the Literature Review (Chapter II) and chapters describing each study.

Transnational Newcomers Transnational newcomers refers to foreign-born populations who move to a new country and have stayed in the new country for a shorter time. More specifically, I adopt the following criteria for this population in the present dissertation: First, newcomers are those who have lived in a new place *for five years or less*. This is a common criteria adopted in past immigration studies, e.g., *Catanzarite* (2000); *Elliott* (2001); *Kingston et al.* (2011). Note that, in some of my studies I loosen this criterion to *ten years or less* to mitigate recruitment difficulties.

Second, transnational newcomers need to be *first generation*. That is, they were 18 years old or older when they migrated (*Rumbaut*, 2004). Past research suggests that 1.5th-generation immigrants, i.e., those who migrate to a new country as young children or teenagers, have adaptation and development processes different from 1st-generation immigrants.

Third, transnational newcomers are voluntary for their migration. Forced immigrants, such as refugees and asylum seekers, have different motivations for migration and unique social contexts. These two groups of immigrants face different challenges in their migration life (*Bernard*, 1976).

Note that I use "immigrants" interchangeably with "transnational newcomers" in this dissertation, though transnational newcomers are actually a subset of immigrants. I use the phrase "transnational newcomers" when I describe my studies, but I use "immigrants" when I review past literature. I clarify explicitly if the definitions change in a single study (e.g., Study 5).

Adaptation Adaptation refers to "*changes that take place in individuals or groups in response to environmental demands*" (*Berry*, 1997, p.13). I use "adaptation" to describe the process in which transnational newcomers adjust themselves to react to the host country's demands. I provide a detailed literature review of immigrant adaptation in Chapter II, including a discussion of related words such as acculturation, assimilation, and integration.

Social Media Technology Social media technologies in my dissertation refer to any technical services that support users' social behavior through the Internet. This includes, but not limited to, social network sites, instant messengers, emails, and online forums.

Social Exchange Social exchange refers to any social behaviors between two social actors (*Cook et al.*, 2013; *Molm*, 1990). One of the two social actors, in my dissertation, is a transnational newcomer, and the other actor could be either an individual or a group of people.

Trust Trust refers to a social actor's belief that the other actor involved in the exchange will behave *benignly* (*Molm et al.*, 2000, p. 1402). That is, a social actor will not take advantage of the other actor or cause a loss.

1.6 Dissertation Structure

The dissertation is structured as follows. In Chapter II, I review the past literature on immigration and immigrants' technology use to identify the open questions in the domain. I then review the literature of social exchange and state how I used the framework to frame the open questions. Chapters III through VII describe Study 1, Study 2, Study 3, Study 4, and Study 5, respectively. In Chapter VIII, I conclude my

dissertation by highlighting the emerging themes across my studies, my contributions to the domain, and future work in the research space.

CHAPTER II

Literature Review

This chapter contains a literature review on two research domains. In the first section, I review past literature on immigration adaptation and discuss how social support is important in immigrants' adaptation. I summarize this section with a review on immigrants' technology uses to seek social support for their adaptation and highlight existing gaps regarding trust in past research.

In the second section, I provide a review of Social Exchange Theory (SET), with a specific focus on trust in social exchange. I wrap up this chapter by describing how I used SET to frame transnational newcomers' trust development in their use of social technology for adaptation.

2.1 Immigrant Adaptation

In immigration studies, adaptation refers to "*changes that take place in individuals or groups in response to environmental demands*" (*Berry*, 1997, p.13). This definition of adaptation comes from Berry's acculturation framework (*Berry*, 1997). Before I dig deeper into the concept of adaptation, I first review Berry's acculturation framework to provide a theoretical background, which covers adaptation as the outcomes of individual-level adjustments. Although Berry's acculturation framework has been used in little HCI research, I provide a review to justify its validity to frame

technology-related studies (e.g., online communities). After introducing Berry's acculturation framework and the concept of adaptation, I describe the importance of social support and trust in immigrant adaptation, and wrap up this section by identifying gaps in the past research on immigrants' uses of social media technologies.

2.1.1 Acculturation Framework

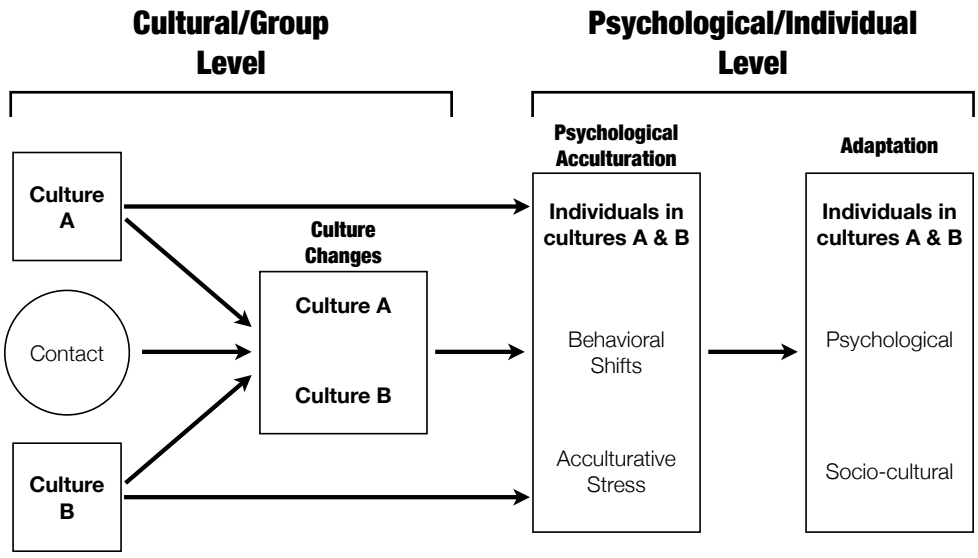


Figure 2.1: Berry's acculturation framework, adopted from *Berry* (2003).

Acculturation's earliest definition can be traced to *Redfield et al.* (1936): "*acculturation comprehends those phenomena which result when groups of individuals having different cultures come into continuous first-hand contact with subsequent changes in the original culture patterns of either or both groups.*" Based on this definition, Berry's acculturation framework (*Berry*, 1997, 2003) has been the most widely used theoretical framework in cross-culture psychology (Fig. 2.1). Berry's framework conceptualizes the acculturation process as two levels: the *cultural/group level* and the *psychological/individual level*. In the acculturation process, a cultural group could have group-level cultural changes such as changes in social values and norms. These group-level changes trigger individual-level psychological changes such as a person's

behavioral shifts or acculturation stress. To accommodate for behavioral shifts or eliminate acculturation stress, individuals need to adjust themselves for *psychological* (i.e., the changes that happen in a person's psychological status) and *sociocultural* (i.e., the changes that are linked to the community and society) adaptation (*Searle and Ward*, 1990) to respond to group-level changes.

Before I unpack the concept of adaptation, I need to introduce *acculturation strategies* to establish some assumptions of my dissertation research. First, acculturation is not a passive process. Acculturation results from groups' and individuals' choices of acculturation strategies to respond to the cultural contact (*Berry*, 1997, 2003). With different acculturation strategies, the adaptation outcomes also vary. It is thus important to note these strategies as my dissertation's assumptions. I introduce acculturation strategies in the next subsection first, to clarify certain assumptions of my dissertation, and then come back to unpack the concept of adaptation in more detail in Subsec. 2.1.2.

2.1.1.1 Acculturation Strategy

As stated, in most cases, cultural groups and individuals of these groups make active choices when cultural contact happens. These choices are acculturation strategies (*Berry*, 1997, 2003). As shown in Fig. 2.2, the acculturation strategies take into account a cultural group's dominance level in a cultural contact situation and two dimensions of a group's preferences. The framework assumes that the two cultural groups have different levels of dominance, in terms of economic power, society size, etc. In the context of immigration, the dominant group refers to the mainstream community of the host country, and the non-dominant group refers to the immigrant community and individuals. The two dimensions that refer to a cultural group's preference of interactions with another group include: *cultural maintenance* and *contact participation*. Cultural maintenance (the horizontal axis in Fig. 2.2) refers to whether

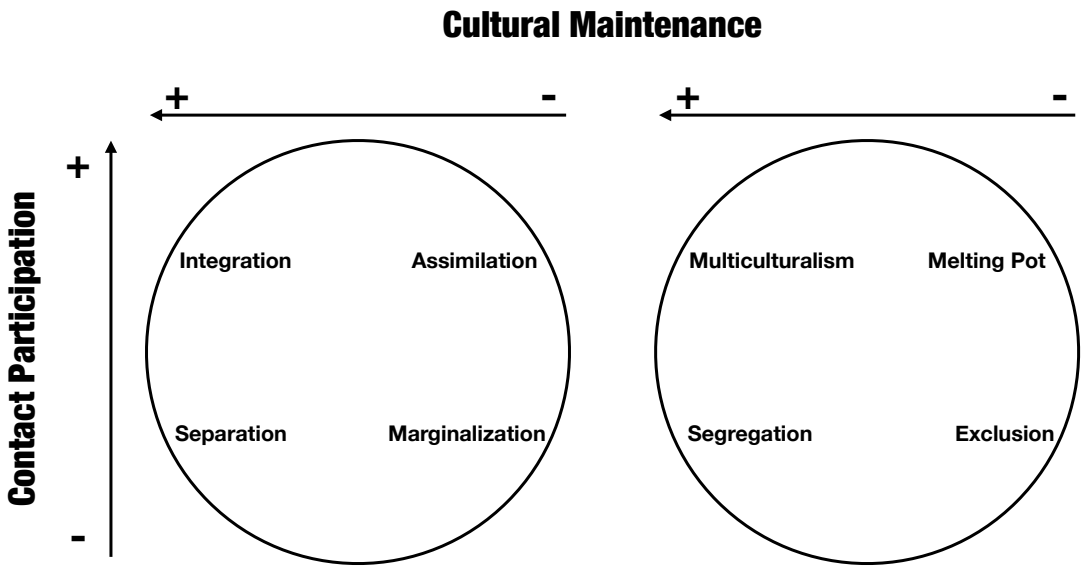


Figure 2.2: Acculturation strategies, adopted from *Berry* (2003).

a cultural group values and keeps its cultural identity in the cultural contact situation, and contact participation (the vertical axis in Fig. 2.2) refers to whether a cultural group chooses to stay in contact with the other cultural group.

Dominant Groups' Acculturation Strategies From the dominant group's view, its four acculturation strategies are: *multiculturalism*, *melting-pot*, *segregation*, and *exclusion* (*Berry*, 2003). These four strategies are likely to be presented by policies and public attitudes of the host country. When a dominant group selects to remain involved in the interaction with a non-dominant group, the dominant group's strategy is either multiculturalism or melting pot. If a dominant group takes on the multiculturalism strategy, it recognizes the uniqueness of a non-dominant group's culture and encourages the non-dominant culture to co-exist with the mainstream culture. If a dominant group encourages, or even forces, the non-dominant group to follow the mainstream culture, the strategy employed by this dominant group is a melting-pot strategy. For example, past research found that immigration policies and public

attitudes of France and Spain leaned toward melting pot, while Canada and Australia showed preferences of multiculturalism (*Maisonneuve and Testé*, 2007; *Navas et al.*, 2007; *Van Oudenhoven et al.*, 2006). The U.S. has been more often viewed as a country with the melting-pot strategy (*Van Oudenhoven et al.*, 2006), but recent scholars also argued that multiculturalism, or the *salad bowl theory*, better explains the modern U.S. society's attitudes on immigration (*Berray*, 2019).

In contrast to multiculturalism or melting-pot strategies, a dominant group might employ segregation or exclusion by restricting the contact between itself and the non-dominant group. In the segregation strategy, a dominant group might allow the non-dominant group to keep its own culture but set up physical or social barriers to prevent close relationships between people in dominant and non-dominant groups. In the exclusion strategy, a practical method is to exclude the non-dominant group from the contact with the dominant group. Although examples of extreme exclusion and segregation strategies are relatively rare, research suggests that Italians' public attitude toward immigrants could be considered segregation or even exclusion (*Cicognani et al.*, 2018; *Kosic and Phalet*, 2006).

Non-dominant Groups' Acculturation Strategies From a non-dominant group's view, the four acculturation strategies are: *integration*, *assimilation*, *separation*, and *marginalization*. Integration and assimilation are strategies in which a non-dominant group keeps in contact with the dominant group. With the integration strategy, individuals from the non-dominant group maintain their heritage or cultural identity, whereas in assimilation, individuals give up their cultural identity and accept the dominant group's cultural values.

If people in a non-dominant group are not interested in keeping in contact with the dominant group and keep their own culture, their acculturation strategy is separation. Last, when people in a cultural group discard their culture but also stay

away from the dominant group, their strategy is marginalization. A non-dominant group's marginalization, however, is more likely a response to the dominant group's segregation or exclusion strategies. For instance, people in a country's mainstream community might be hostile to an ethnocultural group in their country. People in the ethnocultural group could be forced by the host country to give up their own culture and choose to stay away from the mainstream community to avoid political persecution.

My Research Assumptions Based on Acculturation Strategies My research venue is the United States, which is the country that has the biggest population of immigrants (*Migration Data Portal*, 2021). As described, the U.S. has been called a melting pot (*Van Oudenhoven et al.*, 2006). However, recent scholars also argue that the modern U.S. society values different ethnic groups' cultures. This trend suggests that the U.S. mainstream culture has moved from the melting-pot strategy to the multiculturalism strategy (*Berray*, 2019). Although the debate of whether the modern U.S. society adopts the melting-pot or multiculturalism strategy is beyond the scope of this dissertation, this body of research suggests that the U.S. mainstream society maintains close relationships with immigrant communities. My dissertation is, therefore, based on the assumption that the host country's mainstream culture prefers to stay in contact with immigrant communities.

My dissertation targeted transnational newcomers who adopted the integration or assimilation strategies. In other words, my studies focused on transnational newcomers who were willing to maintain relationships with the mainstream U.S. society. My research motivation was to understand technologies' roles in newcomer adaptation across *different cultures*, and it was therefore practical to get in touch with newcomers who adopted integration and assimilation strategies. To this end, my recruitment methods included mainly recruiting from public online platforms and non-profit orga-

nizations that provided English tutoring services, and my study design incorporated study materials designed in simple English. Immigrant populations that adopt separation and marginalization strategies might have concerns about getting in touch with academic researchers, and could thus be hard-to-reach populations for academic research (e.g., some groups of Latin American immigrants (*Vahabi et al.*, 2015). These populations were more likely to be reached through their personal networks and by people with sufficient background knowledge of their culture. Therefore, although my studies did not explicitly filter out participants who were likely adopting the separation and marginalization strategies, most of my participants were likely to be those who were willing to remain in contact with the U.S. mainstream culture.

Acculturation Framework's Validity in Technology-related Research Although the acculturation framework is widely used in cross-cultural psychology studies, few scholars have adopted it to frame technology-related research. A possible explanation is that recent research has mainly adopted the acculturation framework for studies on *ethnocultural groups* (i.e., immigrants and the mainstream community of their destination country), but the framework's flexibility to examine the cultural contact of other contexts has not been widely explored.

As I described, the original definition of acculturation refers to "*changes that happened across two cultural groups*" (*Redfield et al.*, 1936). In other words, acculturation is not limited to changes between ethnocultural groups. This suggests that the framework is valid to frame changes resulting from a wide range of cultural group contacts. Some scholars also leveraged the framework to study community contact in workplaces (newly hired employees and senior members) (*Hommey et al.*, 2020) or educational contexts (rural students who went to an urban school) (*Xiulan*, 2015). In this sense, the acculturation framework is able to frame group contact and adjustments in technology-supported communities. For example, *Brailas et al.*

(2015) studied educators' and students' acculturation process when they joined the Wikipedia community.

In the next subsection, I unpack the concept of immigrant adaptation and the motivation of my dissertation research—to understand technologies' roles in transnational newcomers' trust development in adaptation.

2.1.2 Adaptation

As described in the prior subsections, acculturation refers to macro-level group or societal changes, and adaptation refers to micro-level changes of an individual or a small community to respond to the macro-level society changes. Adaptation defined in relation to acculturation is a broad concept. Therefore, adaptation has received a variety of operationalized definitions from domains such as clinical psychology, social learning models, and social cognitive psychology (*Searle and Ward*, 1990).

These past definitions, however, overlooked adaptation's multi-faceted nature and only focused on a single aspect of adaptation. Immigrant adaptation did not have a widely accepted definition until *Searle and Ward* (1990) proposed and tested their version. *Searle and Ward* argued that adaptation should be viewed from two dimensions, *psychological* and *sociocultural*, and conducted studies to provide evidence to support this distinction. Psychological adaptation refers to a person's perception of emotional well-being and satisfaction in response to the host country's mainstream society. Research on psychological adaptation tends to study immigrants' mental health and perceived comfort of interacting with people of the host country, e.g., *Bektaş et al.* (2009); *Tonsing* (2013). Sociocultural adaptation refers to a person's sociocultural skill development to have effective interaction with the host country. Research on sociocultural adaptation often measures an immigrant's language and cultural value acquisition as an indicator of an immigrant's sociocultural adaptation, e.g., *O'Reilly et al.* (2010); *Wu and Mak* (2011). Searle and Ward's distinction of

psychological and sociocultural adaptation reflects the nature of how humans make psychological and sociocultural adjustments: "*[Past literature] suggests that psychological well-being may follow a curvilinear path approximating a U-curve, while social skills' acquisition, including communication abilities, should reflect a linear improvement over time*" (*Searle and Ward*, 1990, p. 450) and therefore should be viewed as two different components.

Searle and Ward's adaptation definition was widely studied because its simplicity made it robust for adapting to different contexts of immigration. Some scholars have proposed new definitions to replace or extend the psychological and sociocultural adaptation distinction. Most of these new versions, however, did not receive much attention and were not empirically examined. For example, *Aycan and Berry* (1996) extended adaptation's categorization by proposing the third dimension: *economic adaptation*. Socioeconomic adaptation refers to the level in which a person can obtain satisfying employment during the contact with a new culture. However, scholars have paid less attention to this version of the definition in past research, likely because employment and financial status are often studied as part of sociocultural adaptation (*Masgoret*, 2006; *Sinacore et al.*, 2009).

My dissertation follows *Searle and Ward*'s definition of adaptation and goes on to explore *social support*, a key predictor of both psychological and sociocultural adaptation that I introduce in the next subsection. Note that, theoretically, smooth or successful adaptation does not necessarily mean an immigrant *integrates* or *assimilates* to the host country's mainstream society. More precisely, immigrants' successful adaptation refers to individuals reaching their desired acculturation outcomes based on their acculturation strategies. Therefore, immigrants could have a successful adaptation even when their strategies are separation or marginalization.

Another note is that, under the acculturation framework, individuals of the dominant group, i.e., members of the host country's mainstream society, also need to

adapt when they face immigrant communities, e.g., *Mayda* (2006); *Nesdale and Mak* (2000). Although my dissertation's focus is not on exploring the U.S. mainstream society's attitudes toward immigrants, my study results contribute to this topic by revealing immigrants' perceptions of local-born populations' attitudes and contributing political implications to address any existing barriers.

2.1.3 Adaptation and Social Support

Social support is one key predictor of smooth immigrant adaptation. *Searle and Ward* (1990) argued that social support mitigates *acculturative stress* and thus fosters immigrant adaptation. As shown in the acculturation framework, (Fig. 2.1), acculturative stress refers to the stress caused by the conflict and uncertainty when two cultures get in touch (*Berry*, 1997). *Searle and Ward* (1990) evaluated social support by measuring immigrants' satisfaction of social contact with local-born populations. Their results suggested that social support is positively correlated to immigrants' psychological adaptation. Although *Searle and Ward* did not find significant correlations between social support and immigrants' sociocultural adaptation, other researchers extended their studies and found that social support has positive effects on immigrants' sociocultural adaptation (*Caligiuri and Lazarova*, 2011; *Ng et al.*, 2017).

Nevertheless, knowing social support is helpful for immigrant adaptation is not enough. Other research questions regarding social support have emerged and been studied in immigration research. Next, I introduce two research topics extending this research: social support types and social support sources in immigrant adaptation.

2.1.3.1 Social Support Types

Understanding what types of social support are needed by immigrants helps scholars understand how each type of social support might benefit immigrant adaptation and how the support is accessed. Past research leveraged social support categories

proposed by *Cohen and Wills* (1985), including *informational*, *instrumental*, and *emotional* support, to frame resources that immigrants sought or received from their networks. These three types of resources are defined as follows:

- Informational support: advice or information that helps to address a person's problems or needs;
- Instrumental support: tangible forms of aid, service, and assistance such as money, labor, or materials;
- Emotional support: the empathy and trust one receives from his or her social connections.

Some studies include a fourth type of support, such as companionship (*Cohen and Wills*, 1985) or appraisal support (*Langford et al.*, 1997). In this study, I focused on the three support types that were commonly used across past research. This is a common practice done by past studies. For example, *Chadwick and Collins* (2015) studied how non-profit social settlement organizations provide informational, instrumental, and emotional support to help immigrants' adaptation in Canada. *Caligiuri and Lazarova* (2011) also provided a systematic review on immigration studies on these three social support types' effects on female immigrants' cross-cultural adaptation.

2.1.3.2 Social Support Sources

Granovetter's social capital theory suggests that weak ties, i.e., social ties that are from outside a person's immediate network, are more beneficial than strong ties, i.e., ties from a person's immediate network, on accessing new resources (*Granovetter*, 1973). However, this statement could not be easily adopted to immigration contexts. There have been debates on what sources of social support, i.e., types of social ties, might benefit immigrant adaptation. On one hand, some scholars found that support from the host country's mainstream community is more beneficial (*Kanas et al.*,

2012; *Lancee*, 2010; *Moroşanu*, 2015). On the other hand, other researchers found that support from immigrants' ethnic or co-national communities is more critical to their adaptation and resource-seeking (*Kloosterman et al.*, 2010; *Sanders et al.*, 2002). Scholars suggest that these differences might be caused by social contexts among different immigrant populations, as well as the host country's attitudes toward immigrant groups (*Cheong et al.*, 2016; *Grzymała-Kazłowska*, 2014).

In my research, I did not specify target social support sources. Instead, I explored from participants' experiences to understand how different ties through social media technologies may benefit their adaptation to a new place.

2.1.3.3 The Missing Role of Social Media for Acquiring Social Support

Although this past research identified how immigrants access different types of social support and how different types of ties could be helpful, little is known about how social media technologies play a role in immigrants' access to social support. Social media technologies have changed how people communicate and seek resources. Intangible resources such as informational and emotional support can be perfectly afforded by online platforms, but tangible resources such as instrumental resources might require offline labors to access. For instance, *Lampe et al.* (2014) studied how people respond to friends' requests for help through social media technologies, and their results suggest that people are least likely to respond to requests that require offline interactions. This study suggests that different types of resources are associated with different types of challenges. Not to mention, different populations might face different situations when they seek social support through online platforms because of their social contexts.

On the other hand, online platforms allow users to get in touch with a wider range of people. Online platforms provide a convenient way for people to easily build and get in touch with weak ties and enhance their interactions with strong ties (*Burke*

et al., 2011; *Ellison et al.*, 2007). In other words, the Internet has changed how people seek social support from their networks. In fact, Granovetter's social capital theory (*Granovetter*, 1973) has been extensively studied since online social platforms emerged to address communication changes caused by the Internet.

This past research all suggests that social media have potential to change immigrants' adaptation by changing how they seek social support. In fact, recent immigration studies argued that online communication changes how immigrants prepare for migration and build communities in their migration process (*Dekker and Engbersen*, 2014; *Komito*, 2011). Some immigration studies have touched on social media technologies' impact on immigrants' networking and resource-seeking, but this domain remains underexplored (see the review in Subsec. 2.1.5). My dissertation research sheds light on social support types that newcomer immigrants seek through different social media technologies, and the challenges associated with their needs. In addition, my dissertation contributes to this literature by identifying how different kinds of local social connections foster immigrants' acquisition of social support through the Internet.

2.1.4 Adaptation and Trust

To acquire social support from their networks, immigrants need to build connections in the host country first. However, meeting strangers, especially in a new environment, is full of uncertainty and risks. Challenges such as language barriers and limited knowledge regarding legal processes lead to high perceived uncertainties and risks of getting in touch with other people. Some scholars attribute these perceived uncertainties and risks to systematic issues such as discrimination or unfriendly legal systems in the host country (*Daftary*, 2020; *Griffin and McIntosh*, 2015). Nevertheless, even in countries with friendly and open attitudes toward immigrants, this population's perceived uncertainty and risks are likely to be high. This suggests that

changing the host country's attitudes and legal systems might not be sufficient to address immigrants' perceived uncertainties and risks.

The other key to mitigating immigrants' perceived uncertainty and risks is fostering their trust. Trust refers to a social actor's (an individual or a group of individuals) willingness to rely on another social actor. In fact, immigrants are likely to have low generalized trust and interpersonal trust in a new country (*Carvalho*, 2019; *Dinesen*, 2012, 2013; *Lim and Morshed*, 2019). Generalized trust is the fundamental form of trust that refers to a person's tendency to trust another social actor. A person's generalized trust influences whether it is easy for her to trust another social actor. *Dinesen* (2012) conducted a survey to compare first-generation immigrants' generalized trust to that of second-generation immigrants and natives in Northern European countries. The researchers found that first-generation immigrants have lower generalized trust than natives and second-generation immigrants. Fortunately, *Dinesen*'s results also suggested that immigrants' trust is not fully based on their cultural heritage and thus unchangeable. Instead, the host country's culture could affect immigrants' generalized trust. The authors found that immigrants' generalized trust increased over time after their migration to Northern European Countries, which were countries with high generalized trust among their citizens.

Immigrants' low generalized trust can lead to low interpersonal trust during their adaptation process (*Carvalho*, 2019; *Stolle et al.*, 2008). Extending the research on immigrants' generalized trust, *Carvalho* (2019) conducted a survey study in 12 ethnically diverse neighborhoods from four European cities (Bilbao, Spain; Lisbon, Portugal; Thessaloniki, Greece; and Vienna, Austria) to measure people's interpersonal trust in their neighbors. The results showed that immigrants, compared to native-born populations, consistently had lower trust in their neighbors in all of the 12 neighborhoods.

Recent studies have suggested that location-based social media platforms, such as NextDoor, have the potential to enhance interpersonal trust among people in local communities (*Kwon et al.*, 2021). These platforms are also likely positively associated with immigrant adaptation to local communities (*Farzan et al.*, 2017), but it is unclear *how* these platforms were interwoven with immigrants' trust development. Since ICTs became accessible in the 2000s, immigrants have started to use ICTs to seek and access social support, which I review in the next subsection.

2.1.5 Immigrants' Social Media Technology Use

In the early 2000s, scholars noticed that immigrants used social media technologies to address needs in their adaptation. Immigrants' motivations of using social media can be categorized into two types: remaining connected with networks in the home country, and fostering their adjustment to the host country (*Acharya*, 2016). Maintaining connections with their home country supports immigrants' psychological adaptation by reducing their stress and mitigating their homesickness (*Bacigalupe and Lambe*, 2011; *Benítez*, 2006).

On the other hand, use of technology for making new connections online, seeking information, and learning cultures to connect with the host country directly supports immigrant adaptation. Using social media that provide local information in the host country fosters immigrant adaptation. For instance, *Chen* (2010) conducted a survey with Chinese immigrants in Singapore and found that Chinese immigrants who browsed local websites more often than Chinese websites had better psychological and sociocultural adaptation (*Chen*, 2010).

However, a common view across past research on immigrants' technology use was that technologies are just "tools." In other words, these studies saw social media as tools that lead to convenience, rather than essential pieces in adaptation. Research in the early 2000s focused on immigrants' motivations for using social media

technologies, and how these technologies served their goals such as communication or information-seeking, e.g., *Bacigalupe and Lambe* (2011); *Peeters and D'Haenens* (2005); *Tsai* (2006). Limited research was available to understand how social media *actively* affected the migration process. The view of technologies as tools remained for years until the last decade.

Extending the research in the early 2000s, immigration studies in the last decade started to view social media technologies in a different way. These technologies were no longer viewed as tools, but as a fundamental component embedded in immigrants' adaptation process. Scholars argued that social media technologies, such as instant messengers and online forums, were essential to the migration process, and social media technologies' convenience and efficiency changed the migration process (*Dekker and Engbersen*, 2014; *Komito*, 2011). For example, *Dekker and Engbersen* (2014) found that immigrants were able to connect to people in the host country *before* and *at the early stage of* their migration through social media technologies. Before the wide use of social media technologies, immigrants relied on kinship networks, immigrant associations, or their workplaces (e.g., schools or companies) to find connections and resources *after* they arrived in the host country. Social media technologies lowered the barriers to adapting to the host country by allowing immigrants to access resources and information at different stages of their migration process. *Komito* (2011) also found that immigrants in Ireland were able to use the Internet to strengthen their local communities. Instead of relying on offline encounters, they used online interactions to exchange resources and interact with other immigrants in Ireland more frequently.

However, a good amount of immigration research up until today still view social media technologies as *black boxes*. That is, immigration scholars still paid little attention to technological components' effects on immigrant networking and resource-seeking. Although recent studies have recognized social media technologies' importance in immigrant adaptation and networking, e.g., *Dekker and Engbersen* (2014);

Komito (2011); *Lášticová* (2014), few have looked closely at technology design and the impact that these designs may cause on immigrants' needs.

In contrast to immigration research, HCI research has a long history studying general newcomers' transitions when they join a community, typically online communities. These studies explored how factors that affect newcomers' decisions to stay and remain active, and other stakeholders' support in newcomer transition. For example, supporting newcomers to Wikipedia communities is a widely studied topic, e.g., *Li et al.* (2020b); *Tausczik et al.* (2018). Other HCI scholars also studied platforms such as Reddit (*Hsieh et al.*, 2013). Recent studies also explored communities that across online-offline boundaries, such as MeetUp and E-Democracy (*López et al.*, 2015; *Lu et al.*, 2017).

In fact, some recent HCI studies began to open these *black boxes* in immigrants' adaptation process and started to look into designs for this population, though still few studies investigated their newcomer experience. In the next paragraphs, I review a few lines of recent research that shed light on technology design to support immigrants' networking and resource-seeking for adaptation. I also acknowledge past HCI research on immigrants' technology uses that had little to do with networking and resource-seeking.

Topics Exploring Technology Designs for Immigrant Networking and Resource-seeking The past research that explores social media designs for immigrants' adaptation needs could be categorized to the following main topics: resource-seeking, identity transition, safety and privacy concerns, and well-being.

The major topic of past research on immigrants is their *resource-seeking*. Before the Internet was widely used, immigration research had already explored immigrants' resource-seeking and information-seeking to support their adaptation to the host country (*Caidi et al.*, 2010). For example, the public library was a common

venue where immigrants made social connections and acquired information for their new lives in the host country (*Audunson et al.*, 2011; *Khoir et al.*, 2014, 2015, 2017).

After the Internet became widely accessible, immigrants started to move their resource-seeking online. As mentioned, immigration scholars argue that the Internet significantly changed immigrants' migration processes (*Komito*, 2011; *Dekker and Engbersen*, 2014). It is very common for immigrants to use online platforms to reach out to their ethnic communities in the host country or native communities around their areas. For example, as described in prior paragraphs, *Dekker and Engbersen* (2014) studied the social media use of immigrants in the Netherlands. They found that immigrants were able to make connections and secure resources through online communication even before they migrated. These connections built in the pre-migration phase further provided immigrants with social support *after* they arrived in the host country.

The importance of locality for immigrants' adaptation remains underexplored. This gap remains underexplored in other past research. For example, *Lingel* (2015) explored how transnational newcomers' "wandering" with information technologies familiarizes them with the new urban environment (in New York City). This research found that wandering in a city with navigation applications such as Google Maps is a way for transnational newcomers to acquire local information and familiarize themselves with the city. However, although social media platforms such as Yelp were mentioned by participants in this study, how the social community aspects of these applications enriched or hindered their information-/resource-seeking was unclear.

Compared with voluntary immigrants, past HCI research paid more attention to designing social media technologies for forced immigrants' (i.e., refugees and asylum seekers) social support. Almohamed and colleagues conducted a series of studies to understand forced immigrants' needs in social support (*Almohamed and Vyas*, 2016, 2019; *Almohamed et al.*, 2017, 2018). Their research found that newcomer refugees

generally lack networks, and the authors proposed design recommendations to address the refugees' social isolation. For example, *Almohamed and Vyas* (2019) argued that technologies should enhance refugee communities and improve their connections with local NPOs to expose them to local communities of the host country. Other scholars have made similar arguments to support refugees in developing networks and acquiring information. For example, *Brown and Grinter* (2016) designed a communication platform for newcomer refugees and local African American mentors, including a human-translator, which allowed newcomer refugees to build rapport and trust with these mentors.

In addition to designing new technologies to support immigrants' networking and resource-seeking, past HCI researchers focused on immigrants' concerns regarding technology. Concerns such as online privacy issues and lack of trust in the host country society were emerging themes across recent studies on immigrants' technology use. Nevertheless, these studies were also focused on forced or undocumented immigrants (*Almohamed and Vyas*, 2016; *Coles-Kemp et al.*, 2018; *Guberek et al.*, 2018).

Theoretically, these design recommendations supporting involuntary immigrants' social support should also be effective in supporting voluntary immigrants because social isolation and lack of social support are common challenges among voluntary immigrants. However, forced immigrants and voluntary immigrants are in different social contexts; evidence is needed to draw from these implications. My dissertation goal was to fill this research gap to understand and provide implications to support voluntary immigrants.

Topics not Related to Immigrant Networking and Resource-seeking Other HCI studies that explored immigrants' needs or technology use were unrelated to networking and resource-seeking. I acknowledge these studies here but do not go too deeply into them.

A large body of HCI research has explored how technologies are interwoven in identity transition (*Dosono and Semaan*, 2019, 2020; *Lingel et al.*, 2014). Other topics include parenting and children's education (*Brown and Grinter*, 2012; *Wong-Villacres et al.*, 2019a,b), forced immigrant youths' social needs (*Fisher et al.*, 2014, 2016), and nonprofit organizations serving immigrants (*Li et al.*, 2018).

Some scholars also made methodological contributions by employing novel research techniques to account for immigrants' unique sociocultural contexts (*Almohamed et al.*, 2020; *Duarte et al.*, 2018; *Sabie et al.*, 2020). For example, *Almohamed et al.* (2020) proposed a participatory design method, *Magic Machines*, which allowed immigrants to use tangible materials to brainstorm for solutions in different scenarios. This speculative design technique empowered refugees' voice and revealed their imagination of future technologies. *Sabie et al.* (2020) invented a toolkit, *Our Home Sketcher*, to help immigrants' storytelling for heritage sharing. This toolkit allowed inexperienced users to sketch their homes on paper and convert to 3D models. Through the process of designing their home, immigrants were able to develop collective memories regarding their cultural identities. All of these studies shed light on immigrants' needs and challenges and how designers and researchers can provide support through technologies for them.

My review in this subsection revealed that designing technologies for immigrants' adaptation is still an underexplored area. In my dissertation, I focused on immigrants' trust development in their social media use for networking and resource-seeking. As mentioned in the prior subsection, fostering immigrants' trust mitigates their perceived uncertainty and risk in finding social support. Past HCI research has rich literature on technology designs that support users' trust in a platform, a community, or another individual. My dissertation extends this line of research by addressing

newcomer immigrants' needs and proposing design implications to support their trust development.

To understand immigrants' trust development in their social media uses, I adopted Social Exchange Theory to frame their social behaviors when using technologies. I introduce the theory in the next section.

2.2 Social Exchange Theory

2.2.1 SET Overview

SET was first proposed by *Homans* (1961) from the view of sociology. Following Homan's SET, *Blau* (1964) and *Emerson* (1962) extended the theory by integrating paradigms such as economics and social psychology. The essential idea of SET is that any social behaviors can be viewed as exchanges. In these exchanges, individuals evaluate the results of an exchange by estimating the *costs* and *values* of a social behavior. SET assumes that humans are rational, so humans tend to maximize their gains and avoid losses in their social interactions. This suggests that a social actor avoids social behaviors that bear uncertainties and risks of losses. Because SET emphasizes the gain and loss of social behaviors, factors that might affect the exchange outcomes are of interest to the scholars. For example, trust, power, structure, fairness, and commitment are topics often studied in relation to social exchange (*Cook et al.*, 2013).

Four core assumptions exist to define what social exchanges are (*Molm and Cook*, 1995, p. 210):

- *Actors engage in relations developed within structures of mutual dependence between actors,*
- *Actors behave in ways that increase outcomes they positively value and decrease outcomes that they negatively value,*

- *Actors engage in recurring, mutually contingent exchanges with specific partners over time, and*
- *All outcomes of value obey a principle of satiation or diminishing marginal utility.*

SET has high flexibility because it does not set up rigorous theoretical constraints. The resources exchanged in a social exchange could be anything, including tangible and intangible resources. SET is also flexible about the *social actors* involved in the exchange. That is, social actors involved in a social interaction, i.e., an exchange, can be an individual or a group of individuals. This flexibility makes SET widely adopted to different social contexts.

My dissertation focuses on trust in social exchange, which is the key factor that mitigates uncertainty and risks. As mentioned in the prior section, migrating and adapting to a new country are accompanied by uncertainties and risks. Therefore, understanding how transnational newcomers develop trust through the lens of technology-mediated social exchange can lead to important contributions.

Two key elements of social exchange are *resources traded in social exchange* and *forms of exchange*. These two elements influence several aspects of social exchange, such as the perceived costs and gains of exchange and the developed social relationships after the exchange. Defining these two elements is thus essential to the scope of the research. In the following subsections, I describe the forms of social exchange and categories of resources.

2.2.2 Forms of Social Exchange

The first key element of social exchange is the form of exchange. The form of exchange is determined by the social structure of actors and the flow of traded resources. As *Cheshire et al.* (2010) argued, these different social structures and resource flows lead to "*underlying difference in types of risk and levels of uncertainty involved in each*

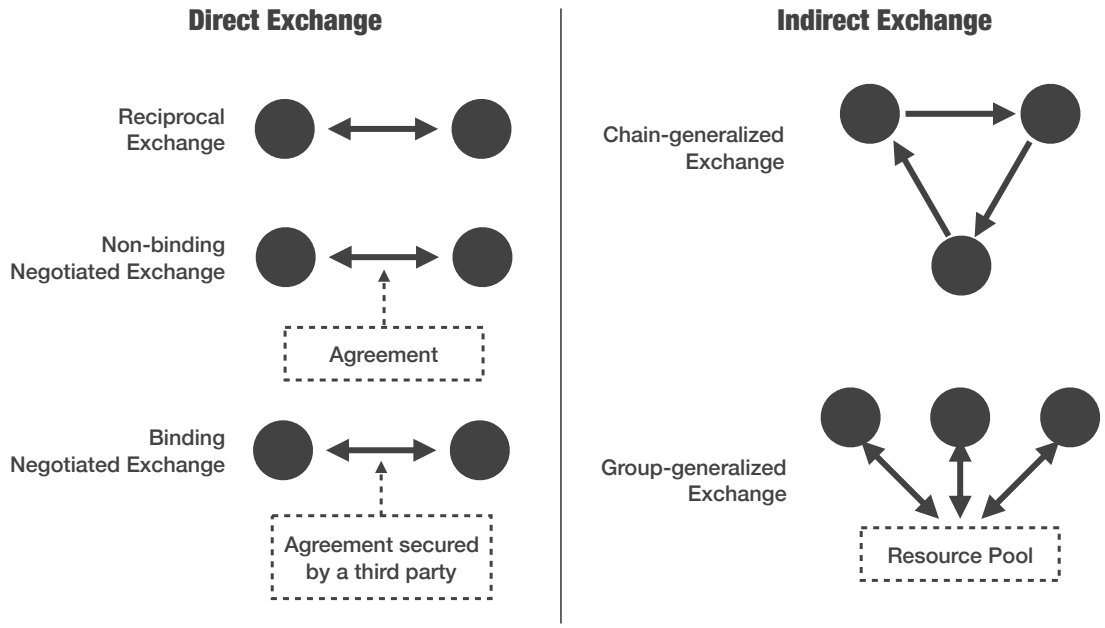


Figure 2.3: Forms of Social Exchange.

mode (form) of exchange." Aspects such as interpersonal trust, risks of exchange, and commitment to the developed relationship are related to an exchange's form (*Cook et al.*, 2013; *Molm and Cook*, 1995). Thus determining an exchange's form is essential to unpack predictors and outcomes of an exchange. Based on the social structure and the flow of resources, social exchange is categorized into five forms: reciprocal, non-binding negotiated, negotiated, chain-generalized, and group-generalized exchange (Fig. 2.3). Next, I provide the definitions of the five forms.

Reciprocal Exchange Reciprocal exchange refers to social exchanges in which two individuals directly trade resources with each other without establishing a mutual agreement. In other words, reciprocal exchange merely depends on the two individuals' social relationship and interpersonal trust in each other. An individual who initially provides resources in a reciprocal exchange would not be able to predict whether, when, what, or how the other individual would return.

For example, John had a problem on his project. His colleague Mike walked by and quickly helped John solve the problem. Without making an agreement in advance, John bought Mike a cup of coffee the next day to show appreciation for Mike's help. In this example, Mike provided information and services to John for solving the problem. John provided goods (a cup of coffee) in return for Mike's help. This type of exchange is considered reciprocal because the two actors involved did not make an explicit agreement for the exchange.

Non-binding negotiated exchange Non-binding negotiated exchange is similar to reciprocal exchange, except in this form of exchange the two individuals create a mutual agreement in advance. Take John and Mike's story as an example again. John was solving a problem for his project. Mike walked by and wanted to help John with the problem. However, before Mike helped John, he asked John to buy him a cup of coffee after he solved the problem. John agreed to Mike's suggestion and asked Mike to proceed. After the problem was solved, John bought a cup of coffee for Mike, as Mike had asked.

The mutual agreement assures that both individuals understand the exchange's details. These details can include more than what to exchange. For instance, Mike and John could discuss when to exchange (e.g., tomorrow), how to exchange (e.g., John would bring the coffee to Mike), and even where to exchange (e.g., the Starbucks next to their office).

Binding negotiated exchange In binding negotiated exchange, two individuals negotiate and reach an agreement about the exchange. Different from the non-binding negotiated exchange, the binding negotiated exchange involves third parties to *assure* the agreement. Therefore, in binding negotiated exchange, it is less likely for the individuals to violate the agreement.

Retake John and Mike's story as an example. John was trying to solve a problem for his project. Mike was to help but asked for a cup of coffee in return for his help. In addition to John's agreement, Mike also asked Susan, a colleague sitting next to John, as a third-party person to assure John and Mike's mutual agreement on this exchange. This third-party assurance supports the two actors' commitment to the exchange, so that John and Mike were more obligated to do what they promised in the agreement.

Chain-generalized exchange In chain-generalized exchange, or just the generalized exchange, a resource receiver does not directly return benefits to the resource provider. Instead, the receiver "returns" the benefits by providing resources to another individual in the group.

In John and Mike's example, this time, after Mike helped John, John did not return anything to Mike. Instead, John kept in mind that he received Mike's help and decided to help other colleagues in the future. A few days later, John helped Susan solve a problem on her project. In this case, John did not return resources to Mike directly but rather returned the resources to another person, Susan, as an indirect exchange.

Group-generalized exchange Group-generalized exchange, or productive exchange, refers to the exchange in which multiple individuals contribute to a shared resource pool and receive collective good from the pool.

When John met a problem on his project, he visited a database that was shared within his team. This database contained past problems and solutions about the project that were reported by other team members. John found that one of Mike's reports could solve his problem, so he followed the report and solved the issue. After John solved the issue, he added his own experience by extending Mike's report. In this example, John made an exchange by receiving resources (i.e., information from

Mike's report) from a shared pool (i.e., the database) and also contributed resources (i.e., extending Mike's report by adding his experience) back to the pool.

Scholars have studied social exchange forms' effects on actors' social relationships, such as trust in exchange partners, commitment to an exchange and relationship, and solidarity of a community (*Cook et al.*, 2013). For example, a rich body of literature has explored how different forms of social exchange are associated with the interpersonal trust developed after the exchange (*Cheshire et al.*, 2010; *Cook et al.*, 2005; *Molm*, 2003a,b; *Molm et al.*, 2000). Although risks and uncertainties before the exchange are highest in the reciprocal exchange form, research suggests that participating in reciprocal exchange is more effective for exchange partners to develop interpersonal trust than participation in other forms (*Cheshire et al.*, 2010; *Molm*, 2003a; *Molm et al.*, 2000). Given the crucial role of social exchange forms, in my dissertation I investigated what forms of exchange newcomers participate in and what effects these forms have on newcomer adaptation.

2.2.3 Resources of Social Exchange

Resources are "*possessions and behavioral capabilities that are valued by other actors*" (*Molm*, 2006, p26). That is, any objects and behaviors that bear value to other individuals can be seen as resources. Resources are thus at the core of social exchange because their value and the potential costs of the exchange affect individuals' decisions to make exchanges as well as the outcomes of exchanges.

Foa and Foa (1980, 2012) proposed a framework of two dimensions for resources in social exchange: *particularism* and *concreteness* (Fig. 2.4). Particularism refers to whether a resource is universal to everyone or has a particular meaning to a certain individual. Concreteness refers to whether a resource is tangible or intangible.

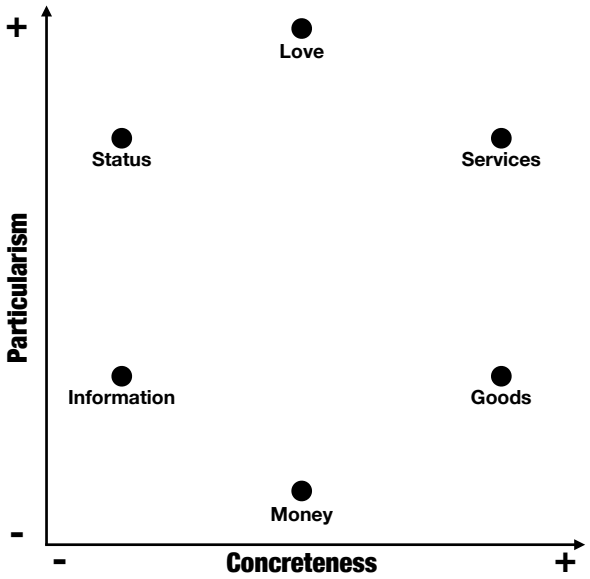


Figure 2.4: Resource types of social exchange. Adopted from *Foa and Foa* (2012).

With this framework, *Foa and Foa* (1980, 2012) further clustered resources in social exchange into six major categories:

- Love: an expression of intimacy, regard, and warmth;
- Status: an evaluative judgment that conveys prestige, regard, or esteem;
- Information: advice, opinions, instruction, or enlightenment, excluding behaviors that could be classed as love or status;
- Money: any coin, currency, or token that has some standard unit of exchange value;
- Goods: tangible products, objects, or materials; and
- Services: activities that affect the body or belongings of a person and that often constitute labor for another.

Foa and Foa's framework navigates research on how different types of resources impact social exchange. For example, a resource's concreteness is related to its costs for exchange. Intangible resources, such as information, status, and love, are easy to duplicate and thus have low or even no cost if they are provided in social exchange (Fig.

2.2a). Scholars thus argue that exchange of intangible resources results in collective values that benefit all actors involved in the exchange, and in consequence facilitates actors' social relationships, such as trust and community engagement (*Cheshire and Cook*, 2004; *Kollock*, 1999).

In Study 1 and 2, I applied *Foa and Foa* (2012)'s framework of social exchange resources to analyze resource types (i.e., social support) that transnational newcomers exchanged through online platforms, and how different resource types affected the exchange outcomes.

2.2.4 Alternative Theories to SET

At the beginning of my dissertation research, I used social resources (or, more broadly, social capital) to frame Study 1 and Study 2. These theoretical frameworks did not have an assumption regarding human rationality. I turned to use SET to frame my dissertation was based on past research that adapted SET to frame newcomers' transition process in organizational science and management science. Leader-member exchange (LMX) and team-member exchange (TMX) are common practices of social exchange that facilitate newcomer adaptation, such as newcomers' trust and commitment development, to their organization (*Banks et al.*, 2014; *Garg and Dhar*, 2014; *Lam*, 2003; *Sluss and Thompson*, 2012). In these studies, the social exchange can be viewed as a practical form of newcomer adaptation. Through social exchange with other community members, newcomers receive resources for their needs and build relationships with other community members. The process of social exchange allows newcomers to adjust themselves to adapt to a community.

In addition, using SET to frame my research has the following advantages. First, past research has well studied SET's validity on framing humans' social interactions in terms of forms and socio-psychological factors such as trust and power. Second,

SET is flexible in different contexts because it does not assume social actors and exchanged resources.

On the other hand, a disadvantage of using SET comes from its assumption — "humans are rational." Rationality here means that humans tend to make decisions that maximize their gains. However, there have been debates about whether this rationality assumption always holds. For example, altruism is a phenomenon that the rationality assumption cannot fully explain or need more contexts to frame (*Margolis*, 1984; *Simon*, 1990, 1993). I will extend this discussion in Ch. VIII to discuss SET's limitations in my dissertation research and how other theoretical frameworks may address these limitations.

2.3 Literature Review Summary

The literature review made clear that our knowledge regarding immigrants' social technology use for resource-seeking in their adaptation process is still limited. This is especially true in relation to technologies, which were mostly viewed as black boxes in past research. Therefore, ways to improve technologies to better support immigrants' adaptation remain underexplored.

Past work revealed how SET can be used to frame social interactions and relationships of social actors involved in social exchange. Aligning with this use, I adopted the SET to understand how immigrants use social technologies to interact with people in the host country in their adaptation process. Specifically, my dissertation explored how immigrants' trust in local communities develops with their use of social technologies.

CHAPTER III

Study 1: Examining Newcomers' Participation in 1-1 Interactions on People-nearby Applications

My past research studied how people-nearby applications (PNAs) support people in developing social capital across the online–offline boundary (*Hsiao and Dillahunt*, 2017b). The results suggested that newcomers who are new to a physical area can be a specific subgroup that benefits from meeting new people using PNAs. In the present dissertation, I adapted the Social Exchange Theory (SET) to re-analyze the data that I collected in *Hsiao and Dillahunt* (2017b) to understand newcomers' use of PNAs for participation in online local social exchange. By re-analyzing the dataset, I aimed to answer the following research questions:

- RQ1-1: What types of resources do newcomers request and provide in online local social exchange through PNAs?
- RQ1-2: What forms of online local social exchange do newcomers participate in through PNAs?
- RQ1-3: What factors influence newcomers' intention of participating in online local social exchange through PNAs?

The results suggested that participants, i.e., newcomers who used PNAs, *did not* intentionally look for information resources when they tried to match with local res-

idents. Instead, participants expected to make new friends, kill time, find someone for a romantic relationship or casual sex, and find ride-sharing or couch-surfing opportunities. Participants' expectations suggest that they look for exchange of love, status, and services when they use PNAs to meet locals.

I found that the only salient form of exchange between newcomers and local residents was reciprocal exchange. This could be related to the fact that newcomers started their interactions with locals by exchanging intangible resources such as information, love, and status. With little monetary cost for these intangible resources, negotiation was thus not necessary. Group-generalized exchange and chain-generalized exchange were not salient, either, which could be because existing PNAs were mostly designed to support communication between two individuals.

Last, newcomers' primary concerns about local social exchange through PNAs were (1) the risks of meeting people they were not interested in and (2) safety issues. To mitigate the perceived risks, newcomers utilized strategies such as *browsing multiple user profiles to assess local communities*, *adjusting PNA filters to narrow the match pool*, and *reviewing individual profile contents* before they matched with any locals. After establishing a match, newcomers also *set up boundaries between different communication channels* before they moved their relationships from online to offline.

In the rest of this chapter, I first give a definition of PNAs. Then I describe how I collected and analyzed the dataset. I then provide findings regarding how newcomers are involved in local social exchange through PNAs. Last, I list research implications that inspired Study 2.

3.1 Definition: People-nearby Application

In this section, I define PNAs and distinguish among online social network sites and applications, social-matching systems, and people-nearby applications. In social networking applications such as Facebook, people share their existing social networks

and are not necessarily looking to meet new people; for a large part, they are communicating with individuals who are part of their existing and extended social network (*boyd and Ellison*, 2007). While some social networking sites recommend new connections based on users' common social networks, they do not aim to bring people together offline.

On the contrary, social-matching systems bring people together in both online and physical spaces (*Terveen and McDonald*, 2005). Unlike typical recommendation systems that recommend items to people, social-matching systems recommend people to people (*Mayer et al.*, 2015a; *Terveen and McDonald*, 2005), and people-nearby applications are one example of a social-matching system. PNAs facilitate social matching among users based on their physical location (*Toch and Levi*, 2013; *Van De Wiele and Tong*, 2014). Because physical location data assume mobility, these applications are typically designed for mobile devices and are not web-based systems, as are many social networking sites. Another distinguishing factor between social-matching systems like PNAs and online social networking sites like Facebook is that on social networking sites (or even traditional web-based dating sites), the prospect of physical interaction is a "*distant, or anticipated possibility*" (*Van De Wiele and Tong*, 2014, p. 620); while this is not an explicit reason for use, PNA users have an inherent motivation to meet offline.

From the standpoint of application features, most PNAs require users to create a personal profile where they specify interests, age, and gender and can provide a photo. PNAs also enable users to search via geographic radius to find other PNA users, and show how far or near, within miles, other users are. Most PNAs allow users to set filters based on gender, age, and distance; to connect through the application via built-in instant messengers; and to block contact from others.

I make these distinctions because while social network research has grown considerably, research on social-matching is still relatively new. Understanding how new-

comers use these systems to adapt to a new physical community given the inherent safety concerns of these applications is an open question.

3.2 Data Collection

3.2.1 Recruitment

Participants were recruited from March 2016 to May 2016. I followed the direction of *Mayer et al.* (2016) and emailed approximately 600 university students, choosing this population because of their life stage and potentially high level of sociability. To ensure participant diversity, I recruited online via Craigslist, Meetup.com, and Facebook groups of local communities; via PNAs such as Tinder, Bumble, and Badoo; and offline by posting flyers to school bulletin boards, churches, and gyms. I also conducted snowball sampling so participants could refer people they met via PNAs. Finally, to address the research questions, my colleagues and I screened participants based on the following criteria:

- Participants needed to be 18 years or older,
- Participants had to have used a PNA within the last 30 days, and
- Participants had to have made at least one new connection using PNAs.

Note that this study did not target newcomers when I conducted it, so the screening criteria did not require participants' experience using PNAs to have occurred when they were new to a physical area.

3.2.2 Interview Procedure

My team began the interviews by first obtaining consent from the participants per institutional review board requirements. The consent form provided an overview of the study and the study procedure. Participants completed a short demographic

survey after signing the consent form and provided information such as ethnicity, education, and occupation. We then conducted interviews.

The three main topics covered in the interviews included online and offline interactions with matched partners, motivations for using PNAs, and user-interface and system issues when using PNAs. If participants used multiple PNAs, we further asked them to compare the differences among the PNAs (e.g., interface features and types of people they met on various platforms).

We began interviews by asking participants to describe their most memorable experience meeting individuals on PNAs, and how this relationship developed. We followed up with these questions: "*Could you describe the first conversation between you and that person?*" and "*How did you decide to meet him or her offline?*" and "*What places have you been since you two met offline?*" When participants mentioned specific application features, we asked them to open the application and show us how they interacted with others via the application. During this process, they described specific features they used. We used this technique to help participants recall their experiences and the application features they used.

After capturing at least one concrete experience, we asked participants about their motivations for using the applications and their overall feelings about the applications. We asked participants to describe their first impression of PNAs and how and why they decided to use the applications. For example, we asked participants to "*Please describe how and why you decided to start using the application(s) and your motivation for continuing to use them.*"

Last, we asked participants to describe any interface and system issues they faced. These questions highlighted whether any of the features was useful in making connections and interacting with others. We also asked: "*What parts of the interface do you like most?*" and "*Could you describe how you adjust the settings of the app?*"

3.2.3 Participant Overview

ID	Demographic	Newcomer Type	Length of Use	PNA Use Location
P1	Diya (F, 20-29)	International student, traveler	1.5y	U.S. Midwest
P2	Ashwin (M, 20-29)	International student	8m	India, U.S. Midwest
P3	Paul (M, 34)	Traveler	2m	Persian Gulf, Europe, U.S. Midwest
P4	Leo (M, 20-29)	Domestic migrant	1.5y	U.S. Midwest
P6	Rani (F, 26)	International student	6m	U.S. Midwest
P9	Cao (F, 24)	Domestic migrant, immigrant	2y	U.S. Midwest
P11	Akani (M, 34)	Traveler, immigrant	4y	Nigeria, Ghana, U.S. East Cost
P13	Ting (F, 25)	International student	8m	U.K., Taiwan
P14	Mike (M, 25)	Domestic migrant, traveler	2y	U.S. Midwest

Table 3.1: Participants were numbered as P1–P14. The data were collected to study PNAs' broad benefits in the beginning, so participants who were not newcomers were excluded from this reanalysis. The Demographic column shows participants' names (pseudonyms), gender, and age. In the Length of Use column: m = month(s); y = year(s).

Table 3.1 presents the demographic information of the nine participants who had experience using PNAs as newcomers to a physical area. All participants were in their 20s and early 30s. In terms of newcomer types, four participants were international students, four were travelers, three were domestic migrants, and two were immigrants.

3.3 Data Analysis

To analyze the modes of social exchange and exchanged resources, I adapted the *provisional coding* approach for analysis (*Saldaña*, 2015). In provisional coding,

Resource Type / Newcomer Behavior	Love	Services	Goods	Money	Information	Status
Resources that newcomers' proactively looked for	X	X				X
Resources provided by newcomers	X	X			X	X*
Resources received from locals	X	X	X**		X	X

Figure 3.1: This figure presents the types of resources that newcomers looked for, provided, and received through social exchange on PNAs. Participants did not intentionally look for information and goods when they matched with people on PNAs. Instead, love, status, and services were the types of exchanges that newcomers looked for through PNA matches.

researchers develop codebooks based on prior established theories and frameworks. With multiple rounds of data analysis, researchers update the codebook by adding, editing, or removing codes in the codebook. For this study, the first-round codebook was developed based on modes of social exchange and exchanged resources.

I report my findings in Sec. 3.4 to Sec. 3.6. I start with types of resources that newcomers exchanged with locals through PNAs (Sec. 3.4) and what forms these exchanges took (Sec. 3.5). In Sec. 3.6, I report participants' concerns about online local social exchange through PNAs and the strategies they employed to address these concerns.

3.4 Online Local Social Exchange between Newcomers and Locals

3.4.1 Information Exchange before Love and Status

Participants' main motivation of using PNAs was to match with locals to exchange *status*, i.e., to address their boredom or social isolation (P1, P4, P11); *love*, i.e., to

establish new friendships (P1, P2, P3, P6, P9, P11, P13, P14); romantic relationships (P4); or sexual relationships (P11, P14).

Although participants rarely had the intention of seeking resources other than status and love through PNAs, newcomers and locals often exchanged information. The most common contents of exchanged information were popular local spots and social events. For example, all participants stated that they received a recommendation for local restaurants from their matches. For example, when Diya [P1] was new to the town where she lived, she matched with a man through Tinder and received the man's recommendation for burger restaurants.

> "*At that time, I was new to [a Midwestern town] and the guy was a native [to the town], so he gave me a lot of tips about what to do in and around [the town]... I told him I like burgers, so he recommended some places for burgers.*" Diya [P1]

Besides recommendations for local spots and events, another common type of information that participants received was the knowledge about local social norms and lifestyles. Ting [P13], who was an international student, stated that PNAs allowed her to really learn about life in London: "*It's only [when] I started to use Tinder, I started to know about London.*" Paul [P3] also talked about learning the local culture of curfew from his match when he was traveling to the Persian Gulf area.

> "*The Persian Gulf region is somewhat of a strict Muslim country. They have curfews and stuff, and if you're a woman, life is hard. She said that she has this curfew where you have to be home by 1 a.m.*" Paul [P3]

In these local exchanges, newcomers provided information related to their backgrounds as a return, such as information about their home city or travel experience. Information about common interests was also often exchanged, such as music and

leisure activities. In some cases, participants had common social connections with locals, and they exchanged information about these overlapped connections. Two participants (Diya [P1] and Rani [P6]) mentioned that they had matched with PNA users who shared common friends. Stories about their common friends served as an icebreaker with their matches.

These exchanges of status, love, and information did not always lead to face-to-face interactions. In other words, these newcomers did not always meet their match offline, and thus only intangible resources could be exchanged. Four participants (P1, P2, P6, and P13) left some of their local matches as remote communication and did not meet with them in person.

3.4.2 Offline Encounters Support Exchange of Goods and Services

Compared to intangible resources such as status, love, and information, tangible resources were less often exchanged between a newcomer and a local through PNAs. This difference between intangible and tangible resources could be related to tangible resources' nature—these resources need to be exchanged offline, but not every participant was willing to meet their matched partner in person.

The most salient type of tangible resource involved in participants' exchanges with locals was services. Participants received services such as ridesharing and help on documents from their matched locals. For example, Cao [P9], who was an immigrant from China, matched with a Chinese immigrant who had lived in a Midwestern city for more than ten years when Cao moved to the city. This individual helped Cao practice driving, buy a car, and negotiate the price with the dealer, and drove Cao around the city to finish the process of getting a car. As another example, Akani [P11] was a Badoo user from Nigeria, and he attended a one-week training program in Ghana for his musical career. He matched with an individual on Badoo who lived in Ghana and who provided him with a free stay and free rides during his visit:

> "*He was actually very helpful ... He took me to different places I needed to go to because I didn't know the place. Some of the places don't really have directions, so you need somebody who is local to take you around. He was able to do that.*" Akani [P11]

In addition to receiving services such as ridesharing and house-sharing, we found that PNAs supported introductions to larger social networks. For example, those matched with our two participants (Cao [P9] and Akani [P11]) introduced them to their friends and families, who were also local. I categorized this introduction to a larger network as an exchange of services. This finding suggests that meeting local people on PNAs could lead to new local social networks, which could help newcomers access local resources for their adaptation.

Compared to the tangible resources they received, most participants did not mention returning goods or services in these exchanges. Only Paul [P3] and Leo [P4] mentioned that they provided ridesharing to their matched counterparts when they met offline. This finding suggests that the exchanges between newcomers and locals could be unbalanced. Newcomers were less likely to provide tangible resources in local social exchange. These unbalanced exchanges could be associated with the high cost of tangible resources. Newcomers might have limited resources in a new area and thus be unable to afford the high costs of tangible resources such as goods and services.

3.5 Forms of Online Local Social Exchange between Newcomers and Locals

Table 3.2 presents the form of exchanges that happened between participants and their local counterparts. The reciprocal exchange was the most common form of local social exchange that occurred between newcomers and locals through PNAs.

Provided \ Received	Love	Services	Goods	Money	Information	Status
Love	Reciprocal	Reciprocal	Reciprocal		Reciprocal	
Services	Reciprocal	Reciprocal	Reciprocal		Reciprocal	
Goods						
Money						
Information					Reciprocal	
Status	Reciprocal	Reciprocal			Reciprocal	Reciprocal

Table 3.2: Findings summary.

All exchanges that happened through PNAs were between two individuals, and no participant mentioned negotiation with the people they matched in these exchanges. Reciprocal exchange was likely the most common form for a couple reasons. First, chain-generalized and group-generalized exchanges were not likely to happen because of the existing PNAs' design. Most existing PNAs supported one-on-one interactions rather than interactions among multiple users. Second, social exchanges were only likely to happen between the two individuals who matched through PNAs, so generalized social exchanges, which happen among groups of people, were not likely to occur.

I did not find salient examples of negotiated exchange from the dataset, but there was an example that contained implicit negotiation in Paul [P3]'s experience. When Paul [P3] took a trip to the Gulf Region, he matched with a woman on Tinder. Paul [P3] asked the woman to hang out offline (requesting companionship as status) and was willing to give a ride to the woman (providing a ride as a service). However, the woman was not willing to meet Paul [P3] offline until she felt safe after spending more time chatting with Paul on Tinder.

In this case, the woman did not specify explicitly what she wanted to accept Paul's request for exchange. However, she agreed to hang out with Paul [P3] offline after

she received more perceived safety (status) from Paul. The woman's agreement after receiving status suggests that there was an implicit negotiation.

Last, the two forms of generalized exchange were not salient. A possible explanation is that most existing PNAs are designed for interactions between two individuals, but the two forms of generalized exchange happen among multiple actors of exchange. Therefore, the fact that generalized exchanges do not happen through PNAs is reasonable.

3.6 Newcomers' Concerns about Online Local Social Exchange through PNAs

Participants' primary concerns about online local social exchange through PNAs were the perceived *risks* of interacting with a stranger. Although the participants actively used PNAs to make new connections, they still perceived that this use could be risky. The risks here include any results that newcomers did not anticipate and might cause a loss. In the case of social exchange through PNAs, risks of matching with a local person could range from very low, such as matching with people who are not of interest, to very high, such as compromised safety.

Newcomers employed strategies to manage their perceived risks in two phases: before matching and after matching. Next, I describe participants' strategies to manage risks of meeting new people through PNAs in each of these phases.

3.6.1 Before Matching

In the *before-matching* phase, participants used three strategies to reduce risks of interacting with local PNA users: *browsing multiple PNA user profiles*, *adjusting criteria in PNA filters*, and *reviewing individual profile contents*. Participants used the first strategy to get the first impression of the local community and the second

strategy to narrow the user pool. And last, among the reduced user pool, newcomers reviewed user profiles before deciding to match.

Browsing Multiple PNA User Profiles Three participants (Diya [P1], Cao [P6], and Mike [P14]) mentioned that they skimmed profiles of other PNA users without trying to match with anyone when arriving in a new place. Diya intentionally used this strategy to keep herself aware of the types of people who were around when she visited a new place.

> "*There are some times I also just go on there [Tinder] to... not because I want to go actually and meet people or talk to them. If I'm in a new city or something, I just go on there to see what kind of people are there, but I swipe left for everyone. I just want to see who's around.*" Diya [P1].

This strategy is similar to newcomers' strategy in online communities. Newcomers to online communities spend time assessing whether they fit a community before they decide to join a community *Kraut et al.* (2012). In our participants' situations, PNAs provided a similar channel for them to observe people who were local and assess whether they themselves fit the local communities.

Adjusting Criteria in PNA Filters Existing PNAs provide filters for users to narrow the pool that they can match with. Participants stated that they adjusted filters for gender, distance, and age to tighten the user pool that they might match with.

Three participants (Diya [P1], Leo [P4], Mike [P14]) set distances to which they could possibly meet their match in person, though the distance they set varied among participants. These participants set the distance filter to where they could easily arrive. On the other hand, Ashwin [P2] turned it to the maximum distance to enlarge the pool of people he could connect to.

Although adjusting the distance filter is common among general PNA users (*Toch and Levi*, 2013), the distance would have larger effects on newcomers than other PNA users. Newcomers might not have established transportation methods, or have limited knowledge about the public transportation system. Thus limited transportation methods can be a barrier to offline encounters for newcomers, unless the matched locals provide support for transportation. For example, Akani [P11] described how the man he matched with when he traveled to Ghana picked him up from the airport and drove Akani to the city where he stayed. Cao [P9] mentioned that when she was new in her town, she matched with two local individuals. Because she did not have a car, the two individuals both gave her a ride for their offline meetings. One of the two individuals even took Cao [P9] around the city to help her complete the process of getting her driver's license and buying a car.

> "*I met a really good friend from WeChat's people-nearby matching in my first time coming to Michigan... The first time [they met offline], I didn't have a car. Well, I just came here... [In their] first meet, he just drove me to some roads to show me the road in Michigan.*" Cao [P9]

Reviewing Individual Profile Contents All of the participants reviewed other users' profiles to seek more personal information on PNAs. Profile images play an important role in users' matching decisions. Five participants explicitly mentioned using photos to judge whether a profile was trustworthy or represented a fake account (P1, P2, P3, P4, P6).

Besides profile images, participants frequently discussed cross-platform information in the interviews. Some PNAs such as Tinder supported cross-platform integration, which allowed users to link their other social media accounts to their PNA profiles. The main two types of information imported from other social media were mutual friends and photos. Participants' responses suggested that cross-platform in-

tegration influences their trust in other PNA users. For example, two participants (Diya [P1] and Rani [P6]) mentioned that knowing they shared mutual friends with other PNA users influenced their willingness to send invitations to match.

Even if an individual's profile is perceived as safe, newcomers might not send out match invitations unless this individual is of interest to them. Newcomers reviewed profile contents and assessed their level of interest. However, the information participants sought and the ways they judged its validity varied significantly among participants. For example, the education status influenced Diya [P1]'s and Paul [P3]'s decisions in different ways. Diya [P1] tended to send matches to those who seemed to have some level of intellectual capability, e.g., who reported good schooling or majors in their profiles. According to Diya [P1], who was an international student pursuing a master's degree, "*If this guy is from a good school ... I can have meaningful conversations with him. It's not just like flirting and stuff.*" Diya [P1]. In contrast, Paul [P3] held a doctorate but avoided graduate students because he already had a lot of friends in academia.

Representing one's identity as a newcomer in a personal profile could be a strategy to match with locals who are interested in meeting with newcomers. Mike [P14] shared his experience as a local finding newcomers and welcoming them when he used GROWLr in his hometown.

> "*So last month there was a gay couple in town for [a local event] and they were staying in [Mike's hometown] with some friends and I thought that they were hot... They were on Growler and I saw both of them on there and they mentioned each other on their profile so I sent them both messages, saying 'Hi, welcome to [Mike's hometown].'*" Mike [P14]

This finding suggests that the user profile provides a space for newcomers to reveal their identity as newcomers. This finding reflects what *Kraut et al.* (2012) suggested in their guidelines, that newcomers can provide some personal information so that

established residents can recognize them and provide initial socialization resources. Browsing profiles increases the likelihood for newcomers and local populations to identify each other and make connections.

3.6.2 After Matching

After being matched with an individual through PNAs, newcomers' strategy to manage risks was *setting up communication boundaries*. That is, participants would move from PNAs to other social media platforms or communication channels according to their relationships. All of our participants used PNAs' built-in messengers to interact with others, and this was often their first interaction after they received a match. Having conversations via built-in messengers was the major way to exchange information, love, and status before their interactions in other platforms and offline encounters. Conversations usually started from shared interests or life attributes, such as alcoholic drinks (Leo [P4]), local events (Paul [P3], Ting [P13], Mike [P14]), and common friends (Diya [P1], Ashwin [P2], Rani [P6]).

When enough love, status, and information were exchanged, *interpersonal trust* was likely to develop between a newcomer and a matched local. A matched pair would then proceed to the next boundary they had. That is, a matched pair would extend their interactions to other channels that contained more personal information. Most participants extended their interactions from PNAs to other communication channels such as Facebook, Instagram, WhatsApp, or text messages to broaden online interactions before meeting offline.

By extending the interactions through these other channels, participants' were able to continue exchanging intangible resources, which would lead to interpersonal trust developed between the newcomer and the matched local. For example, Ashwin [P2] described this process of moving between remote channels as a way to build interpersonal trust before any offline encounters, which could be risky.

"*Coming from the online to the offline zone, I think it's a big threshold and only can happen after a while and a lot of trust comes into the picture ... only then, I would want to meet them.*" Ashwin [P2]

3.7 Discussion

This study examined how newcomers use PNAs to make connections and seek local resources through the lens of SET. The findings revealed that PNAs provide an efficient online channel for newcomers to receive intangible resources, such as status, love, and information, from a matched local individual. These exchanges address newcomers' issues such as boredom and social isolation and help them learn about local culture and information of resources. These exchanges can be viewed as serial socialization, in which locals provide guidance for newcomers to learn about the local environment and communities.

On the other hand, when a matched pair moved their interactions offline, the newcomer of the pair was able to receive tangible resources such as services and goods from the matched partner. To return to the tangible resources from locals, however, a newcomer was not likely to return tangible resources. Instead, newcomers in this study provided other intangible resources, such as information about their common interests or knowledge about their home cities and countries, as the return in these exchanges. Only two participants mentioned that they provided ridesharing as services to their matched locals.

Exchanges between a newcomer and a local individual through PNAs were primarily reciprocal social exchanges. Reciprocal exchange was more likely than the other forms of exchange, for two reasons. First, newcomers' main purposes were looking for love and for status, which were intangible and thus have little monetary cost. With little monetary cost, negotiation for the exchange was not necessary. However, a local woman who matched with Paul [P3] implicitly negotiated for more perceived

security from Paul before she decided to meet Paul offline. This example echoes past research on PNAs (*Toch and Levi*, 2013), which found that for a matched pair to meet offline, the pair's perceived risks of meeting need to be mitigated. To reach this mitigation, continuing past research on online-dating sites also suggests that users look for information to warrant other users' trustworthiness from their profiles and communication (*Ellison et al.*, 2006). Little is known about whether the situation of a pair comprising a local and a newcomer would differ from a pair comprising two general individuals. Future research could further examine perceived security as a type of exchanged resource between newcomers and locals on PNAs.

Second, generalized exchanges did not happen among participants in this study. A possible explanation is that most PNAs were designed for matching two individuals rather than groups of users. Generalized social exchange is helpful for members to develop group identification and solidarity (*Willer et al.*, 2012). Some PNAs such as Tinder recently started to support group-matching, which was not a common technical feature when this dataset was collected. With a group-matching feature, generalized exchange between groups of people would be possible, and thus could help newcomers adapt to the local community if they wanted. *Kraut et al.* (2012)'s guidelines on formal and collective socialization would be possible through generalized exchange using a group-matching feature. Future research should continue to investigate how PNAs' group-matching features influence newcomers as a group to meet with locals as a group for generalized exchange.

Although PNAs provide an efficient online channel for newcomers to initiate interactions with locals, newcomers' perceived risks of meeting strangers and making exchanges could still stop them from realizing PNAs' benefits. To mitigate newcomers' perceived risks, supporting their trust in local populations on PNAs would be important. Our participants adopted their own strategies to reduce their perceived risks.

Based on these findings, I discuss the design implications of PNAs to address newcomers' needs in local social exchange in the next two subsections. I also provide research implications, which call for attention in understanding the needs of different types of newcomers.

3.7.1 Design Implications

Support Newcomers in Assessing a Local Community's Fit and Trustworthiness Past research on social-matching applications suggests that interpersonal trust is an important factor supporting two matched users' interactions and relationships. This would be supported by social-matching applications having techniques and strategies to reduce users' perceived uncertainty and risks of a matched partner. To support a user's interpersonal trust in another user, past work suggests that a social-matching application should facilitate user strategies such as recognizing small cues from user profiles (*Ellison et al.*, 2006). In the case of newcomers, this finding is also relevant because newcomers use such techniques to assess whether another user is of interest and trustworthy, both before and after matching.

However, my findings suggest that newcomers also used strategies that were not employed by other types of social-matching application users. They reviewed multiple user profiles on their PNAs to get a sense of the local populations when they visited a new place. This finding suggests that newcomers first assess whether they fit a local community and whether a community is trustworthy before matching with local PNA users. This is similar to the concept of newcomers as lurkers in online communities, where they spend time observing a community before making any commitment to it (*Preece et al.*, 2004). Thus, in addition to supporting newcomers' interpersonal trust with other PNA users, a PNA should also facilitate newcomers in assessing their fit to a local community as well as the local community's trustworthiness.

Past research on newcomers to online communities has inspired ways for PNAs to support newcomers' assessments before matching and participating in social exchange. *Kraut et al.* (2012) argued that newcomers conduct self-selection before they feel comfortable joining an online community. Thus, providing newcomers with information and images illustrating newcomer experiences would facilitate their assessment of fit to the community. In the case of newcomers to a place, PNAs could provide a visual overview of their local users. In fact, *Sun and Naaman* (2018)'s findings touched on the benefits to newcomers of visualizing local communities' activities. This work investigated how Movemeant, an anonymous location-based social application, supports community development in different locations of a city. *Sun and Naaman* interviewed community leaders on their thoughts about Movemeant. A participant stated that visualizing local populations' activity history in places helps newcomers become aware of a local community's activity pattern and identify activities of interest. Similar designs could have the same effects on PNA users who are new to a place.

Support Exchange of Ridesharing between Newcomers and Locals PNAs are bound with a local area, and matched users might want to meet offline for further interactions. However, most of our participants did not have transportation methods when they arrived in a new place. Participants relied on locals for rides or transportation information when they wanted to meet offline.

Being unfamiliar with the public transportation system and lacking a vehicle could be barriers for newcomers to move between locations in an area. Even when two matched individuals are willing to meet offline, transportation barriers could still preclude the matched pair from meeting offline. PNAs could include information or rough suggestions about local transportation for users who decide to meet offline,

or PNAs could be designed to support transportation exchange among users. By providing this support, newcomers might be more likely to meet with locals offline.

3.7.2 Research Implications

Notably, not every newcomer in this study needed to fully adapt to the communities they visited. Some participants were tourists and did not stay in the places they visited for a long time. Other participants, such as international students or migrants, stayed in a new place for a longer time frame. Motivations for making new connections and resource-seeking might thus differ among different types of newcomers. For example, when Cao [P9] was an immigrant who had just moved to a town in the Midwestern U.S., the resources she received from the men she met through PNAs were mostly to help her settle in the town, such as assistance in processing legal documentation and purchasing a car. The resources she received were necessary to her life as a newcomer. In contrast, for Paul [P3], the cultural knowledge that he learned from a local woman in the Persian Gulf Region was not critical to him because he only had a short trip there.

Given these varied scenarios, my study's small sample size might not be able to fully represent all types of newcomers' needs and experiences using PNAs. Future research should extend this study's findings to investigate different types of newcomer needs and uses of PNAs. Findings from this research would contribute to our understanding of how location-based social media can support newcomers' adaptation and what designs would facilitate these supports.

CHAPTER IV

Study 2: Exploring Transnational Newcomers' Local Social Exchange through Social Media Technology

In Study 2, I extended the previous study by focusing on two points. First, I extended Study 1 by looking deeper into immigrants, a subgroup of newcomers who move to a new country. Immigrants are those who migrate to a new country and aim for long-term living in the host country. This population is faced with distinct challenges such as social isolation and cultural impact, which are not necessarily influential on other types of newcomers such as travelers and domestic migrants. Because immigrants might face challenges that are different from those of other newcomers, immigrants have a distinct way of using social media technologies for social exchange. Second, instead of focusing on people-nearby applications (PNAs), Study 2 explored recent immigrants' participation in local social exchange using broad social media technologies. That is, rather than focusing on PNAs like Study 1, this study explored how a wide range of social media technologies supports recent immigrants in adapting to new communities in a new area. Following these lines, I aimed to answer the following research questions in Study 2:

- RQ2-1: What types of resources do immigrants request and provide in local social exchange through social technologies?
- RQ2-2: What forms of local social exchange do immigrants participate in through social media technologies?
- RQ2-3: What factors affect immigrants' participation in local social exchanges using social media technologies?

Through semi-structured interviews with 18 immigrants in the U.S., this study showed that the types of exchanged resources and the forms of social exchange vary, with two groups of determinants—*community factors* and *individual factors*. Immigrants generally felt comfortable participating in social exchange with a group that shared the same ethnicity with them. In this context, all of the six types of resources were exchanged, and these exchanges were mostly reciprocal exchange and chain-generalized exchange. On the other hand, immigrants had perceived risks of exchanging with local populations. They were more likely to exchange resources with low cost such as information, or through the group-generalized exchange.

In the rest of this chapter, I first define the scope of immigrants and provide a short literature review on immigrant adaptation (Sec. 4.1). This literature review covers how social exchange is associated with the challenges immigrants face in the host country. Then I explain the data collection process (Sec. 4.2) and the analysis (Sec. 4.3). I provide an overview of the findings in Sec. 4.4, and describe the findings' details in Sec. 4.5 and Sec. 4.6. Based on these findings, I provide design and research implications in Sec. 4.7.

4.1 Background

4.1.1 Definition: Immigrants

Broadly, the term *immigrants* refers to populations that migrate "*from one country to another on a permanent basis*" (*Caidi et al.*, 2010). However, this broad definition does not always cover the scope of immigrant populations in practice, and thus past studies tend to have various definitions of immigrants. In my dissertation, I refer to immigrants as those who are foreign-born and migrate to a new country in their adulthood. This definition not only covers those who are naturalized and who receive permanent resident status, but also those who move to a country and aim to stay for years.

Note that forced migrants, such as refugees or asylum seekers, are not covered in my research scope. The social contexts of forced migrants could be largely different from those of voluntary migrants. The motivations for forced migrants' movement are to escape from wars, disasters, and violence, e.g., *Castles* (2003); *Udahemuka and Pernice* (2010). Thus forced migrants' migration is likely to be accompanied by fear, stress, and trauma. These factors cause forced migrants' adaptation experience to be different from the experience of voluntary immigrants, so my dissertation does not cover forced migrants as a target population.

Another group of immigrants that I exclude from my dissertation is international students who are enrolled at U.S. universities. International students' environment is different from that of immigrants who migrate for work, marriage, and family. These students have the college campus as an environment in which to adapt, and the campus context is largely different from contexts such as workspace.

4.1.2 Immigrants, Social Exchange, and Technologies

Although social exchange is common human behavior and has been studied in a variety of contexts, in past immigration research, the concept of social exchange was not commonly used. Instead, how immigrants trade resources with other people while building social relationships was often framed as reciprocity, social capital, or general social resources, e.g., *Adler and Kwon* (2002); *Lovejoy and Handy* (2011); *Portes and Sensenbrenner* (1993); *Ryan et al.* (2008a). Therefore, in the rest of this review, I include past research that studied immigrants' use of technologies to develop social capital, practice reciprocity, and access social resources to provide a research background for my dissertation.

Recent studies suggest that immigrants' use of social technologies supports their networking and resource-seeking in their destination country. Social exchanges are common within immigrants' ethnic communities. For example, *Dekker and Engbersen* (2014) found that immigrants to the Netherlands used Facebook as a multi-functional platform over the entire migration process. Their use included finding resources for pre-migration preparation and settlement after arrival in the host country. This study found that "the insider knowledge" on migration, which is an instance of informational resources, was the most common resource exchanged after migration.

Some social technologies were used for more specific types of resources, such as goods and services. *Lovejoy and Handy* (2011) found that the Mexican immigrant community in California, U.S., relied on instant messengers, such as WhatsApp, for ridesharing within the local ethnic communities. This study found that these ridesharing services were initially offered as an economic exchange without social relationship development. However, the network reliance and common cultural background among drivers and passengers shaped these trades as a social exchange. The instant messengers provided a platform for local Mexican immigrants to request, provide, and negotiate low-cost ridesharing within their ethnic community.

In contrast to immigrants connecting with their ethnic communities, the ways social exchanges happen between immigrants and local populations through social technologies have been less studied. Some past studies touched on this aspect. For example, *Elias and Lemish* (2009) found that among immigrant teenagers in Israel facing segregation, social applications provided opportunities for these immigrant teenagers to overcome the segregation and interact with local teenagers. *Damian and Van Ingen* (2014) studied social network site (SNS) use by immigrants in the Netherlands. This study found that immigrants' frequency of using SNSs was positively associated with their social connections with the local population but had no significant correlation with their connections with their local ethnic community. However, this study did not specify any causal relationships, and thus longitudinal field experiments would be necessary to uncover the interplay with SNSs and immigrants' relationships with the local population. Also, this body of literature commonly investigated these applications without focusing on specific applications and their design features.

Despite this past research, the challenges immigrants have when using technologies for socialization and how human–computer interaction (HCI) design can address these challenges remain unclear. HCI scholars thus have opportunities to explore this research space and design social technologies to better support immigrant adaptation. The present study, and the following studies, thus explored this research space and contribute knowledge to design technologies to better support immigrant adaptation.

4.2 Data Collection

4.2.1 Recruitment

I adopted two sampling methods to recruit participants: *reputational case sampling* and *convenience sampling*. Reputational case sampling is a common recruiting

method for special populations (*Schensul and LeCompte*, 1999) such as immigrants, patients of a specific disease, or rural area residents. Researchers using this method rely on experts' (i.e., community leaders or non-profit volunteers) recommendations to recruit members of a specific group. Permission from a county-level, non-profit organization allowed us to distribute flyers at the organization's social events.

For convenience sampling, I relied on both online and offline channels. My research team posted on local community groups' electronic bulletin boards, Craigslist, and Facebook groups. For online recruitment, we selected metropolitan areas that had large immigrant populations. We selected the areas by reviewing multiple online reports and articles illustrating the immigrants' geographic distribution in the U.S.[1] (*Florida*, 2015; *Migration Policy Institute*; *The Daily Beast*, 2010; *Wikepedia*). We did the same locally, again using Craigslist and Facebook groups for potential face-to-face interviews, which could be beneficial for communication. We included local cities with large immigrant populations. For offline recruitment, we posted flyers in public libraries, supermarkets, and community centers. We used the following screening requirements to increase our chances of finding eligible recent immigrant participants. Participants had to:

- Be older than 18 years when they moved to the U.S.
- Not be on a B-1 (short-term business visitors), B-2 (short-term tourists), F-1 (international students), or J-1 (visiting scholars) visa when participating in the study. B-1 and B-2 visa holders are people who travel to the U.S. for short periods, and thus do not necessarily have time or need to adapt to the U.S. F-1 and J-1 visa holders are international students who receive adaptation support from their academic institutions.

[1]We posted online advertisements to recruit participants from the following areas: Phoenix (AZ), Los Angeles (CA), San Diego (CA), San Francisco (CA), San Jose (CA), Miami (FL), Chicago (IL), Boston (MA), New York (NY), Las Vegas (NV), Houston (TX), Seattle (WA), and Washington D.C. Also, for the convenience of offline recruitment, we recruited from areas with large immigrant populations around our cities.

- Know basic conversational English. We set the basic conversational English requirement for the convenience of data collection and analysis. This research practice has been used in prior HCI and computer-supported cooperative work (CSCW)-based immigrant research, as well (*Brown and Grinter*, 2012; *Brown et al.*, 2014; *Kim and Lingel*, 2016; *Lingel et al.*, 2014).

4.2.2 Interview Procedure

We conducted semi-structured interviews that lasted approximately one hour. At the beginning of the interviews, participants briefly introduced themselves, described their motivations for migrating to the U.S., and explained how they prepared for their migration. The interviewer then asked participants to highlight their biggest challenges after coming to the U.S. This part of the interview also included how immigrants used social technologies in their daily lives. We followed up with questions about the people participants chose to connect to or hang out with and what context they used to make these connections. We asked participants to specify the ethnicity of populations they connected to and spent time with. We then asked for more details about their interactions with these new connections, and whether they encountered challenges in meeting people. The last question we asked was what technology services would be most helpful for recent immigrants.

Table 4.1 presents the demographic information of the 13 recent immigrant interviewees and five long-term immigrant interviewees.

4.3 Data Analysis

To analyze the modes of social exchange and exchanged resources, I adapted the *provisional coding* approach for analysis (*Saldaña*, 2015). In provisional coding, researchers develop codebooks based on prior established theories and frameworks. Along the process of data analysis, researchers update the codebook by adding, edit-

ID	Demographic	Home Country	Residential Area(s)	Duration in the U.S.
R1	Tina (F, 30)	Czech Republic	A large East Coast city	1m
R2	Akani* (M, 35)	Nigeria	A large East Coast city	1y&6m
R3	Bing (M, 24)	China	A large West Coast city	4y
R4	Yu (F, 32)	Taiwan	A small Midwestern town	6m
R5	Camila (F, 28)	Mexico	A large Midwestern city	7m
R6	Ng (F, 34)	Vietnam	A large East Coast city & a small Midwestern town	4y&7m
R7	Antonio (M, 38)	Italy	Two large East Coast cities	2y&2m
R8	Lucas (M, 39)	Chile	A small Midwestern town	8m
R9	Huang (F, 47)	China	A small Midwestern town	1y
R10	Emily (F, 27)	France	A small Midwestern town	6m
R11	Zhang (F, 29)	China	A small Midwestern town	1y&5m
R12	Rahul (M, 25)	India	A large East Coast city	5y
R13	Zhu (M, 39)	China	A large West Coast city	2m
L1	Nadia (F, 28)	Kuwait	A small Midwestern town	5y&7m
L2	Elise (F, 76)	The Netherlands	A small Midwestern town	∼50y
L3	Li (F, 59)	China	A small Midwestern town	8y
L4	Claire (F, 35)	Albania	A large East Coast city	17y
L5	Allen (M, 38)	Russia	A large East Coast city	7y

Table 4.1: Participants' profiles. R1–R13 are Recent immigrants, and L1–L5 are Long-term immigrants. The Demographic column shows participants' name (pseudonym), gender, and age. The Residential Area(s) column shows the areas that participants lived or had lived in. Duration in the U.S.: y=year(s), m=month(s). *Akani [R2] happened to also participate in the PNA study (Ch. 3) and was numbered as P11.

ing, or removing codes in the codebook. For this study, the first-round codebook was developed based on the modes of social exchange and the exchanged resources. After the modes of social exchange and exchanged resources were coded, I grouped similar quotes that suggested factors affecting immigrants' intention of participating in online local social exchange.

4.4 Findings Overview

Through the interviews, I identified two groups of factors that affect immigrants' participation in online local social exchange, i.e., what they exchanged and the forms of these exchanges. The first group comprises community/platform factors. This group of factors is about a community's characteristics that participants relied on to make a decision about participating in the social exchange. This group includes four factors of an online platform and the local populations on this platform: *a community's ethnic diversity*, *a community's regulation*, *a community's organizational support*, and *frequency of a community's activities*. The second group comprises factors about an immigrant's personal context. This group includes three factors regarding an immigrant individual: *differences in language and culture*, *limited support network*, and *unfamiliarity with social technologies*.

The types of exchanged resources and the forms of exchanges varied largely with these factors. Therefore, instead of listing the forms and resources in immigrants' social exchanges, I chose to describe each factor and how the factor influences the resources and forms of exchange. In the next two sections, I first present how community factors affect immigrants' participation in online local social exchange, and then the effects of the personal factors.

4.5 Community/Platform Factors' Effects on Immigrants' Participation in Social Exchange

I identified four community factors that affect recent immigrants' participation in local social exchange. These factors are associated with a local community and the platforms that the community uses. The four factors are: *a community's ethnic diversity*, *a community's regulation*, *a community's organizational support*, and *frequency of a community's activities*. These four factors were interwoven with one

another and have effects on a recent immigrants' trust in other users online and their intention of participating in online local social exchange.

4.5.1 Ethnic Diversity of a Community

The ethnic diversity of a community is determined by how diverse community members' ethnicity is. This factor has two values: *uniform* and *diverse*. *Uniform* means that the community members share the same or similar ethnic background. Specifically, these ethnically uniform communities typically have the same ethnicity as recent immigrants' ethnicity. In contrast, *diverse* means that the community members have mixed ethnic backgrounds.

Ethnically Uniform Community Participants showed no concern when it came to online local social exchange within ethnically uniform local communities. Participants exchanged all types of resources except for money. Although money was used by Huang [R9], Zhang [R11], and Zhu [R13] for goods such as second-hand furniture, these exchanges were considered economic exchange. That is, participants did not build social relationships with individuals with whom they exchanged monetary resources.

Network-based generalized social exchange and reciprocal social exchange were the two major modes that happened between newcomers and other members among the local ethnically uniform communities. Senior community members provided resources to newcomers and helped them settle, but these senior members did not expect newcomers to return the exchange directly to them. Instead, senior members would ask newcomers to "return" by providing resources to other community members after they become established in the new area. Lucas [R8] and Emily [R10] benefited from these network-based generalized exchanges among their local ethnic communities through WhatsApp group channels. Following this community norm,

Lucas shared how network-based generalized exchange worked in the local Chilean community:

> "*[A long-term Chilean immigrant], in fact, gave us a desk chair, a microwave, some furniture. They told us, 'we are going to give you this, but you don't get to sell that. You have to give it away the same way we give it to you.' If someone is coming to [the town Lucas lived], we will do the same.*" - Lucas [R8]

The reciprocal social exchange happened when a recent immigrant developed interpersonal relationships with the other individual involved in the exchange. After the interpersonal relationship was built, the exchange happened back and forth between the two individuals. Yu [R4] and Ng [R6] both described similar experiences. After they posted resource requests on Facebook groups of their local ethnic community, community members provided resources to them. Among these members, some established interpersonal relationships with Yu [R4] and Ng [R6]. Yu and Ng thus provided other resources, such as an invitation for dinner or social events, back to these individuals as the return of exchange. For example, Ng shared her experience receiving resources from a member of a Facebook group for Vietnamese immigrants in her town.

> "*I know a friend in [Ng's town] through Facebook. Because I didn't know any Vietnamese in [Ng's town] before we moved here and then I asked my friends and they refer the group to me. Then I joined the group, and then I asked information and [Vietnamese in the group] came to answer. That's how I know [her]. After I came here and I send my address to invite her to come, and that's how we became friends.*" - Ng [R6]

In Ng's experience, she received information from this long-term Vietnamese immigrant online, and she returned by providing services offline (inviting the individual

to visit). Only after this exchange happened, Ng stated that they became friends. Ng's story suggests that social exchange that happened among the same ethnic community does work as a process of building an interpersonal relationship.

Zhu's [R13] experience was a bit different from the example above. Zhu [R13] looked for Americans for language exchange through WeChat, which is a social media application that is widely used among Chinese communities. In other words, Zhu [R13] was able to identify local-born populations through a platform that is majorly used by Chinese populations. Through these interactions on WeChat, Zhu [R13] gained information that helped him orient himself around the city and learn about U.S. cultural norms. This implies that even in a platform where the user population is ethnically uniform, recent immigrants might still be able to find locals who are interested in learning different cultures and languages.

Long-term immigrants, on the other hand, mentioned little about interacting with recent immigrants through social technologies. Nadia [L1] and Allen [L5] suggested that they did not find it necessary to stay close with their ethnic community. This could because their migration life in the new country was settled. They did not need more resources for their adaptation, and thus remaining connected with their ethnic community became unnecessary. For example, Allen [L5], a Russian immigrant who owned a small business in the U.S., made the following statement.

> "*We do have a Russian community, but, it's not large [in Allen's city]. So, I'm not necessarily making it a point to interact with the Russian community. Not because I don't want to, but, I work a lot of hours and when I'm not working I'm doing something else, which is necessarily not culture kind of relate.* " - Allen [L5]

Elise [L2] and Claire [L4], who were also long-term immigrants, participated or had participated in local associations for their ethnic communities, but they stated that their exchange with recent immigrants did not happen through social technologies.

Only Li [L3] mentioned her experience of helping international students from China in a WeChat group. Li's case is related to the organization that she worked for.

Ethnically Diverse Community Immigrants' participation in online local social exchange within ethnically diverse communities was all group-based generalized exchange. Participants received resources from others in these communities but seldom provided resources directly back to the same individual. Instead, resources were provided to the entire community and shared by all community members. These group-based exchanges mostly happened in offline social events that were mediated through online platforms. Examples of these events are language exchange groups or social gatherings.

The most salient type of resources that participants exchanged among members of ethnically diverse communities was information (knowledge about local culture and language, and information about local events). Participants also exchanged services and goods through group-based generalized exchange within local ethnically diverse communities. For example, Ng [R6] was in a Facebook group of a local community of immigrant women, and she actively participated in the community's offline events, such as parent–child activities and group language tutoring sessions. At these events, community members exchanged goods and services with one another. Allen [L5] also participated in local bicycle-riding groups and events through posts on Craigslist.

Camila [R5] and Antonio [R7] also attended weekly offline gatherings of language exchange groups through Meetup.com. Camila shared about how the language exchange group gave her opportunities to mingle with a wide range of people, and how members prepared activities to help everyone's language learning.

> "*The Spanish-speaking meet-up, it's very cool, because you meet people that is interested in learning Spanish. It's not only Spanish-speaking people, but people like Americans that would like to improve their Spanish skills, so*

you find all kinds of people... It's just basically people that meet there to speak the language they want to learn, and they have some games or exercise, and we help them." - Camila [R5]

4.5.2 Community Regulation

The administration level or regulation of a community refers to how a community manages members' interactions and posts on their platforms. Community administration was coded as *yes* and *no* in the analysis. *High* means that the community enforces different mechanisms for regulation, such as platform policies, screening questions, and active administrators, to manage activities on the platform (Antonio [R7], Zhang [R11], and Nadia [L1]). For example, Nadia [L1] suggested that to support recent immigrants' participation in local social exchange, social technologies should support administration mechanisms such as strict user policies, one-time passcodes, and identity verification.

"*If [a social technology] belongs to [a school] I'm very sure it's going to be very strict policies ... like a high secured authority where nobody can be trouble and no foreigners should be cheated or something like that ... if they [immigrants] are here for the jobs I think that companies should provide something app like this that they can connect with their co-workers... Obviously, it should high secured with codes for only the company workers can be in that app, like a batch ID.*" - Nadia [L1]

While these regulation mechanisms are often accompanied by organizational supports, they are not necessarily related. For example, the WhatsApp groups that Lucas [R9] and Emily [R10] belonged to had no organizational support, but the community leaders created invite-only groups. That is, community leaders verified and approved newly joined community members. The invite-only mechanism could stand as a high level of administration.

In contrast, platforms with low administration are those that are public and have loose platform policies or no active administrators. For example, Craigslist is public for everyone to post. Bing [R3] was worried that some posts on Craigslist were not legitimate, and he thought recent immigrants might not have strong enough English reading comprehension to understand Craigslist posts fully. Thus he used Craigslist only for economic exchange with low prices or opportunities for extra income, such as participating in academic studies.

4.5.3 Organizational Supports

Organizational support refers to whether a local community is associated with a third-party organization. In the analysis, this community factor was coded as *yes* and *no*. The only example that had organizational supports was from Ng [R6]'s experience. Ng was in a Facebook group for a local community of immigrant women that was supported by a non-profit organization. This local organization held and supported social events specifically for immigrant women to exchange and socialize with one another.

> "*I only use Facebook [to meet new people] and know about a group. You know about [the group] in [Ng's town]? ... Everyone in [the group] can meet together. Last month they have the meeting... We prepare some special dessert from our country and bring there, and we do have like a party. The tea party and people can bring tea and some special cake from the other countries.*" - Ng [R6]

While other participants did not interact with local communities with organizational supports, three participants (Antonio [R7], Zhang [R11], and Nadia [L1]) expressed their desire to have third-party organizations to secure the social exchange. For example, Antonio [R7] mentioned that his friend went to a graduate school in

Norway, and the school established a Facebook group for international students to ask for information from senior students. Antonio [R7] would like to have a platform supported by an organization for other recent immigrants. Zhang [R11] also suggested that organizations such as supports from English-as-a-second-language (ESL) centers could guarantee community members' trustworthiness.

> "*I think maybe apps can introduce someone American friends first. Maybe it's like somebody live here and they want to help foreigners to settle down. Maybe in this apps they are identified as safe... If people their identity is not supervised, everybody they can just write an e-mail address and become member. It is dangerous, but if there is someone who can evaluate these people, like in the ESL class. They are tutors, they are reliable. They are not like, bad person.*" - Zhang [R11]

Intriguingly, while participants expressed their desires to have local organizations support these platforms, two participants (Camila [R5], Antonio [R7]) established an internal boundary between themselves and local organizations. These participants did not think of themselves as the target clients for local organizations that helped immigrants. For example, Camila [R5] described a local organization that supported her ethnic community in her city.

> "*I heard about the Hispanic Center, but I have never been there... From what I hear, it's like they help a lot, mostly immigrants. And I know they have a soccer league... I think they have immigration services, but I think that would apply more for people that comes here without the proper work permit. I don't need that so I haven't [approached them].*" - Camila [R5]

Elise [L2], the most senior long-term immigrant participant, also shared her thoughts that recent immigrants might not be interested in receiving local organizations' support. Elise [L2] was a vice president of a local association for immigrant communities

from the Netherlands. Through word-of-mouth, she invited Dutch newcomers to attend information-sharing talks and weekly gatherings; few newcomers, however, participated in these events. Elise [L2] attributed this disconnection to the generational differences between the long-term Dutch community and recent Dutch immigrants.

Based on these examples, some recent immigrants created internal boundaries between themselves and local organizations. These newcomers excluded themselves from the organizations' target populations. Given participants' low engagement in local organizations, it is thus unclear whether and how organizational supports would affect immigrants' intention to participate in the local social exchange. Future research should further examine this question.

4.5.4 Frequency of Community Activities

The frequency of a community's activities was coded into two levels: *strong* and *weak*. Participants utilized the perceived tie strength to decide whether to participate in local social exchange within the community.

Strongly Tied Local Community Participants were comfortable exchanging resources within strongly tied local communities. Besides living in the same area, these local communities often shared common interests such as shared ethnicity, parent–child care, and language exchange, and strong ties could result from these common interests. The factors of a strongly tied local community included that community members knew one another and that social events frequently happened within the community.

The group-based generalized social exchange and network-based generalized social exchange were two salient modes of exchange described by participants. The group-based generalized social exchange often happened at offline social events. Participants exchanged resources by supporting and participating in these events. For example,

Ng [R6] was in a Facebook group of a local community of mothers, and she actively participated in the community's offline events such as parent–child activities and group language tutoring sessions. In these events, attendees exchanged goods and services among the group. Camila [R5] and Antonio [R7] also attended weekly events of local language exchange groups through Meetup.com.

In the network-based generalized social exchange within these local communities, the salient types of exchanged resources were information, goods, and services. For example, second-hand goods exchange and ridesharing were common in network-based generalized social exchange. However, through the networked-based generalized exchange, Lucas [R8] and Emily [R10] stated they received *belongingness*, which consists of love and status.

> "*I met a French guy in my ESL group... Because he was the first French I met here, so I was so excited, yes, this is not fantasy, there is French here... We have a little group with French friends [on WhatsApp]... Now I think we have a little group of 10 or 15 French friends... We [Emily's husband and she] were very glad to find this guy. I think it's very important for foreigners to find people from their country.*" - Emily [R10]

However, it is unclear what factors resulted in belongingness. Did their belongingness result from the shared ethnicity among community members? Or did belongingness result from the strong ties among community members? Future research could look into these two factors and examine their effects on recent immigrants' belongingness exchanged within a community.

Weakly Tied Local Community The reciprocal exchange was the most salient exchange mode that happened among participants and weakly tied local communities. However, the examples of reciprocal exchange were from the experiences of Yu [R4]

and Ng [R6], which happened within ethnically uniform communities. How the interplay of reciprocal exchange and tie strength affect immigrants' local social exchange needs further examination.

Without participating in local social exchange, participants developed two strategies to access resources via weakly tied local communities. First, participants engaged in economic exchange through these platforms with weakly tied communities. In these economic exchanges, participants requested or looked for resources on these platforms, and they bought resources without building interpersonal relationships with the individual or the community. The economic exchange happened in platforms for both ethnically uniform and diverse communities. For example, Huang [R9] and Zhang [R11] mentioned that they bought second-hand goods through an online forum of the local Chinese community. Bing [R3] shared his experience buying a second-hand scientific calculator through Craigslist.

The second strategy was being a lurker in local communities. That is, participants received resources without contributing to the community. An example of being a lurker was from Yu [R4] in her use of a Facebook group of her town. Yu read information and asked questions about the area in this group, but never tried to participate in or contribute to local social exchange through the platform.

4.6 Personal Factors' Effects on Immigrants' Participation in Social Exchange

Participants' intention of engaging in local social exchange was associated with three personal factors: *differences in language and culture*, *limited support network*, and *unfamiliarity with social technologies*. Similar to the four community factors, the three personal factors were dependent on one another.

4.6.1 Differences in Languages and Cultures

The difference in languages and cultural backgrounds was a personal factor associated with uncertainty and risks of local social exchange on these platforms. The differences in languages and cultures mitigated an immigrant's intention to participate in an online local social exchange. Bing [R3] mentioned that recent immigrants might have a difficult time reading English websites.

Beyond language differences, cultural differences were another factor affecting immigrants' participation in local social exchange. For example, when the interviewer asked Yu [R4] about her opinion on meeting local populations through social technologies, her response was this:

> "*How can we trust them [local populations]? Just sharing the information online, I don't mind. It's good to share information with them, like I can ask them some questions around this area or anything I want to know... Otherwise what kind of topic are we going to talk with? You meet some Taiwanese people, you will chill with them or something you know before. Then we can have an interaction. Here, I say something, they won't know. How can you keep talking?* " - Yu [R4]

Antonio [R7] also described how differences in culture became a barrier for him to developing deeper interpersonal relationships with local populations.

> "*The biggest challenge was to fit in the American culture... I don't know anything about baseball, I don't know anything about football. You know, strangely enough I feel more comfortable to have a conversation with women compared to men because there's a lot of things I don't know... I speak a decent level of English so it's not about communication, it's about the culture and the values that people share.*" - Antonio [R7]

4.6.2 Limited Support Network

Participants who went online to look for local social exchange often mentioned their limited networks. Most participants suggested that they had no connections after they migrated. Some participants' employers or their spouse's employer provided ESL classes and social events (R1, R6, R7, R10, and R13), but not everyone had access to these resources. Online platforms thus became an approach for participants to find people to create new connections with local communities. For example, Akani [R2] did not know anyone in his city when he migrated to the U.S., so he frequently used PNAs such as Tinder to meet new local people. He stated that he met his best friend through Mingle, a PNA. This person provided Akani with intangible resources (trust as love) and tangible resources (house sharing as services) when Akani had a hard time after migration.

Having a limited helpful network was common among newcomers, but it was more salient among our immigrant participants who were spouses of U.S. citizens or had a spouse who was employed in the United States. Eight of thirteen recent immigrant participants fit one of these categories. These participants' networks were limited and strongly dependent on their spouses. Therefore, social technologies become a major channel for them to access local resources, make new connections, and adjust themselves to the local community. For example, when asked about how she found resources after moving to the U.S., Yu [R4] talked about a Facebook group for Taiwanese immigrants. This Facebook group allowed her to have opportunities to connect with Taiwanese immigrants throughout the United States. Yu [R4] described that the Facebook group had "*Lots of [Taiwanese] women there. They will help a lot of things.*"

While lacking helpful networks could be more common to immigrant women, e.g., *Bauer et al.* (2000); *Hurtado-de Mendoza et al.* (2014), immigrant men who moved to the U.S. might have a similar challenge. For example, Antonio [R7] and Zhu [R13]

both looked for people to meet using online platforms, such as Craigslist or WeChat, or sought information about local social events.

4.6.3 Unfamiliarity with Social Technologies

Recent immigrants could be unfamiliar with social technologies, such as platforms unpopular or unavailable in their home countries. This unfamiliarity with social technologies caused two different results in immigrants' participation in online local social exchange. First, participants had limited knowledge about the social norms of the community on a platform, so they were exposed to an exchange with high perceived risks. Despite its bad reputation among Americans, Craigslist was still one social technology that our participants (five recent immigrants and three long-term immigrants) used to look for local connections and resources. However, because of being unfamiliar with the quality of posts and users on Craigslist, Huang [R9] had two negative experiences trading with local-born populations. Huang [R9] then learned about Craigslist's bad reputation from her colleagues and stopped trusting the posts and users on Craigslist. She made a comparison between Craigslist and an online forum for the Chinese-speaking population in her area.

> "*There was this gentleman who send out the posting [selling a second-hand car] on Craigslist... And then to buy the car I have to buy five Target gift cards... I asked my faculty and my mentor and he says, 'No. It's so fake. Don't go buy it.'... The next thing with Craigslist is I was trying to sublease my apartment... I got the check from the guy [who was interested in subleasing] and it's way more than what the rent is all about... I [told the guy], 'no I'm not going to accept your check.' Then many people were saying the same thing [to me], 'Craigslist has a lot of fake thing.' I'm trust [the online forum for the local Chinese-speaking community] and never Craigslist.*" - Huang [R9]

Second, participants would stay away from social technologies that they were not familiar with. This finding was salient from participants who were from China. These participants mentioned less about using Facebook. Because Facebook is banned in China, these participants did not use Facebook until they moved to the U.S. Huang [R9] and Zhang [R11] only used Facebook to follow public fans pages that they were interested in, such as pages of famous writers or artists. Bing [R3] and Zhu [R13] used Facebook mainly to connect with classmates in their ESL classes. Thus, for the technologies they were unfamiliar with, participants avoided using them for online local social exchange. These participants were more likely to turn to online forums for local Chinese communities or to participate in offline social events without the mediation of technologies.

4.7 Discussion

Through a series of interviews with immigrants, I identified two groups of factors that influence immigrants' perceived risks of participating in online local social exchange. The first group of factors is related to a community and its platform's social structure. Whether a community has established regulation, strong ties, and organizational supports affect recent immigrants' intention to participate in online local social exchange. The second group of factors is based on immigrants' personal context in the destination country—including differences in language and culture, support networks that they have (e.g., family or connections from their workspace), and familiarity with technologies.

Next, I discuss how the community/platform factors affect recent immigrants' intention to participate in online local social exchange. Because the ethnic composition of a community is a dominant factor among the four group factors, I use this factor to structure the discussion of the other three factors. For the personal factors, I discuss

how findings of each factor relate to past literature. These discussions could lead to study designs that are more inclusive to recent immigrant platform users.

4.7.1 Effects of the Group Factors

Ethnically Similar Communities Among the four community/platform factors, the ethnic diversity of a community was the primary factor affecting immigrants' decision to participate in online local social exchange. When a community is ethnically uniform, and the community's dominant ethnicity is close to a recent immigrant's ethnicity, that immigrant is likely to participate in online local social exchange. However, recent immigrants' participation in local social exchange within their ethnic community is often found to be offline (*Damian and Van Ingen*, 2014), and past research suggests that a similar tendency also happens in online exchange for immigrants (*Dekker and Engbersen*, 2014). My findings suggest that when it comes to online local social exchanges that cross online–offline boundaries, immigrants tend to rely on their ethnic communities.

A reason for participants' high reliance on their ethnic community is the shared cultural background and the common language, which could mitigate their perceived risks. This shared culture and language of a community also increased participants' intention to interact with local-born people who were on the platform of an ethnically uniform community. Our participants' experience using WeChat's PNA function to make connections with the local-born who were interested in language exchange speaks to this tendency. Although WeChat is an ethnically uniform platform primarily used by the Chinese-speaking population, its PNA feature is open to the public. Local-born people on these platforms could be "friendly strangers" who are interested in learning about an ethnic community. I thus suggest making ethnically uniform platforms more inclusive by connecting immigrants to local-born individuals who want to learn new languages and more about different cultures. Increasing the inclusiveness

of ethnically uniform platforms like WeChat could lead to opportunities for new *inter*-ethnic ties and could address unfulfilled cultural needs that online local social exchange with ethnically uniform populations are not able to support.

However, shared culture and language do not always support local social exchange within an ethnic community offline, as past literature suggests. In some immigrant communities, long-term immigrants avoid sharing information with newcomers or even share false information within their community because an ethnic community might have limited resources to serve newcomers (*Ryan et al.*, 2008a).

This trend of vicious competition, however, was not salient in my findings. Neither did prior research on immigrants' social technology have this finding (*Dekker and Engbersen*, 2014; *Lášticová*, 2014; *Lovejoy and Handy*, 2011). My findings thus echo the findings of past research regarding vicious competition in online local social exchange within an ethnic community.

A few possible explanations exist. First, it could be that these online local ethnic communities are well regulated. Our participants stated that some of these online local ethnic communities were invite-only, and some were supported by third-party organizations. The affordances of online community platforms allow community members to manage members and resources in a community. Another reason could be beyond technology uses. The ethnic communities of this study's participants could have sufficient resources in their area to serve both long-term immigrants and recent immigrants. Therefore, no competition would be necessary within the ethnic community. Future research could look into this aspect and uncover whether and how vicious competition for resources might happen in immigrants' other contexts of social technology use.

Ethnically Diverse Communities Compared to their high intention to participate in online local social exchange within ethnically similar communities, partici-

pants' intentions to engage in online local social exchange within ethnically diverse local communities were much lower. Participants also became lurkers on these platforms without actively requesting or providing resources.

However, unlike newcomers to online communities, who can enter and leave a community with low cost, recent immigrants often physically belong to these communities' offline contexts (i.e., neighborhood or organization). That is, although recent immigrants could cut themselves off from a local community's online context by leaving the online platforms, they still live in the community offline. These newcomers still need to continue their adaptation process without online resources, which could limit their access to local resources. The other three platform/community factors, i.e., regulation, community tie strength, and organizational supports, thus play a critical role for recent immigrants to assess the perceived risks of online local social exchange within these communities, which could benefit their adaptation offline.

4.7.2 Effects of the Personal Factors

The three personal factors were related to recent immigrants' personal context. To address these issues, however, immigrants would need supports outside their use of social technologies for local communities. For example, although a platform used by an ethnically mixed community could be designed to be more inclusive by implementing more language choices, a more comprehensive solution would be to increase immigrant users' literacy of the destination's language. Therefore, in this subsection, I focus more on non-technology solutions, such as policies and education, rather than technology designs that could address these issues.

Language and Culture Differences Although my participants had more than basic English literacy for conversation and reading, language and culture differences were a critical concern of participation in online local social exchange. Past research

suggested that using websites in the destination country's major language is associated with immigrants' perceived comfort after their migration (*Chen*, 2010; *Farzan et al.*, 2017). Although these studies only examined the correlation but not the causality, their results suggest that a correlation exists between immigrants' website use and their adaptation level.

Providing multi-language service on a platform would be helpful to recent immigrants. In fact, it is common that websites that have local immigrants as targeted users provide multi-language options. For example, organizations that support immigrants often have multi-language settings. However, other general social technologies for neighborhoods or local communities do not. In particular, those websites relying on heavy user-generated contents might not have multi-language choices or only have the choice of machine translation. The language and culture limitations thus stop recent immigrants from full utilization of these websites.

A possible solution is to have an in-loop human mediator. Past research suggested that having a volunteer mediator for refugees and local service providers through technology would be helpful for these refugees to understand the language and perceive more comfort, e.g., *Brown and Grinter* (2016). Similar techniques could be possible for immigrants through a crowd-sourced approach. Utilizing the social exchange framework, this crowd-sourced approach could even be designed as a language exchange service to benefit both recent immigrants and local volunteer translators.

Lack of Helpful Network Participants who had limited networks were more likely to use platforms for local communities to look for networks and resources. Study participants, especially those whose spouses made the choice to move, were more likely to be socially isolated. This issue could be exacerbated by U.S. law, which does not allow immigrant spouses to work under certain types of visas in the U.S. This constraint of employment limits their opportunities to develop new networks, which

would in turn lead to helpful resources. This finding thus suggests that online platforms can be supportive of recent immigrants who have limited networks to develop new connections and access resources.

Unfamiliarity of Social Technologies Unfamiliarity with certain technologies can cause recent immigrants to be exposed to risky exchanges on some platforms. In some cases, recent immigrants just avoid using these technologies. To address the first issue of immigrants' exposure to risky interactions on a platform, as discussed in the previous subsection, increasing a platform's regulation and the ties among community members could mitigate the uncertainty and risks of participation in online local social exchange on these platforms. In other words, when a platform and its community provide supports as the previous subsection suggested, recent immigrants' concerns of risky social exchange should be mitigated.

The second issue is that recent immigrants might refrain from using specific community platforms. In prior literature on newcomers to online communities, attracting newcomers was a different topic from keeping them in the community and socializing them (*Kraut et al.*, 2012). Thus, finding ways to attract a recent immigrant to join a community is a different topic from finding ways to keep a recent immigrant engaged and adapting to a community. In this dissertation, I focus on the latter. That is, my following studies focus more on designing for existing technologies that are used by immigrants.

CHAPTER V

Study 3: Exploring Transnational Newcomers' Shared Identity in 1-N Interactions on Local C2C E-commerce Platforms

5.1 Introduction

Social technologies such as social network sites and instant messenger applications play an important role in transnational newcomers' adaptation. Transnational newcomers utilize social media technologies to exchange information for adaptation needs with other newcomers (*Dekker and Engbersen*, 2014; *Erdem*, 2018; *Komito*, 2011). This use of social technologies allows transnational newcomers to gain information about the legal documentation process and local cultural knowledge to live in the destination country. In addition to information-seeking, transnational newcomers participate in *local consumer-to-consumer (C2C) e-commerce* to seek adaptation resources, such as items and services, in the destination country. These newcomers depend on C2C e-commerce platforms such as Craigslist, neighborhood Facebook groups, and local community WhatsApp groups to trade resources and network with other people in their local area (*Hsiao and Dillahunt*, 2018).

An essential element of C2C e-commerce is *trust*, i.e., a person's confidence in depending on another party (*Salo and Karjaluoto*, 2007). However, transnational

newcomers need time to develop trust as they adapt to the destination country (*Dinesen*, 2012). The uncertainty and potential risks of online activities can hinder these newcomers' use of online platforms to access local resources (*Guberek et al.*, 2018; *Hsiao and Dillahunt*, 2018). Thus, this study investigated transnational newcomers' *trust in local C2C e-commerce*. Specifically, my research team focused on *shared identity*, a critical trust determinant in C2C e-commerce (*Cheng et al.*, 2019; *Lampinen et al.*, 2015; *Lu et al.*, 2010; *Moser et al.*, 2017). Shared identity refers to the similar personal attributes shared among individuals. Past work suggests that *shared ethnic background* is one shared identity determinant of transnational newcomers' choices of social applications for networking and resource-seeking (*Hsiao and Dillahunt*, 2018), but it is unclear whether other shared identity determinants affect this population's trust in local C2C e-commerce. Our work dug deeper to unpack what shared identity means to transnational newcomers' participation in local C2C e-commerce, and how shared identity influences their trust in local C2C e-commerce. We aimed to answer the following research questions in the present work:

- What are the determinants of transnational newcomers' shared identity in local C2C e-commerce?
- How do the shared identity determinants affect transnational newcomers' trust in local C2C e-commerce?

We conducted semi-structured interviews with 12 transnational newcomers in the United States in November and December 2020. Our results suggest that, to transnational newcomers, shared identity is determined by close geographic proximity, similar life stages, shared ethnicity, and similar socio-economic status when they participate in local C2C e-commerce. We also found that transnational newcomers' experience in local C2C e-commerce varies across different types of platforms. We conclude our work by providing research recommendations for future work on transnational newcomers' technology use and trust development in local C2C e-commerce.

5.2 Related Work

In this section, we review prior literature on (1) transnational newcomers' technology use for adaptation and (2) shared identity in C2C e-commerce to frame our research scope.

5.2.1 Transnational Newcomers' Technology Use for Adaptation

Trading items, services, and information within local communities is common for transnational newcomers to access resources and develop social connections even without using online platforms (*Ryan et al.*, 2008b; *Sanders et al.*, 2002). These transactions allow transnational newcomers to receive needed information and resources for adapting to a country and expose them to networking opportunities within local communities (*Ryan et al.*, 2008b; *Sanders et al.*, 2002). With the development of the Internet, social media have become a channel supporting people under life transitions (*Haimson et al.*, 2019), including transnational newcomers (*Dekker and Engbersen*, 2014; *Erdem*, 2018; *Farzan et al.*, 2017; *Komito*, 2011). For example, Dekker and Elgram conducted a series of in-depth interviews with 90 immigrants in the Netherlands to understand how social media applications influenced their migration decisions and processes (*Dekker and Engbersen*, 2014). The researchers found that social media applications allowed immigrants to develop networks with people who had a shared ethnic background in the destination country. Using social media applications for networking facilitated newcomers' adaptation by exposing them to local resources such as information and services. In another study, Erdem interviewed 30 immigrants in California, U.S., and found that their use of social media applications, especially Facebook groups for local communities, exposed them to inter-cultural contact with local populations (*Erdem*, 2018). Erdem argued that social technologies can boost transnational newcomers' adaptation by exposing them to language resources and news of the destination country.

Recent HCI studies have explored technology design opportunities to address the needs of transnational newcomers, or immigrants in general, in domains such as parenting and education (*Brown and Grinter*, 2012; *Wong-Villacres et al.*, 2019a,b), resource-seeking (*Hsiao and Dillahunt*, 2018; *Motahar et al.*, 2020), online security and privacy (*Guberek et al.*, 2018), and identity transition (*Dosono and Semaan*, 2019, 2020; *Lingel et al.*, 2014). Among these studies, trust has been found to be a critical factor of transnational newcomers' online activities in the destination country, and shared ethnicity was a key antecedent of this population's trust (*Guberek et al.*, 2018; *Hsiao and Dillahunt*, 2018). While these studies shed light on transnational newcomers' needs and the ways that technology design can help, a deeper look into their trust development is missing. Our work contributes to this literature by studying transnational newcomers' trust development in the context of local C2C e-commerce, with a focus on the role of shared identity.

5.2.2 Shared Identity in C2C E-commerce

The shared identity among platform users is one key trust determinant in C2C e-commerce (*Lampinen et al.*, 2015; *Lu et al.*, 2010; *Moser et al.*, 2017). In past C2C e-commerce research, shared identity has referred to the similar personal attributes shared among platform users. Lu et al. conducted an online survey to examine how similarities such as goals, interests, and values affect trust among users of C2C e-commerce (*Lu et al.*, 2010). Their results suggest that these high-level similarities among users positively affect a user's trust in other users' integrity and benevolence on a platform. Recent qualitative studies unpacked the determinants of shared identity among different populations in C2C e-commerce. Moser et al. studied Facebook groups for buying-and-selling second-hand goods among mothers who lived in the same geographic area (*Moser et al.*, 2017). This study found that the shared identity of motherhood fosters members' trust in the community on these groups. This study

found that living in neighborhoods nearby and the shared identity as a mother supported members' trust in these groups. In another study, Lampinen et al. deployed a local C2C e-commerce platform for single parents in California (*Lampinen et al.*, 2015) and found that the shared identity as single parents supported participants' long-term interpersonal trust in other members. Participants' trust based on shared identity helped them feel safe to make risky transactions, such as childcare services or carpools to school for their children, with other members on the platform.

This prior literature acknowledges how shared identity fosters two populations' trust in local C2C e-commerce. This research implies it is necessary to understand different populations' shared identities and associated needs in C2C e-commerce. My Study 2 touched on their shared identity (*Hsiao and Dillahunt*, 2018), suggesting that a shared ethnic background is a key determinant. Our work extends this literature by digging deeper into what determines transnational newcomers' shared identity in local C2C e-commerce, and how these shared identity determinants affect their trust in this context.

5.3 Methods

Participant Recruitment Our recruitment spanned from October to December 2020. We defined transnational newcomers as those who were (1) foreign-born and had lived in the U.S. for ten or fewer years, and (2) 18 years or older when they moved to the U.S. We did not sample for other demographic factors (e.g., age, education, or race).

We first advertised our study with a screening survey on public social platforms, such as Craigslist's volunteer sections and neighborhood Facebook groups in over ten U.S. cities. The survey asked about a respondent's country of birth, year of migration, most recent experience in local C2C e-commerce, and contact information. We recruited six (N=6) eligible participants through online advertisements. Because the

recruitment through public advertisements went slowly, we employed the second recruitment strategy by recruiting through professional survey panels. We deployed the screening survey on Prolific[1], which had predefined screening criteria for us to target foreign-born populations living in the U.S. We received 200 responses from Prolific, but only 16 respondents were newcomers with local C2C e-commerce experience. After we reached out to these 16 respondents, six (N=6) of them participated in the study.

Study Procedure The present work is a part of an umbrella project to understand transnational newcomers' trust in online resource-seeking. We developed our interview protocol by adapting questions from past studies on trust in local C2C e-commerce to our context (mostly survey studies) (*Hwang et al.*, 2014; *Kim and Park*, 2013; *Lin et al.*, 2019; *Moser et al.*, 2017). The interviewer started by asking participants to recall their most recent local C2C e-commerce transaction. Based on participants' experience, the interviewer then probed with questions that were focused on trust regarding their use of the platform. The interviewer then asked whether and how shared identity influenced their trust in local C2C e-commerce with the question: "*Have you found yourself to be similar or dissimilar with other members on the platform? Why did you feel so?*" The interviewer then followed up with the question: "*How does the feeling of being similar (dissimilar) influence your use of the platform?*" We also asked: "*Compared to the time when you were new in the U.S, has your use of the platform changed?*" to capture whether their local C2C e-commerce experiences evolved as they adapted to the U.S. Each interview lasted approximately 60 minutes. Besides shared identity, we also explored other trust determinants in C2C e-commerce in the interview, such as *perceived social presence* and *social support* (*Kim and Park*, 2013), which we left for future work. Participants were asked

[1]Prolific (`https://prolific.co`) is an online survey platform that allows researchers to purchase a panel to recruit survey participants. Each panelist was paid 0.32 USD for completing our screening survey.

ID	Pseudonym	Home Country	Duration in the U.S.	Gender	Age	Race
P1	Emily	Venezuela	10 yrs	W	47	White
P2	Ann	South Korea	Less than 1 yr	W	29	Asian
P3	Shakir	Egypt	8 yrs	M	28	White
P4	Aparna	India	3 yrs	W	34	Asian
P5	Hang	Vietnam	5 yrs	W	23	Asian
P6	Reth	Kenya	3 yrs	M	20	Black
P7	Mert	Turkey	2 yrs	M	30	White
P8	Sara	North Macedonia	9 yrs	W	34	White
P9	Komla	Ghana	3 yrs	M	26	Black
P10	Kristina	Russia	4 yrs	W	28	White
P11	Juliana	Brazil	3 yrs	W	23	White
P12	Maduka	Nigeria	9 yrs	M	28	Black

Table 5.1: Participant details.

to respond to a closing survey to report their detailed demographic information after the interview. All the interviews were conducted remotely through Zoom between November and December 2020. Our study was approved as an exempt study by our institutional review board (IRB). All the materials used in the study, including the recruitment post, surveys, and interview protocols, were designed in English. Participants received a 30 USD electronic gift card as compensation, which they were able to choose from Amazon, Target, or Walmart.

Participant Overview Table 5.1 presents the participants' demographic information. We had more women participants (N=7) than men (N=5). Participants' average age was 29, and their duration living in the U.S. was 5 years on average. Half of the participants were White (N=6); the other half were Black (N=3) or Asian (N=3). All except two participants had a bachelor"s degree; the other two participants reported their educational background as having some college. Four participants (N=4) migrated to the U.S. as a family member or spouse of a U.S. citizen or permanent immigrant; four (N=4) participants moved as an international student; the other

participants migrated because they or their spouse got a job in the U.S. (N=3), and because they won the U.S. green card lottery[2] (N=1).

Data Analysis The interviews were audio-recorded and professionally transcribed, and we used `Atlas.ti`[3] to analyze the transcriptions. In the first round of coding, the first author reviewed the data line-by-line and adopted *structural coding* to identify quotes associated with shared identity and trust in participants' local C2C e-commerce experience, i.e., *Saldaña* (2013). The first author then gathered the highlighted quotes to generate themes as a codebook.

5.4 Results

Our study aimed to identify the determinants of transnational newcomers' shared identity in local C2C e-commerce, and how these determinants affect their trust in local C2C e-commerce. We first found that participants' experience in local C2C e-commerce varied based on the type of platforms they used. We observed that platforms that supported other online activities beyond C2C transactions, such as neighborhood Facebook groups or NextDoor, provided opportunities for participants to engage in local communities. In these cases, newcomers' offline trust in their neighborhoods and trust in users on a platform mutually fostered each side. On the other hand, participants who relied on the other platforms that were pure online marketplaces for local C2C e-commerce, such as Craigslist, Facebook Marketplace, or OfferUp, used these platforms only when they had material needs or looked for income opportunities, such as local gigs or paid research studies. These platforms had limited to no space for casual interactions among platform users. In these cases,

[2]The U.S. green card lottery, or the Diversity Visa Program, is a visa program to improve immigrant diversity in the U.S. The program grants 50,000 applicants an immigrant visa annually by randomly drawing applicants from countries that had a low rate of immigration in the previous 5 years.

[3]Atlas.ti is a qualitative analysis tool.

participants' trust was limited to trust in users on a platform but did not convert to trust in their offline communities.

Our results suggest that shared identity is multifaceted and that each aspect of shared identity influences participants' trust in local C2C e-commerce in a different way. Participants' trust was affected by the following aspects of shared identity: close geographic proximity, a similar life stage, a similar ethnic background, and similar socioeconomic status. We present the results regarding each determinant in the rest of this section.

5.4.1 Close Geographic Proximity

Being in close geographic proximity was the top shared identity determinant stated by participants. Being in a close geographic area with other users in C2C e-commerce allowed transnational newcomers to develop trust by (1) converting trust in neighborhoods to trust in local C2C e-commerce, (2) maintaining control of offline locations to meet, and (3) developing a sense of belonging through online activities.

5.4.1.1 Converting Trust in Neighborhoods to Trust in Local C2C E-commerce

Being in the same geographic areas allowed participants to convert their offline trust in their neighborhoods to an online trust in the user community on a platform. Five participants (P1, P2, P4, P7, P9) stated that they were familiar with their neighborhoods, so they trusted these users who were also local. For example, Emily [P1], who migrated to the U.S. because she won a green card lottery, and her family needed to move to a different state every few years because of her husband's job. Emily described how living in the same neighborhood with other users on Craigslist fostered her trust: "*Let's say I find something in Craigslist that is posted and it happens to be a neighbor of mine. I will probably go there by myself because I know*

the neighborhood. So it was like, what kind of risks am I taking with the amount that I'm going to save by buying something here in the neighborhood. But if the same item was next town where I don't know anyone, I probably wouldn't go by myself."

Not only did newcomers' offline trust in neighborhoods convert to online trust in C2C e-commerce, but their distrust did also. Ann [P2], who married a U.S. citizen and migrated to the U.S. in 2020, stated that she knew some unsafe neighborhoods in her area, so she avoided transactions in those areas on Craigslist. Mert [P7], who was an international student and moved to the U.S. in 2018, had an experience buying a second-hand bike from, as he described, an insecure neighborhood, through Craigslist: "*It wasn't a very secure neighborhood, I would say. I felt I wasn't really trusting the guy [seller] in the first place, but I really liked the item, the bike... Eventually, I came home and then I saw some problems with the bike... There are some neighborhoods, you feel secure... But there are some neighborhoods that you don't. So it was kind of one of those neighborhoods, I guess.*"

5.4.1.2 Maintaining Control of Offline Locations to Meet

All participants mentioned that they negotiated the location to meet offline for the transaction with another party. Two participants (P3, P9) stated that being able to select locations to meet made them feel safe. Shakir [P3] stated that having control of the offline location to meet mitigated his perceived risks and improved his trust in a transaction: "*It's actually like this person [seller] was trustworthy, because they just told me that, for example, like me, that a certain parking lot to take the tools [to sell]. And it was close to me, it wasn't very far from me... I felt like this person was doing their best to make a very good experience, and a safe experience.*"

When the buyer or seller involved in a transaction invited a newcomer to visit their home, participants also developed trust in the buyer/seller. Two participants (P1, P8) had this type of experience and described their trust development as a mutual

process. Being invited to someone's house suggested to them that the buyer/seller trusted the participants, and thus the participants developed trust in the buyer/seller. Sara [P8], who moved to the U.S. as a family-reunion migrant in 2011, described her experience using NextDoor to find a parking lot to rent in her neighborhood. Sara described her feeling when a person who was willing to lease the parking lot to her invited her to their house: "*[The parking lot owners] said, 'Okay, we would like to meet you first.' Because they wanted to see they can trust us as well. So we went over their house one night after work. And we have a discussion for the background, what we do, where we live... So I think that was a very trusting moment that they invited us to their home.*"

5.4.1.3 Developing a Sense of Belonging through Online Interactions

The online interactions on local C2C e-commerce platforms also fostered participants' trust in the user community. Platforms such as neighborhood Facebook groups and NextDoor offered online spaces for casual conversations such as sharing daily news and local information among group members. By soaking in this information and familiarizing themselves with the neighborhood's social norms, two participants (P5, P8) developed trust. Hang [P5] moved to the U.S. to start college in 2015, and she was a member of a Facebook group for her neighborhood. In addition to having C2C transactions within the group, she often observed members' discussions about local news and events. As she lived in the area longer, Hang was able to understand the inside jokes regarding the neighborhood in the group. Familiarizing herself with the neighborhood's culture fostered Hang's identity as a local community member, which increased her trust: "*Because sometimes the people [in the Facebook group] have inside jokes that only people in our neighborhood can understand. And it makes me feel closer. It makes me feel like the community is just a few more nice people... So just*

acts of kindness and just community jokes that people have inside a group that makes me feel closer and better as part of the group."

5.4.2 Similar Life Stage

Being in a similar life stage fostered participants' trust in another user and in a user community. One shared life stage stated by two participants (P4, P11) was being a transnational newcomer to the U.S. Juliana [P11], who was an international student, described that she looked for a roommate through a Facebook trading group consisting of students from her college. Juliana said that she decided to live with her current roommate because they shared the same identity as an international student. However, the two participants (P4, P11) also stated that their engagement in these platforms decreased after they transitioned from a newcomer to an established migrant. Aparna [P4], who migrated to the U.S. in 2017 because her husband got a job in the U.S., joined multiple WhatsApp groups for Indian women in her local area. These groups were for buy-and-sell within local Indian women communities, and the members also exchanged information for adaptation in these groups. Aparna described how her use of these groups decreased as her duration living in the U.S. increased: "*When I was a newcomer, I was a frequent user [of the WhatsApp groups]. I used to frequently, I used to keep on checking my phone. I was frequently asking questions, I was regularly seeking out certain members of the group whom I thought were very similar to me and I was making a lot of efforts to get to know them and I used to go and meet out. And I was making a lot of efforts in making new relations. Now that I do not need any of that, I'm just a mere spectator unless I need something.*" Juliana [P11] also stated that "*I think that when I was a freshman, I used to use it [the Facebook group] way more than what I use right now.*" This suggests that 1 year could be sufficient for transnational newcomers to become established and reduce their dependence on local C2C e-commerce.

In addition to their shared identity as a newcomer to the U.S., the marriage and family status as a shared identity influenced participants' trust (P1, P4, P8, P10) in local C2C e-commerce. Emily [P1] was the mother of two kids. Emily believed that other members on Craigslist were also local families with similar needs, so C2C transactions could be a reliable way for mutual assistance: "*The things that I'm looking for, household things, are families like my family. They have kids like I have, they need things like I need. They need to get rid of stuff like I do when kids grow. I mean, there's the same thing. They are going through the same things that we are, in some way.*"

5.4.3 Shared Ethnicity

A shared ethnicity refers to the same or similar cultural background. Notably, we did not find a salient association between participants' trust and common cultural background. Although a participant (Aparna [P4]) described that the shared cultural background with other Indian women in WhatsApp groups helped her find needed information for immigration documentation and international traveling, her experience did not suggest an association between a shared ethnicity and trust.

However, the shared ethnicity could improve a newcomer's trust in local C2C e-commerce by providing access to *latent ties* within an ethnic community. Latent ties are existing social ties that are not activated, such as people who work for the same company but do not know one another (*Haythornthwaite*, 2002). Latent ties among an ethnic community were cited by Maduka [P12] as a safety mechanism that reduced his perceived risks of C2C transactions. Maduka moved to the U.S. as an international student from Nigeria in 2011. Maduka preferred to have local C2C transactions with people from his home country on Craigslist, because the latent ties allowed him to have more control over his transactions: "*I like [relying on] people that come from the same country I come from because they're more... Let me say that we have some*

connections. I can easily track them. I can easily get my item. I can track my item easily."

5.4.4 Similar Socioeconomic Status

The last determinant of shared identity we found was a similar socioeconomic status. Although other users' socioeconomic status is not public information, participants utilized posts on a platform to assess other users' socioeconomic status. Kristina [P10] migrated because she got a job in the U.S. in 2016, and she used a few Facebook groups for local C2C e-commerce. Kristina described that by seeing items that other members traded, and sometimes their Facebook profiles, she was able to assess a person's socioeconomic status. Kristina believed that most of the same group users were in a similar socioeconomic status and had similar needs. Kristina said that C2C transactions provided a way for people to help one another address common needs: "*You feel like there exist people on the same level as you. I think because if I would be of higher income I would buy toys [for kids] by myself. I would not ask for yours... Yes, it's encouraged me to use more and I also feel more confident because I know that in case if I really need something and really don't have something, I have resources who can help.*"

Another example was described by Ann [P2], who had a medical doctoral degree from South Korea. Besides the transactions for items on Craigslist, Ann often browsed posts that recruited research participants. Ann took these posts as a signal to suggest that other users were similar to her in terms of profession: "*I can see there are researchers and scientists and there are some good causes and purposes that people are using Craigslist for... And I could see that they were real business and real people like myself, so they were similar to me... It increases my use, because I feel more comfortable.*"

5.5 Discussion and Conclusion

This work was a preliminary study to unpack what shared identity means to transnational newcomers in their participation in local C2C e-commerce, and how each aspect of shared identity affects their trust. We identified the following shared identity determinants: geographic proximity, similar life stages, shared ethnicity, and similar socioeconomic status. Geographic proximity was the top shared identity determinant among our participants. For newcomers who have less knowledge about their area, participating in local C2C e-commerce could increase their trust and engagement in their local communities. This finding provides an explanation to past research that found a positive correlation between newcomers' adaptation level and their use of neighborhood-based social applications (*Farzan et al.*, 2017).

Although past research suggested that shared ethnicity is a key trust determinant of transnational newcomers' technology use (*Guberek et al.*, 2018; *Hsiao and Dillahunt*, 2018), we found that shared ethnicity has a limited effect. An explanation of this discrepancy could relate to the different contexts between our work and others' past work. Others' past works studied newcomers' online networking and general social activities, whereas our work focused on their participation in C2C e-commerce. Our results suggest that shared ethnicity has limited influence on newcomers' trust when their online behaviors are merely commercial and material.

Our results suggest two implications for our next steps and future research. First, we found that future research should narrow the scope of transnational newcomers to focus on the adaptation process. The present study used a 10-year duration as a screening criterion to cover a wider range of newcomers to explore how long their newcomer identity recognition lasted in the context of online resource-seeking. Our results suggest that participants' newcomer identity recognition in this context lasted much less than 10 years and was even less than the 5-year duration used in past research (*Catanzarite*, 2000; *Elliott*, 2001; *Kingston et al.*, 2011). We found that

future research exploring transnational "newcomers" should narrow the population with an even shorter duration in the host country (e.g., 1 year) because newcomers' technology uses also adapt to the host country as they become established. This was evidenced by Aparna [P4] and Juliana's [P11] examples in Subsec. 5.4.2. Our second research implication, which resulted from our limitations in screening platforms used by this population, suggests that researchers should distinguish types of C2C e-commerce platforms in future research. We observed participants' deeper engagement in platforms that supported casual interactions among users, such as Facebook groups, NextDoor, or WhatsApp groups. In contrast, platforms that were designed for pure C2C transactions, such as Craigslist, Facebook Marketplace, and OfferUp, were used to address the material needs of our participants. We found that future research on local C2C e-commerce platforms should distinguish platforms by accounting for the online activities that these platforms support.

Given these research implications, I plan to continue uncovering transnational newcomers' trust in local C2C e-commerce. As my research team described in the Methods section, our interview protocol covered other trust determinants such as perceived social presence and social support. My next steps will be to look into these other trust determinants and also how the shared identity determinants collectively affect this population's trust in local C2C e-commerce. I also plan to further unpack different forms of transnational newcomers' trust in local C2C e-commerce.

CHAPTER VI

Study 4: Examining Transnational Newcomers' Participation in 1-N Local Social Exchanges on Community E-commerce Platforms

Transnational newcomers, i.e., those who are new to a country, rely on *community commerce*, a type of peer-to-peer e-commerce where transactions happen within local communities. *Trust* is crucial to community commerce participation, and transnational newcomers need time to develop trust after their arrival. My research team's work unpacks how community commerce affects transnational newcomers' adaptation and their trust development in community commerce. Through interviews with 24 transnational newcomers to the United States, we found that community commerce fosters newcomer adaptation by exposing them to local resources beyond peer-to-peer transactions and increasing their sense of belonging to local communities. Newcomers' online trust in community commerce and their offline experience with local communities mutually influence each other. We also identified challenges such as adaptation to new technologies and limited transportation. We discuss research and practice implications for creating a welcoming community commerce platform to support transnational newcomers who are adapting to a new community.

6.1 Introduction

More than 40 million foreign-born populations live in the United States (U.S.), and a million transnational newcomers have moved to the U.S. every year on average in the last decade (*Budiman*, 2020). However, newcomers might encounter challenges in their adaptation process. Social isolation, cultural differences, racism, and ethnic discrimination are challenges that transnational newcomers might experience (*Berry*, 1997; *Goldlust and Richmond*, 1974). These newcomers' adaptation has become even more difficult in the last few years because of the recent political atmosphere in the U.S. These challenges were especially exacerbated in 2020 because of the coronavirus 2019 (COVID-19) pandemic and related political issues, such as discrimination against certain racial and ethnic groups (*Gordon*, 2020).

Social technologies such as social-network sites (SNS) and instant messengers play an important role in transnational newcomers' adaptation. Transnational newcomers utilize online groups to exchange adaptation information with other newcomers (*Dekker and Engbersen*, 2014; *Erdem*, 2018; *Komito*, 2011). This use of social technologies allows transnational newcomers to gain information such as legal documentation processes and cultural knowledge in the destination country. A recent study further found that transnational newcomers trade items and services locally, either within or outside their ethnic community, through social technologies (*Hsiao and Dillahunt*, 2018). Transnational newcomers' resource-seeking through social technologies not only allows them to access resources such as information, items, or services but also gives them opportunities to network with other people in their local area (*Hsiao and Dillahunt*, 2018).

To extend this line of research, our work explored transnational newcomers' participation in *community commerce*, a framing that emphasizes community-building in local peer-to-peer (P2P) electronic commerce (e-commerce) (*Moser et al.*, 2017). We specifically focused on these newcomers' *trust* development in community commerce.

Trust is defined as "*the willingness of a party to be vulnerable to the actions of another party based on the expectation that the other party will perform a particular action important to the trustor, irrespective of the ability to monitor or control that other party*" (*Mayer et al.*, 1995), and is an essential element of P2P e-commerce. On top of P2P e-commerce, community commerce emphasizes the community-building among users on a community commerce platform. However, transnational newcomers often need time to adjust their trust to the home country society. The uncertainty and potential risk of online activities can hinder their use of online platforms to access local resources (*Guberek et al.*, 2018; *Hsiao and Dillahunt*, 2018). Therefore, our study aimed to discover how transnational newcomers develop trust in community commerce. We leveraged six affordances from past e-commerce literature (*Dong et al.*, 2016; *Dong and Wang*, 2018) and examined them in the context of newcomers' community commerce experience. Specifically, our work aimed to answer the following research questions:

- RQ1: How do a community commerce platform's affordances affect newcomers' trust in community commerce?
- RQ2: What challenges or concerns do newcomers have when participating in community commerce?

Findings from our semi-structured interviews with 24 transnational newcomers suggest that community commerce fosters newcomer adaptation by exposing newcomers to local resources and social norms, such as how local people do peer-to-peer transactions. Newcomers' community commerce experiences and their trust in the local area influenced each other bidirectionally. Newcomers associated their community commerce experiences with their offline trust in local areas, and the community commerce experiences improved their trust in the local areas.

Our work contributes to human–computer interaction (HCI) and e-commerce research by uncovering how community commerce affects newcomers' adaptation and

their trust development in community commerce. Specifically, we make the following contributions:

- We discovered how community commerce influences transnational newcomers' adaptation process and the challenges hindering them from community commerce participation,
- We identified community commerce platform affordances that influence different forms of newcomers' trust in community commerce, and
- We deliver design and research implications to support transnational newcomers' trust development in community commerce.

6.2 Literature Review

In this section, we first review prior literature on transnational newcomers' technology usage and their participation in P2P transactions to highlight research gaps in this literature. We then review past literature on *social commerce* instead of the literature on *community commerce*, because the latter is a relatively new framing and there has not been much literature on it.

6.2.1 Transnational Newcomers' Participation in Online Peer-to-Peer Transactions

Social technologies play an important role in transnational newcomers' adaptation (*Dekker and Engbersen*, 2014; *Erdem*, 2018; *Komito*, 2011). For example, Dekker and Engbersen conducted a series of in-depth interviews with 90 immigrants in the Netherlands (*Dekker and Engbersen*, 2014). They found that social media applications allowed immigrants to develop networks in their destination country. Using social media applications to network facilitates newcomers' adaptation by exposing them to more opportunities of accessing necessary resources, such as information and services. In another study, Erdem interviewed thirty immigrants in California

and found that transnational newcomers' use of social media applications, especially Facebook groups for local communities, increased their inter-cultural contact with the local population (*Erdem*, 2018). Erdem concluded that social technologies could boost transnational newcomers' adaptation by assisting them in accessing resources for local languages and local news.

An important role that these social technologies played is supporting transnational newcomers' P2P transactions. In transnational newcomers' adaptation process, they commonly use P2P transactions and exchanges of items, services, and information in order to access settlement resources and develop social networks (*Ryan et al.*, 2008a; *Ryan*, 2011; *Sanders et al.*, 2002). These P2P transactions could even evolve from informal exchanges to structured transaction ecosystems. Lovejoy and Handy studied how Mexican immigrants in California formed P2P ride-sharing and car-sharing within their ethnic communities (*Lovejoy and Handy*, 2011). The authors found that the shared connections within the ethnic community served as a signal of trust for car-sharing. With the popularity of the Internet, newcomers leveraged online spaces for P2P transactions. Hsiao and Dillahunt found that newcomers relied on social media applications to network with local populations and their ethnic communities. Some of these groups also developed in-group rules and hierarchies to support P2P transactions (*Hsiao and Dillahunt*, 2018).

Recent HCI scholars have explored opportunities for technology design to address transnational newcomers' needs in aspects such as parenting (*Brown and Grinter*, 2012; *Cho et al.*, 2019; *Wong-Villacres et al.*, 2019a,b), resource-seeking (*Hsiao and Dillahunt*, 2018; *Motahar et al.*, 2020), security and privacy (*Guberek et al.*, 2018), and identity transition (*Dosono and Semaan*, 2020; *Lingel et al.*, 2014). Among these works, trust has been found as a critical factor of transnational newcomers' online behaviors in the destination country (*Guberek et al.*, 2018; *Hsiao and Dillahunt*, 2018). Our work aimed to discover transnational newcomers' trust development in

community commerce, a form of P2P e-commerce that allows them to access local resources and communities and exposes them to potential risks (*Guberek et al.*, 2018; *Hsiao and Dillahunt*, 2018).

6.2.2 Social Commerce Platforms' Affordances

Moser et al. coined the term *community commerce* to frame a peer-to-peer (P2P) e-commerce ecosystem that is based on general social media applications (*Moser et al.*, 2017). The community commerce framing emphasizes users' close geographic proximity and collective identities as a community. For example, Moser et al. studied two Facebook buy-and-sell groups for local mothers (*Moser et al.*, 2017). The authors found that the shared identity of being local and being mothers fostered trust among group members. These groups' nature as closed groups also supported members' sense of community and perceived safety for transactions.

However, community commerce is a relatively new framing and hence, has not been widely adapted. A similar but more established framing is *social commerce*, which refers to an e-commerce ecosystem that consists of P2P transactions through general social media platforms (*Busalim and Hussin*, 2016; *Gonçalves Curty and Zhang*, 2013; *Stephen and Toubia*, 2010). For example, P2P transactions that happen on social media applications such as Facebook, Twitter, or Instagram are instances of social commerce transactions. Community commerce, however, on top of social commerce, emphasizes consumers' collective identities as a group or a community. A couple examples are the *local buy-and-sell groups on WhatsApp or Facebook*. Our work drew on *affordances* from social commerce literature to develop our research questions and frame our analysis.

Affordances are an object's attributes that are "*constituted in relationships between people and the materiality of the things with which they come in contact*" (*Treem and Leonardi*, 2013). In past HCI research, affordances referred to technology capacities

Affordance	Definition	Technology Capacities
Visibility	The potential to make users' knowledge on related products visible	Unique profile of items, including its attributes
Metavoicing	The potential to enable users to provide feedback on product content	Post or comments tools, e.g., "like" and "share" buttons
Triggered attending	The potential to notify content changes about products	Automated alerts that inform users of changes regarding objects of their interest
Guidance shopping	The potential to help users make purchase decision by offering personalized service	Personalized and collaborative support service
Social connecting	The potential to establish or maintain social ties and involve users in the reciprocal commerce relationships	Tools that connect products or other users
Trading	The potential to enable users to finish the process or act of actual purchase	Payment options, e.g., online banking or third-party payments

Table 6.1: Six affordances of social commerce platforms. Table adopted from *Dong et al.* (2016).

or features that support user behaviors. HCI scholars have identified key affordances for a variety of platforms and how these affordances form users' relations with a platform, e.g, *Treem and Leonardi* (2013). Trust, as a relationship between users and platforms, can be affected by platform affordances. To understand newcomers' trust development in community commerce, we leveraged six affordances for social commerce proposed by *Dong et al.* (2016). Dong and colleagues proposed and validated these six affordances for social commerce platforms: *visibility*, *metavoicing*, *triggered attending*, *guidance shopping*, *social connecting*, and *trading* (definitions are shown in Table 6.1) (*Dong et al.*, 2016). In another study, Dong and colleagues leveraged the six affordances to examine how a social commerce platform's interactivity fostered consumers' strong/weak tie formation on the platform (*Dong and Wang*, 2018). They found that all affordances except for guidance shopping improved consumers' perceived interactivity of a social commerce platform. We leveraged the six affordances to analyze how different trust antecedents are affected by different affordances.

6.3 Methods

We employed semi-structured interviews to discover how transnational newcomers develop trust in community commerce. In this section, we describe our recruitment and sampling, study procedure, data overview, and data analysis.

6.3.1 Recruitment and Sampling

Our recruitment spanned from mid-January to late March, 2021. We employed convenience sampling and snowball sampling to recruit participants. For convenience sampling, we posted online advertisements to counties that had over 500,000 foreign-born people on Craigslist[1]. We also posted to counties [anonymous for review] with large foreign-born populations near our areas. In addition, we advertised on U.S. migrant Facebook groups and email lists to which the authors personally belonged. We also specified that the interview was conducted in English in our advertisements.

Snowball sampling is a recruitment technique often used to recruit special populations through their community connections (*Schensul and LeCompte*, 1999). For snowball sampling, we asked participants to invite their connections to sign up for the study. If a participant referred an eligible newcomer to sign up and finish the study, we granted her a 5 USD e-gift card, extra to the study compensation, which we describe later. A participant could receive up to 15 USD, i.e., making referrals for three eligible participants, from snowball sampling. We set three referrals as a maximum to avoid compiling similar experiences in using the same community commerce platform by multiple participants.

Individuals who were interested in participating in the study needed to respond to a sign-up form, which included screening questions about their country of origin, du-

[1]Including Los Angeles County, CA; Miami-Dade Country, FL; Harris County, TX; Cook County, IL; Queens County, NY; Orange County, CA; Kings County, NY; San Diego County, CA; Santa Clara County, CA; Broward County, FL; Dallas County, TX; Maricopa County, AZ; Alameda County, CA; Riverside County, CA; and King County, WA. Data source: `https://www.migrationpolicy.org/programs/data-hub/charts/us-immigrant-population-state-and-county`.

ration in the U.S., and their most recent transactions through community commerce platforms. After we received a response, we reviewed the respondent's eligibility with the following criteria: Eligible participants (1) had been in the U.S. for three years or less, (2) were 18 year or older when they moved to the U.S., and (3) had experience using community commerce groups for P2P transactions. Although past research typically used five years as a screening criterion for "newcomers"—e.g., *Catanzarite* (2000); *Elliott* (2001); *Hsiao and Dillahunt* (2018); *Kingston et al.* (2011)—our pilot study suggested that foreign-born populations might not perceive themselves as newcomers after one year of living in the U.S. [citation left blank for anonymity]. We decided to use three years and less as a screening criterion because this group of newcomers was likely to be established but still remember their newcomer experience. We also intentionally diversified participants' countries of origin by selecting no more than two participants from the same country. We diversified the nationality because our work aimed to identify the common experience of "newcomers" across different cultural and ethnic backgrounds.

6.3.2 Study Procedure

The interview lasted about 60 minutes and included the following six components. All of the interviews were conducted in English.

Opening The interviewer first briefly introduced himself to the participants. The interviewer then explained the study procedure and informed participants about their rights (e.g., rights to skip questions or drop from the study if they felt uncomfortable).

Warm-up The interviewer started recording and initiated the interview by asking participants to describe their newcomer experience briefly. Participants were asked about how long they had lived in the U.S., their motivations for moving to the U.S., and the challenges that they met in the U.S.

General Community Commerce Experience The interviewer presented participants' responses to the screening survey and asked them to describe their experience in the community commerce group(s). We followed up by asking details about the group, such as the group's member size, member backgrounds, and common activities in the group. We then asked participants to describe their first and most recent transactions in detail. We probed for details such as communication between participants and the sellers/buyers, information exchanged for the transaction, and their perceptions about the transaction.

Newcomer Identity and Community Commerce Next, we asked about participants' newcomer experience by asking "*How does this group affect your transition to the U.S.?*" and "*As a newcomer to the U.S., how does your newcomer identity affect your feeling and usage of the group?*" We then followed up by asking for concrete examples related to their responses. We also asked, "*How has your usage of the group changed since you started using it*?" to capture whether their usage of the group changed over time.

Trust in Community Commerce We then moved on to ask participants about their trust development by asking, "*In your experience in this group, was there a time you trusted or distrusted in the community in the group?*" and "*In your experience using this group, was there a time you trusted or distrusted in the website/application provider?*" We asked participants to unpack these experiences by probing for what happened and why they felt the way they did.

Closing The interviewer stopped recording and explained the post-interview process to participants, which we describe next.

After the interview, we sent an email to every participant to wrap up the study. We asked participants to respond to a post-interview survey in which they reported demographic information. After they finished the survey, participants were compensated with a 30 USD e-gift card, which they could choose from Amazon, Target, or Walmart. We also included details of snowball sampling in the mail. Our study was reviewed and exempted by our university's institutional review board (IRB).

6.3.3 Data Overview

We interviewed 24 transnational newcomers, and their demographic information is presented in Table 6.2. We reached good gender balance with 12 women participants and 12 men participants. Most participants were in their late 20s or early 30s (Mean=28). In terms of primary identities, i.e., the legal identity that they had in their first year in the U.S., international students were the biggest group (N=8). The other participants were foreign workers (N=6), green card lottery winners (N=4), family of a U.S. citizen or permanent resident (N=4), family of a foreign worker (N=1), and family of an international student (N=1). Most participants identified themselves[2] as Black (N=9), followed by Asian (N=6), White (N=4), Hispanic (N=3), Pacific Islander (N=1), and Other (N=2). More than half of the participants had a bachelor's degree (N=16), followed by a master's degree (N=6), and some college (N=2). Most participants moved to the U.S. in 2019. Notably, three participants had lived in the U.S. for a few years when they were younger (Sofia [P12], Drea [P19], Linda [P22]). They had moved back to their home countries and came back to the U.S. recently.

All of the interviews were conducted remotely through Zoom. Our dataset consisted of 24 interview recordings, with an average length of 49 minutes (max=68 minutes; min=35 minutes). All the recordings were professionally transcribed for

[2]Participants were allowed to select for more than one race/ethnicity.

ID	Pseudonym	Gender	Race/Ethnicity	Age	Country of Origin	Year of Migration	U.S. State of Residence
P1	Martin	M	Hispanic	26	Venezuela	2019	CA
P2	Lai	M	Asian, Pacific Islander	31	Taiwan	2019	MI
P3	Shriti	W	Asian	26	India	2019	MI
P4	Rong	W	Asian	26	China	2019	CA
P5	Emma	W	White	38	Canada	2019	CA
P6	Veronica	W	White	24	Mexico	2019	CA
P7	Chuk	M	Black	21	Nigeria	2019	NY
P8	Jerry	M	Black	30	Kenya	2018	WY
P9	Pallavi	W	Asian	24	India	2019	MI
P10	Mugisa	M	Black	31	Rwanda	2017	MI
P11	Bill	M	Black	25	Canada	2019	NY
P12	Sofia	W	White	32	Portugal	2020	CA
P13	Mateo	M	Hispanic	26	Argentina	2019	CA
P14	Anastasia	W	White	28	Belarus	2019	NY
P15	Aasir	M	Black	29	Kenya	2017	NY
P16	William	M	Black	26	South Africa	2018	NY
P17	Nomin	W	Asian	30	Mongolia	2019	NY
P18	Jenny	W	Black	28	South Africa	2019	MI
P19	Drea	W	Other	23	Bahamas	2019	NY
P20	Elizabeth	W	Hispanic	31	Mexico	2018	IL
P21	Souma	M	Asian	25	Pakistan	2020	WA
P22	Linda	W	Black	48	U.K.	2019	NY
P23	Daniel	M	Other	36	Trinidad and Tobago	2019	GA
P24	Jacob	M	Black	23	New Zealand	2018	CT

Table 6.2: Participant information. Gender: M=Man, W=Woman. Age: participants' age in 2021.

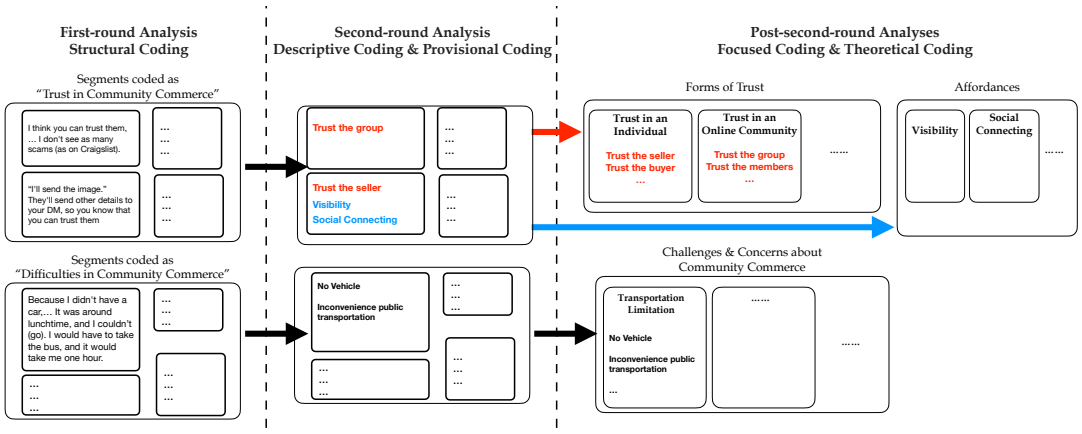


Figure 6.1: Analysis process

analysis. In addition to the interviews, we communicated with participants through emails when we had follow-up questions.

6.3.4 Data Analysis

Fig 6.1 presents our analysis process. We combined both deductive and inductive approaches to our coding analysis and conducted multiple rounds of coding. Two coders used Atlas.ti to work on the coding process. The first coder, i.e., the first author, led the coding process and organized the codebook. The second coder, i.e., the last author, followed the codebook to code the data and focused on delivering high-level findings. These high-level findings also included newcomers' general community commerce experience, which we used to contextualize our core findings. The two coders met weekly to discuss the analysis and update the codebook. The authors also received suggestions on our analysis from our lab mates regularly. Next we describe each round of our analysis.

6.3.4.1 First-round Analysis

In the first-round analysis, we adopted *structural coding*, an inductive approach that allowed us to focus on conceptual phrases related to our research questions. To answer our RQ1, "*How do a community commerce platform's affordances affect new-*

comers' trust in community commerce?", we first adopted a code "trust in community commerce" to segments related to participants' trust in community commerce. To answer our RQ2, "*What challenges or concerns do newcomers have when participating in community commerce?*", we adopted a code "*difficulties participating in community commerce*" to segments depicting participants' concerns and difficulties in using community commerce.

6.3.4.2 Second-round Analysis

We had two goals in our second-round analysis to answer RQ1. First, we wanted to identify the six social commerce platform affordances. We adopted *provisional coding* by bringing the six social commerce affordances (i.e., *visibility, metavoicing, triggered attending, guidance shopping, social connecting*, and *trading*) to analyze the segments that were coded as "trust in community commerce" in the first-round analysis.

Second, we wanted to identify different forms of newcomers' trust in community commerce. We employed *descriptive coding* to inductively analyze segments coded with "*trust in community commerce*" from the first-round analysis. Descriptive coding is a technique that adapts codes to summarize a sentence, and it is suitable for qualitative analysis to explore data around topics. Examples of codes generated from this step include *trust in the group*, *trust in the seller*, and *trust in the moderator*.

To answer our RQ2, we also employed *descriptive coding* to generate codes around participants' challenges in community commerce. We generated codes such as *no vehicle* and *lack of online footprints* from this analysis.

6.3.4.3 Post-second-round Analyses

After the second-round analysis, we employed *focused coding* to generate categories and themes to answer our research questions. To answer our RQ1, we aggregated different forms of trust and delivered four forms of trust: *trust in an individual*, *trust*

in an online community, *trust in an offline community*, and *trust in a platform*. We then counted the co-appearance of different forms and affordances to identify the relations in between.

Similar to the way we analyzed for RQ1, we employed *focused coding* to generate categories and themes to answer RQ2. We identified challenges and concerns that newcomers had about community commerce, including *adapting to new technologies*, *perception as outsiders*, and *transportation limitations*.

6.4 Results

Our work answers how newcomers develop trust in community commerce, and the challenges or concerns they might face. In the rest of this section, we first present participants' community commerce experience to contextualize our findings around newcomers' trust. Then we present how newcomers develop trust in community commerce, followed by concerns and challenges about community commerce.

6.4.1 Newcomers' Community Commerce Experience

Table 6.3 presents the community commerce platforms that we focused on during the interview. Most participants got involved in community commerce through Facebook groups, followed by WhatsApp groups, Nextdoor, and WeChat. Most participants browsed the community commerce platforms they used every day (N=8) or a few times a week (N=9). The rest of the participants browsed these platforms once a week (N=2), a few times a month (N=3), or once a month or less (N=2).

More than half of the participants (N=17, 71%) thought that community commerce was helpful for their adaptation to the United States because it allowed them to get low-priced resources for settlement, to meet local people, and to learn about local culture and social norms. In the rest of this subsection, we describe newcomers' community commerce experiences and how these experiences interwove with their

ID	Pseudonym	Platform	Community	Browsing Frequency
P1	Martin	Facebook group	Venezuelan community in P1's city	Once per month or less
P2	Lai	Facebook group	Residents in P2's town	Every day
		Facebook group	Students at P2's university	Every day
P3	Shriti	Facebook group	Indian students at P3's university	A few times a month
P4	Rong	WeChat group	Chinese students at P4's university	Once per month or less
P5	Emma	Facebook group	Residents in P5's neighborhood	Every day
P6	Veronica	Facebook group	Residents in P6's city	Every day
P7	Chuk	Nextdoor	Residents in P7's neighborhood	A few times a week
P8	Jerry	Facebook group	Residents in P8's town	A few times a week
P9	Pallavi	WhatsApp group	International students at P9's university	A few times a month
P10	Mugisa	Nextdoor	Residents in P10's neighborhood	Every day
P11	Bill	WhatsApp group	Residents in P11's city	Every day
P12	Sofia	Facebook group	Photographers in P12's city	Every day
P13	Mateo	Facebook group	Residents in P13's city	Every day
P14	Anastasia	Facebook group	Residents in P14's neighborhood	Once per week
P15	Aasir	Facebook group	Residents in P15's city	A few times a week
P16	William	WhatsApp group	Employees of P16's workplace	A few times a week
P17	Nomin	Facebook group	Residents in P17's neighborhood	A few times a week
P18	Jenny	WhatsApp group	Employees of P18's workplace	A few times a week
P19	Drea	Facebook group	Residents of P19's city	A few times a month
P20	Elizabeth	Facebook group	Mexican women community in P20's city	Every day
		Facebook group	Residents in P20's city	Every day
P21	Souma	Nextdoor	Residents in P21's neighborhood	A few times a week
P22	Linda	Nextdoor	Residents in P22's neighborhood	A few times a week
P23	Daniel	Facebook group	Immigrants in P23's city	A few times a week
P24	Jacob	Facebook group	Residents in P24's town	Once per week

Table 6.3: Community commerce platforms used by participants.

adaptation. Specifically, we describe the following three themes: *addressing material needs*, *meeting local people and learning social norms*, and *exploring new local places and information*.

6.4.1.1 Addressing Material Needs

The main reason for newcomers' participation in community commerce was to address their material needs. Their motivations included finding good deals, making fast transactions, and convenient delivery/pickup. As newcomers to the United States, most participants looked for household items for their settlement. Several participants also used other local P2P commerce platforms, such as Facebook Marketplace, Craigslist, or OfferUp. Participants found community commerce groups to be easier for keeping smooth communication with the seller/buyer, and the prices of similar items tended to be lower in community commerce groups than other platforms. These reasons motivated participants to rely on community commerce to address their material needs. For example, Mugisa [P10], a green card lottery winner from Rwanda, stated how community commerce on Nextdoor helped his transition to the U.S.:

> "*Nextdoor has really helped us, especially, those people who are not [from] the United States because we have challenges in getting things. But when I start search things [on Nextdoor], I can buy and purchase things. Also, you can get also services on Nextdoor. Nextdoor offer services, so it's a good thing, I think. It really helps a lot for these people, like me who are difficulty in coping with a new environment. Also, it is the cheap way... there where you can buy cheap things, because [first-hand] items are very expensive.*"

Convenient delivery/pickup was another material motivation that participants cited for community commerce. Most participants mentioned experiences asking the

sellers/buyers to deliver the item to their house or to a location close to where they lived. This could result from the fact that more than half of participants *did not own a car* (N=14). Therefore, asking the sellers/buyers to come to nearby places was more convenient for participants. In some cases, participants were asked to pick up the items they bought. In these cases, participants asked family or friends who owned a car to help, rented a car, or relied on ride-sharing services or public transportation. Some participants also walked or rode a bike if the places were not far and the items were easy to carry.

We also found that participants requested or provided gigs on the community commerce groups they used. For example, Rong [P4] requested a ride-sharing gig from a WeChat buy-and-sell group for Chinese international students at her university. Some participants (Sofia [P12], Linda [P22], Daniel [P23]) also used community commerce platforms to find gigs to gain extra income. Sofia moved from Portugal to the U.S. in 2020 because of her job. Sofia stated that "*the life in the U.S. is very very expensive,*" describing that the city she lived in had a high cost of living. She utilized a Facebook group for local photographers to find clients for her photography gigs. This group consisted of local photographers who shared business-related information and traded second-hand equipment. Clients who looked for professional photography services could also join to make a request. Unlike Sofia, who leveraged her professional skills to find local gigs through community commerce, Linda and Daniel looked for entry-level gigs. Linda, from the United Kingdom, looked for babysitting gigs in her neighborhood on Nextdoor. Daniel, from Trinidad and Tobago, leveraged his experience of migration to provide consulting services to other newcomers for preparing immigration documents. He sold his services to members of a Facebook group for immigrants in his area.

6.4.1.2 Meeting Local People and Learning Social Norms

Participants stated that participating in community commerce was a good way for them to interact and connect with local people (Emma [P5], Veronica [P6], Chuk [P7], Anastasia [P14], William [P16], Nomin [P17], Elizabeth [P20], Souma [P21], Linda [P22], Daniel [P23]). This motivation could be related to newcomers' social isolation, which was cited by seven participants as the biggest challenge. Participants stated that community commerce provided opportunities to get in touch with local people. Thus, community commerce platforms played a welcoming entrance to newcomers and fostered their sense of belonging to local communities. Participants stated that the friendly attitudes of community commerce members and their willingness to exchange favors fostered their sense of belonging to local communities. Seeing community members being supportive of one another also increased their comfort with the group. For example, Nomin [P17], an international student from Mongolia, joined a community commerce group of a neighborhood that she was going to move to. Seeing the interactions within the community commerce group made her feel welcomed to the neighborhood:

> "*With this group, even though I haven't even moved there yet, I'm getting way more hopeful about the number of good people sharing the same values and then just sharing their opinions, their items and their services. So I think it's helping me feel more welcome in that neighborhood and I feel like I'm a part of it so therefore I need to be also involved with it more.*"

The Facebook group allowed Nomin to observe what the neighborhood community looked like and how community members interacted with one another. Despite that Nomin had not had deep interactions with other members in the group, by seeing friendly and polite interactions among members, Nomin developed a sense of belonging to the community.

Most participants saw community commerce as a reciprocal way to help other group members. Although most of our participants had more experiences in buying/receiving than selling/giving away, some participants (Emma [P5], Veronica [P6], Anastasia [P14], Souma [P21]) stated that most sellers just wanted to get rid of unused items as soon as possible. Therefore, some of them (Emma, Anastasia) felt that receiving items from local people was also helping these local people.

Through observing interactions on the platforms and their transactions, participants learned about a wide range of local social norms. The most common norm that participants learned was the social norms in their daily lives. Unlike general P2P e-commerce platforms that only focused on commercial buy-and-sell transactions, community commerce platforms are open to casual interactions and discussions. Participants learned about local social norms by reading and joining these discussions. For example, Souma [P21] was a foreign worker from Pakistan. He went to an American international school in Saudi Arabia when he was younger, so he did not have much culture shock when he arrived in the United States. He described starting to feel confident about joining discussions on Nextdoor recently because he had learned that local people tend to ignore comments. He could avoid aggressive responses even under controversial discussion threads:

> "*I'm just not confident in posting. I'll start now, I've started maybe not posting, but leaving a comment with a question, like if someone says, 'You can get vaccinated in this location at this pharmacy.' And then I'll say, 'Hey, I am 24 years old, when do you know when I can get my vaccine?' So now I'm confident enough to say that, I know people won't get mad because it's not a post... [If] it's just a comment, I'm comfortable with it. Because I've learned that people don't get mad at comments.*"

In addition, participants (Lai [P2], Souma [P21], Jacob [P24]) learned the local norms of P2P transactions. For example, Jacob [P24], a green card winner from New

Zealand, relied on a Facebook community commerce group for local P2P transactions. He stated that one thing he learned from his community commerce experience was the norms of P2P transactions in the U.S.:

> "*I think in a way it kind of made me more familiar with how people in this country do online selling... It's a fast-paced thing. Normally, when I was doing it in the past, back when I was in New Zealand, it was more of a slower process. It would take a couple of days just for someone to finalize what they're going to pay from what they're buying. But here, it's much more fast paced. I guess in this country, people want things fast, and they want to get things done. They don't take their time when they're doing these kind of things.*"

6.4.1.3 Exploring New Local Places

Last, community commerce provided participants with opportunities to explore new local places. As stated, more than half of the participants did not have a car, which limited the areas they could visit in their daily lives. Thus when participants were asked to pick up items through community commerce, they had chances to visit local places where they had not been. Emma [P5], a foreign worker from Canada, said that she often explored new places on her way to pick up items that she bought through a Facebook community commerce group in her neighborhood.

> "*Honestly, to me, I see it like a scavenger hunt, because it takes me to parts of my neighborhood that I didn't even know... [One] day, I went to get two things that I found on the group, the cocktail glasses and the coffee I was telling you about, the cans. And they were both pretty far from each other. So, I went to walk to one and get the cocktail glasses and walked to the other one to get the coffee cans. And I just discovered this whole*

section of my neighborhood that I didn't even know existed, that has really nice houses. So, honestly, even if I wasn't getting any free stuff, it was really nice, a really nice walk. It was a discovery of a new area that I would have never gone to otherwise."

Similarly, Shriti [P3], an international student from India, had never been to the south area of the town where she lived. When she purchased a yoga mat from a Facebook group for Indian students at her university, she took the bus and visited neighborhoods that she did not know before. Jenny [P18], a foreign worker from South Africa, used a community commerce platform among workers at her workplace on WhatsApp. Jenny made a friend in the group, and she said, "*[the friend] showed me around the neighborhood, places to eat, the parks, museums.*" These examples suggest that participating in community commerce fostered newcomers' exploration of local areas.

6.4.2 Newcomers' Trust Development in Community Commerce

	Trust in an Individual	**Trust in an Online Community**	**Trust in an Offline Community**	**Trust in the Platform Provider**
Visibility	X	X		
Metavoicing	X	X	X	
Triggered Attending		X		
Guidance Shopping		X		
Social Connecting	X	X	X	
Trading				X

Table 6.4: How the six affordances fostered newcomers' four forms of trust in community commerce.

Our results suggest that newcomers develop four forms of trust in community commerce. We present how these four forms of trust relate to the six affordances (Table 6.4). Among the six affordances, metavoicing and social connecting fostered

three of the four forms of newcomers' trust, but not trust in the platform provider. In the following paragraphs, we describe how each of the six affordances fostered newcomers' different forms of trust. We present the results in an order based on the number of trust forms that an affordance affected.

6.4.2.1 Metavoicing

Metavoicing, the affordance that allows users to provide feedback and share opinions on the traded items/services, supported three of the four forms of trust, but not trust in the platform provider. Comments and replies, i.e., features that afford metavoicing, fostered newcomers' trust by surfacing the supportive attitudes among members. Participants stated that community members often commented on a post to share their experiences or information about the items to be traded or about a buyer/seller. For example, Jerry [P8], a green card lottery winner from Kenya, used a Facebook group for community commerce. He described that members left comments, especially positive feedback, after a transaction. These positive comments fostered newcomers' trust in an individual:

> "*Whenever you have got it, you find some maybe giving out some reviews about the item. Yeah, whenever you get [the traded item] you say, 'I got it, it was fine, it's working well...' A person may come to the group, maybe selling another item, for a second time, and when I see [the person] selling for a second time, whenever one of the group members had maybe bought something from that person the first time, he'll say 'I had actually acquired this item from this person on this day.' So, they're going to be supportive, they're going to give you some positive ideas.*"

The positive comments across posts could further evolve collectively and support newcomers' trust in the online community. Mugisa [P10] shared his experiences seeing comments on Nextdoor,

> "*People there comment positively. You rarely find somebody commenting bad about an item, so that's a kind of supporting... The supportive feeling is the members support each other, then definitely you feel that this is the best platform. You feel like, your problems are being solved, and you feeling that these challenges of feeling away from home, you feel that you are still at your place, just like home. When you need something you get assisted. When you need an advice you are given an advice.*"

Note that although Mugisa used the word "platform," we interpreted his statement as the community on Nextdoor rather than a reference to the Nextdoor application. Therefore, this suggests that metavoicing, by highlighting members' support for one another, fostered newcomers' trust in an online community.

As community commerce tied an online community to an offline community, the supportive and welcoming attitudes also fostered participants' trust in an offline community. As Emma [P5] described the community of a Facebook community commerce group of her neighborhood,

> "*I totally trust them. Yeah. They seem [like] really nice people. And it's frustrating, like you asked how the group helped me integrate into my community. It didn't really, because I haven't met any of these people. But it makes me feel good to know that the people in my neighborhood are so generous.*"

In addition to posts and comments, Linda [P22] mentioned that she looked into ratings of a user to judge a her trustworthiness. Because social ratings are also collective opinions from other members, we categorized this under metavoicing.

6.4.2.2 Social Connecting

Social connecting is the affordance that allowed users to connect with other community members and develop social relationships. Social connecting was the most cited affordance for participants' trust in an individual. Because community commerce was based on social media platforms such as Facebook or Nextdoor, users had people's personal profiles beyond community commerce transactions. When newcomers had intentions for a transaction, they viewed the person's personal profile and looked into information such as photos and activities to judge whether they were trustworthy. For example, as Souma [P21] stated, by browsing personal profiles collectively on Nextdoor, he believed the community members were genuine. We interpreted this as trust in an online community:

> "*I just think because there are pictures sometimes attached to the username, and you can see what their posts were. So you know who you're dealing with, whereas with the other apps you don't. So for that reason, I think people are a bit more genuine through Nextdoor. And also just also because of the fact that a lot of them care less about money, they just want to help people, give things for free.*"

Furthermore, participants assessed the shared identity between themselves and the community members. For example, Jerry [P8], who was from Rwanda, stated how the proportion of black people on the platform affected his trust in the community of a Facebook local buy-and-sell group,

> "*[W]hat made me maybe to have that courage of trying to use up that site, I found out that most of them, if not maybe 3/4, were actually Blacks, and since I was also Black, I found it more comfortable maybe using it, and I found it maybe more secure. And that made me trust [the community].*"

After investigation of other users' profiles, newcomers contacted the person through private messengers. In most of the participants' experiences, the buyers/sellers were friendly and were willing to respond to participants' questions, which included questions about the traded items or even the seller/buyer themselves. Thus, social connecting allowed newcomers to assess a person's trustworthiness and thus fostered newcomers' trust in an individual. Mateo [P13], an international student from Argentina, described how he developed trust in a seller when he purchased something through a Facebook group for local residents:

> "*When I was going to their places, they make their best for me to take the furniture in the best state or helping me out, moving out. Like, 'I'm selling you this so I want you to have it on the best place on the time that you can.' So the people that have been kind to me was very helpful because when some kind of people treat you like that you feel, yeah, this person is really nice. [She] told me that she has been selling a lot of stuff on the group, so knowing that, change a little bit your mind that this [is a] trustworthy person.*"

6.4.2.3 Visibility

Visibility, which refers to the detailed information of traded items or services, fostered newcomers' trust in an individual and an online community. Participants developed trust in a buyer/seller when they saw their post contained detailed information of the traded items or services. Most participants looked into information such as the item's photos, detailed specifications, and price. In addition to this objective information, three participants (Lai [P2], Emma [P5], Nomin [P17]) mentioned that personal stories that described the item's background or the reason a seller wanted to sell it also increased a post's trustworthiness. For example, Emma [P5], a foreign

worker from Canada, described how she believed that members who made transactions posts were real and thus trustworthy:

> "*I guess their tone, the tone of their posts are very conversational [made me feel they were real]. Sometimes they explain why they don't need something... It just seems it's not just transactional, there's a little bit of this story behind why this person is giving these away. Or the woman with the cocktail glasses, like, 'I've decided that in 2021, I'm going to be sober and I'm not going to drink anymore, so I'm giving away all my cocktail glasses.' If there were a but, they wouldn't make up this whole story about giving away their cocktail glasses.*"

The visibility of participants' individual transaction experiences collectively fostered their trust in an online community. For example, Jacob [P24], an international student from New Zealand, described that he always received correct information from a community commerce group he used, and this fostered his trust in the online community in the group:

> "*[I]f they're describing a product, maybe I might go on my phone and look it up and see if I can find any flaws in what they're saying. But, when I've done that, I've never come across anything that was incorrect... Just knowing that the information is correct, it makes me of course not want to leave the group, use it whenever I feel I need to get something, if I want to buy something. Because, I know that these people are telling me everything I need to know, and I never have to question whether or not I'm getting what I actually intend to buy.*"

6.4.2.4 Triggered Attending

Triggered attending is associated with features that notify users when there are new posts on a platform. Seven participants (Martin [P1], Shriti [P3], Emma [P5], Sofia [P12], Elizabeth [P20], Daniel [P23], Jacob [P24]) described the community commerce platforms they used as very active because they received notifications of new posts multiple times a day. Triggered attending supported participants' awareness of these groups' activities. Seeing these groups being active, participants' were more willing to rely on these groups to find resources, i.e., this increased their trust in the online community. Chuk [P7], a family-reunion immigrant from Nigeria, described his perception of Nextdoor as being active. He said that seeing multiple new posts a day on Nextdoor led him to believe the platform was active:

> "*I know Nextdoor is active really. So anytime I need to get something like I said earlier, whenever I needed to get something, I would just look at, 'Let me just got to Nextdoor, look through the catalog. If I will be able to see something that I will get really.' And as we are working fine.*"

6.4.2.5 Guidance Shopping

Guidance shopping refers to affordances that help consumers identify items or services that can serve their needs. A few instances we found were that community members shared information on alternative items or sellers in the group (Mugisa [P10], Anastasia [P14], Jacob [P24]). Given that community members provided this information, participants perceived that the community was friendly and willing to help. Therefore, newcomers' trust in the online community increased. For example, Jacob [P24], an international student from New Zealand, described his feeling as a seller in the group, and how the community members guided other members to his post:

"[If] I'm selling something and they don't want to buy it, what they'll do is instead of just saying, 'No, we don't care,' they might tag their friends in the post and be like, 'Hey, you might like this,' kind of like get other people who might want to buy it... It definitely makes me want to use the group more, because knowing that these people are just looking out for me and don't want to just take my money. They want to build a relationship while also making a sale, it makes me want to use it more. Because, these people are not just salesmen. They're decent people who care about me, and they care about what I'm looking for."

Believing that the community members are willing to help members in need, Jacob was more willing to rely on the community as a buyer and a seller, which we interpreted as his trust in the online community.

6.4.2.6 Trading

Trading refers to transaction mechanisms on an e-commerce platform, such as payment systems or shopping carts. Community commerce groups, however, were based on general social media applications, which did not support online payments or transactions. Most participants relied on cash, online-banking, or third-party cash applications for their community commerce transactions. Intriguingly, although Facebook Pay existed, none of our participants used Facebook Pay for their community commerce transactions. Most participants who used Facebook commerce groups could not provide a specific reason for not using Facebook Pay.

Rong [P4] was the only participant who had experiences related to the trading affordance. Rong used WeChat, which allowed users to make in-app online payments and monetary transactions. Rong stated that her transactions in a community commerce group on WeChat were all completed using WeChat's payment system.

With WeChat protecting her transactions, Rong felt that the WeChat community commerce group was safe and trusted the platform provider.

6.4.3 Challenges of Participating in Community Commerce

We identified the following challenges regarding the newcomers' participation in community commerce: *adapting to new technologies*, *outside perceptions*, and *transportation constraints*.

6.4.3.1 Adapting to New Technologies

Learning new technologies was unavoidable for newcomers to participate in community commerce. Some technologies were not popular or even available in participants' home countries. Thus, learning new technologies became necessary to their participation in community commerce. Six participants (Rong [P4], Chuk [P7], Pallavi [P9], Mugisa [P10], Souma [P21], Linda [P22]) mentioned that they learned new technologies in their community commerce experiences. These new technologies included the community commerce platforms (e.g., Facebook or Nextdoor) or technologies used for transactions (e.g., cash applications such as Venmo). However, we found two issues related to participants' adaptation to new technologies for community commerce: (1) having few online footprints and (2) lack of important connections on new platforms. These issues were not related to how they learned new technologies, but to how they had used them.

As described in prior paragraphs, newcomers leveraged other members' personal profiles to assess whether a community member was trustworthy. Most of our participants did so to evaluate a seller/buyer's trustworthiness, as well. However, other community members also assessed newcomers by looking into their profiles. This caused challenges to newcomers who did not use these platforms back in their home countries. For example, Rong [P4], who was an international student from China, described her

challenges using community commerce groups on Facebook to find available housing resources. Because Facebook was banned in China, Rong never used Facebook before she decided to come to the United States. She created a Facebook profile to look for community commerce groups for housing and settlement resources when she arrived in the U.S. However, because her Facebook account was newly created and had little information, other members in these groups did not trust her. Rong described her experience as follows:

> "*As you know, the Facebook and Google, I can't use all of them in China. I tried to join some Facebook group to rent a house, and then because my account is a fresh new account and doesn't have too much information, because I didn't use Facebook, so the people, say the renting group in Ann Arbor, they would not really trust me because I didn't have a lot of social information there. And especially I want to move in with girls. Girls are particularly careful about the background checking for the girls, for the potential roommates, so it's pretty hard. All in all, I didn't get any house before I moved to U.S. because this community trust thing. They don't have [trust in me].*

As a consequence, Rong gave up using Facebook to find housing resources. She turned to WeChat, a popular social media application in China that she was familiar with. Rong joined a few community commerce groups of Chinese international students in her town and received resources to settle in the U.S.

Lack of important connections was another reason that stopped the newcomers in our study from migrating to a new platform for community commerce. Pallavi [P9] was an international student from India and was invited to join a WhatsApp community commerce group by her classmate. The group consisted approximately 50 members, who were alumni and current international students of Pallavi's university. The group members were from different countries of origin. The group moderators,

who were alumni of Pallavi's university and had lived in the area for years, created this group to help international students' settlement. The moderators also held holiday gatherings for group members. However, a few months after Pallavi joined the group, the community decided to migrate to Signal, a relatively new social media application, because of WhatsApp's privacy policy changes[3]. Pallavi decided not to follow the community in migrating to Signal because her family mainly remained on WhatsApp:

> "*And because of all the [WhatsApp] restrictions recently that there was compromise on data and everything. So those people started switching the app called Signal... [Interviewer: Is there any reason that you didn't switch to Signal?] I was comfortable with WhatsApp. My entire family, all my friends use WhatsApp... I actually tried Signal, but the main reason would be to communicate internationally with family and friends, it's very difficult using a phone number, just a phone number. So we generally do it through WhatsApp. Like I said, all of the people in India use WhatsApp most of the time. So it was very difficult to have them migrate to Signal.*"

Pallavi's case shows that newcomers might stay on platforms where they have older networks even when switching to a new platform for using community commerce could benefit their adaptation. This suggests that newcomers prefer platforms with their existing network in their home country and might avoid learning new technologies.

6.4.3.2 Outside Perceptions

Although community commerce exposed our newcomers to local communities, this exposure did not always foster their interactions with local communities. Some participants described themselves as outsiders in these groups, and we identified the

[3]Pegasus breach: Will quitting WhatsApp make your phone safer? — `https://www.bbc.com/news/world-asia-india-50285350`

following reasons: (1) no common ground because of racial and ethnic differences and (2) no capacity to contribute back to a community.

Local-born populations dominated some community commerce groups used by participants. Being a newcomer to the United States meant that participants had limited common ground with these local-born populations, and it thus reduced participants' willingness to engage with local communities. Lai [P2], an international student from Taiwan, described his perception of two Facebook community commerce groups that he used:

> "*Specifically for this group, the [group's name], most of the user of this group are [Lai's town] townies and they are all mostly Americans. That's when I feel, 'Oh, well I'm not one of them.' That's how I feel, it's 'I'm an outsider.' Taking another group, the [Lai's college] group, I would say, I'm one of them. And there are a lot of international students inside.*"

Lai's perceptions as an outsider could be explained by *contextual oddity*, which means that a person shares few contextually common attributes with other people (*Mayer et al.*, 2015b). Rong's [P4] experience visiting a local yard sale could be an example. Rong found a local yard sale in a nearby town through a community commerce platform. However, when she visited the yard sale, she felt very awkward because she was the only Asian there:

> "*I went there, and [was the] only Asian. I went there alone. It looks so weird now when I think about it. And then everyone there, I can tell that they're from local. They probably know each other. It's so easy for them to say hi, and just run into a neighbor in a crowd. I feel very not belonging there, and I can feel the way, say, if I'm interested in this candle you're selling, and the way you're talking to me is different the way you're talking to an American customer, you will treat me like a foreigner or something.*

I'm not saying it's a different price. I'm saying the different customer service. I just don't feel close. It's a very awkward experience for me. I don't want to go there ever again."

Rong's experience suggests that the *contextual oddity* of race and ethnicity could hinder newcomers' engagement in community commerce that is dominated by certain racial groups. Furthermore, the community members could already know one another well, and thus it could be difficult for someone who is new, e.g., our participants, to join in a short time.

In addition to physical differences related to race and ethnicity, limited knowledge about local norms in community commerce hindered participants' engagement in the community. Participants described their lack of confidence to interact with other community members because they had limited knowledge of local social norms, such as appropriate reactions to certain topics. As we described in 6.4.1.2, Souma [P21] was not confident about joining discussions on Nextdoor when he was new to the platform, and new to the U.S.

"*So I think now I'm more comfortable, but back then when I first came I didn't want to like, say the wrong thing or get banned from the platform, but that kind of stuff... [Interviewer: what do you mean by 'the wrong thing?'] So I'm not very sure and I still don't know about politics. So for example, vaccine, not everyone wants the vaccine. I didn't know that, I don't want to start an argument because I want to get the vaccine, you know what I mean? I'd just rather let other people ask those questions until I learn politics and conservative and whatever, liberal, Democrat, Republican.*"

Last, newcomers might not be able to initially contribute back to a community in an equitable way. Their resource needs motivated participants to join commu-

nity commerce; their situation also, however, hindered their community commerce participation. Thirteen participants never sold or gave away any items or services in community commerce platforms they used. A reason was that participants were new to their areas, and thus they had no resources to give away in the group. For example, Emma [P5], who was a foreign worker from Canada, relied on a Facebook buy-nothing group in her neighborhood to get household items. Although she appreciated the items that she received from the group, she felt indebted to the group because she never gave away anything in the group:

> "*And sometimes I feel bad because I don't have that much to give. I mostly have taken. I have some things, but sometimes I feel I'm just sticking everything... [Interviewer: Is there any reason that you didn't do much of giving out things?] I just don't have much stuff. I haven't accumulated much because I haven't been living here that long.*"

In another case, Elizabeth [P20], a green card lottery winner, shared the same perception of indebtedness as a free rider in a Facebook buy-and-sell group for Mexican women in her area. In addition to transactions for household items in the group, members exchanged local information and hosted online social events. Although she purchased handmade food from group members and attended a few events organized by the group, she did not feel she contributed back to the community. Elizabeth said that if she had a chance to take a trip back to Mexico, she would bring Mexican gifts back and give them away in the group. She blamed the coronavirus 2019 (COVID-19) pandemic for preventing her from taking an international trip, thus stopping her from contributing back to the community.

6.4.3.3 Transportation Constraints

As we described in Subsec. 6.4.1.1, more than half of the participants did not own a car after they moved to the U.S., so they were more likely to ask the buyers

or sellers to come to places close to where they lived, or even their house. However, the transportation constraints raised participants' perceived risk. To ask the other party for delivery, they needed to tell the other party of a transaction where they lived. Veronica [P6] thought it risky to invite someone to come to her house for a P2P transaction, especially if the deal fell through: "*I don't want to invite somebody in my house, and then they change their mind. And I'm just like, 'Now they know me and they have my address.'* " Sofia [P12] also mentioned a transaction that made her concerned because a seller volunteered to deliver a bulb set that she bought from a Facebook buy-and-sell group:

> "*Because I didn't have a car, so he wanted me to be there at [a public space], I can't remember. It was around lunchtime, and I couldn't. And then I would have to take the bus, and it would take me, like, one hour or something. It's very close, but still it will take me, like, one hour. And I don't know if he was rushing or something. He offered to deliver. Which made me a little bit scared, because he would have my address.*"

Daniel [P23] shared his strategy using ride-sharing services to minimize the risk of offline transactions. Daniel stated that he had heard news that people were robbed or harmed during face-to-face transactions. He adopted a strategy to reduce the risk by managing the time of requesting an Uber ride:

> "*I wasn't driving at the time. So, I definitely wouldn't use public transportation in a [face-to-face transaction] because if it's some kind of setup, I have no way to... because the way I do it is, [the Uber driver will] drop me off, and then if the person is in the parking lot, usually about half way into the conversation, I'll order the car to come, because they may take 10 minutes, five minutes, so it's like, hey, I'm in and out. So, even if it was something going on, because I don't want to wait on the bus or train. You*

don't know when the next coming, or train, so I just try to be precautious, because I see videos for people posting the worst case scenarios, people set people up, people getting robbed."

It could be hard for newcomers to prevent transportation constraints because some community commerce platforms required buyers to pick up. For example, Emma [P5] stated that the Facebook group she joined had very strict rules to require buyers to pick up the traded items: "*If you say you want something, you have to go pick it up that same day.*" And it could be totally opposite, as described by William [P16]: "*That's one of the rules of the group, you have to deliver. Once you are selling your product, you have to deliver.*" It could also be the social norms of P2P transactions in certain areas that require buyers to pick up. Linda [P22] stated that buyers were expected to pick up items in local P2P transactions in her city, which she learned from her past transaction experiences:

"*In [Linda's city], nobody is going to deliver. So it's pretty much a basic, okay? I think perhaps in other parts of the country, it might be slightly different, but usually they just want to get rid of that stuff as soon as possible... You wouldn't necessarily know that at the beginning... I think it was something that I noticed, noticed by myself. Okay? Otherwise it could be problematic. If you're buying something and you might expect somebody to deliver it, then that could be problematic for you, honestly.*"

Although newcomers felt community commerce was convenient because they could ask for delivery, newcomers needed to face transportation constraints in some circumstances. These transportation constraints could thus raise other issues such as safety concerns.

6.5 Discussion

Our study's goal was to understand how transnational newcomers' community commerce engagement is associated with adaptation, and how they develop trust in community commerce. Through semi-structured interviews with 24 transnational newcomers, we found that community commerce allows them to fulfill their material needs, develop a sense of community, and learn local norms. They also had opportunities through their transactions to visit local places that they had not visited. Our findings echo past research suggesting that social media applications can benefit newcomers by exposing them to local information, communities, and social norms (*Dekker and Engbersen*, 2014; *Erdem*, 2018; *Farzan et al.*, 2017).

Our results also showed that participating in community commerce fosters newcomers' generalized trust, i.e., the tendency to trust, and their trust in an offline community, such as their neighborhood. This finding suggests that by participating in community commerce, newcomers develop trust across the online–offline boundary, fostering their adaptation in the host country. Metavoicing and social connecting, the two affordances that supported community members' collective activities and interpersonal interactions, fostered all forms of trust except trust in the platform provider.

Last, we identified challenges that newcomers face in participating in community commerce: adaptation to new technologies that they did not use in their home countries, outside perceptions, and transportation constraints. These challenges either limited newcomers' participation in community commerce or increased the perceived risks of relying on community commerce for adaptation resources.

In the rest of this section, we situate our findings in prior literature and discuss two themes: (1) technology as an aspect of adaptation and (2) design implications for supporting newcomers' trust in community commerce. We provide theoretical contributions by proposing *technology adaptation* as a new aspect of adaptation and

practical contributions with a series of design guidelines to foster transnational newcomers' trust in community commerce.

6.5.1 Technology as an Aspect of Adaptation

Adjusting technology use is common when a person faces life transitions, and moving to a new country is one instance of significant life transition (*Haimson et al.*, 2019). People learn new technologies and discard technologies that do not support their needs when they experience life transitions. Our results indicate that newcomers need to learn new technologies that are not popular or not available in their home countries to participate in community commerce in the United States. Although our participants did not have problems with learning new technologies, they still faced challenges when they adapted to new technologies: the lack of an online footprint and the need to manage social media for multiple social networks. In addition to these two challenges, I discuss their outside perceptions and transportation constraints in the following paragraphs.

6.5.1.1 Lack of an Online Footprint

People rely on online information to judge whether a person online is trustworthy. For example, the warranting theory theorized how people look for online third-party information as warranted to judge whether an online account is real and trustworthy. Because community commerce is based on general social media applications, our participants were able to look into other users' profiles to judge their trustworthiness and make decisions about transactions.

However, other community commerce consumers have adopted similar strategies to examine newcomers' trustworthiness. These consumers also browse newcomers' profiles and ask for details to determine whether newcomers are trustworthy. This might cause newcomers who did not use these platforms in their home countries to

seem untrustworthy. This applies especially to Facebook, which was not available in four countries, and NextDoor, which was only open to 11 countries. Rong [P4] did not use Facebook before moving to the U.S. She had little information on her Facebook account, which caused other consumers to doubt her identity, and she had no successful transactions through Facebook community commerce groups.

Newcomers' lack of an online footprint is similar to the problem of lacking a credit history. Countries like the U.S. and Canada rely heavily on personal credit history. Banks and corporations assess a person's credit history to determine whether to provide services. People who do not have personal credit records are likely to face challenges to get appropriate resources. In fact, newcomers are among the populations that might face difficulties because they do not have a credit history in the host country (*Desiderio*, 2014; *Worswick*, 1999). This issue could be mirrored online because not all social media applications are equally popular or available across countries. Take Facebook as an example. Because Facebook is globally available except for four countries, U.S. users might have the mindset that Facebook accounts with little information are fake. Newcomers who did not use Facebook in their home countries, such as our participant, could thus face a two-layer difficulty to be both "new to Facebook" and "new to a country" simultaneously. This situation thus causes difficulties for this population when they rely on Facebook to access local resources. We argue that social media applications need to develop designs to support users who do not have enough "online credits" to increase inclusivity.

Intriguingly, our participants did not mention similar issues when they used Nextdoor. A possible explanation is that Nextdoor was not as widely used as Facebook, so Nextdoor users were more open-minded to people who just started to use the platform. In addition, Nextdoor has features to support users who are new to an area to adapt to local communities. For example, Nextdoor encourages people who are new to an area to make a post to introduce themselves. Nextdoor also sets up neigh-

borhood leaders and works with these leaders to welcome new residents in the area. Although our participants did not mention whether these features influenced their use of Nextdoor for community commerce, it is worth future exploration.

6.5.1.2 Managing Multiple Networks on Different Social Media Platforms

It is common for people to manage different networks on different social media platforms. This is to support different social identities that a person establishes for certain networks. For newcomers, separating different platforms for different networks is also common (*Lingel et al.*, 2014).

More than half of our participants needed to learn new technologies to join community commerce in their area. However, we still had participants who did not learn new platforms. As we discussed in 6.5.1.1, existing users of some platforms might not be friendly to new users, which was the challenge met by Rong [P4]. Another reason is that newcomers might like to stay on platforms where they can easily connect with their old networks, like Pallavi [P9].

These findings have policy implications. Based on our findings, when policy makers restrict access to social media platforms that are popular in other countries, they need to provide extra support to foreign-born populations for this kind of transition. For example, the U.S. government announced a policy to restrict access to WeChat in 2020[4]. Although the policy got halted and reviewed by the new U.S. presidential administration in 2021[5], this announcement caused stress and fear of Chinese immigrants in the U.S. when it was announced in 2020[6]. While most debates were around the policy's impact on Chinese immigrants connecting with family and friends back

[4]Trump Administration to Ban TikTok and WeChat from U.S. App Stores: `https://www.nytimes.com/2020/09/18/business/trump-tik-tok-wechat-ban.html`

[5]Biden Asks for Pause in Trump's Effort to Ban WeChat: `https://www.washingtonpost.com/technology/2021/02/11/wechat-trump-biden-pause/`

[6]WeChat Users in the U.S. Fear Losing Family Links with Ban: `https://www.bloomberg.com/news/articles/2020-08-10/wechat-users-in-the-u-s-fear-losing-family-links-with-ban`

in China, our findings suggest that such a ban could also impact their ethnic community development in the U.S. We argue that when policymakers want to restrict certain social media applications, especially those that are popular in other countries, they need to take newcomers' benefits and wellness into account. These platforms might not have alternatives because they connect newcomers with people back home and with new networks in the host country. Policymakers need to carefully plan to minimize the harm to foreign-born populations.

6.5.1.3 Outside Perceptions

Our participants' community commerce experiences were associated with outside perceptions. These outside perceptions were based on their racial and ethnic differences and the limited knowledge of local social norms caused by those racial and ethnic differences. The perception of indebtedness also contributed to newcomers' outside perceptions.

Being new to a community, newcomers need to adjust themselves and develop their community identities. Past research on local social exchange platforms suggested techniques to mitigate these outside perceptions of users, and these could also be relevant to our populations' community commerce experiences (*Lampinen et al.*, 2013, 2015). For example, Lampinen et al. found that shared identity is a key to community engagement and trust on local social exchange platforms (*Lampinen et al.*, 2015). Moser et al. emphasized that locality and motherhood fostered in-community trust among members in their study (*Moser et al.*, 2017). In fact, Study 3 of this dissertation also found that locality, life stage, and socioeconomic status fostered newcomers' engagement and trust in local peer-to-peer commerce platforms such as Craigslist and Facebook Marketplace. Built on this past work, our results suggest that helping newcomers to connect with similar users can foster new members' engagement in a community commerce platform. Future research could further study

how social-matching features beyond common racial and ethnic backgrounds might mitigate newcomers' outside perceptions of a community commerce platform.

Our participants' feelings of indebtedness also echoed past research. *Lampinen et al.* (2013) found that users of local social exchange platforms felt indebtedness, as our participants did. These users felt that they kept taking resources from other members without giving away items within the community. *Lampinen et al.* (2013) proposed that highlighting the value of being a recipient in a community could mitigate the sense of indebtedness. As some of our participants realized, receiving items that other community members did not need also helped the givers. A community commerce platform should prompt this kind of message to reduce the perceived indebtedness of newcomers, who might have limited resources during their transition and adaptation. Future research could look into specific designs that work for newcomers who are both new to a platform and to a country.

6.5.1.4 Transportation Constraints

We found that transportation constraints were a common challenge in participants' community commerce experience. Most participants mentioned that they did not have a car when they were new to the United States. U.S. society heavily relies on automobiles, but not having a car was common among our participants. Our participants needed to ask the sellers/buyers to visit locations close to where they lived, or even visit their houses, to complete the transactions. When participants were asked to visit a place to deliver or pick up items, participants needed to rely on public transportation, ride-hailing services, or friends' help. These strategies increased newcomers' perceived risks of community commerce, and they needed to pay more attention to their safety.

In fact, it is common for newcomers to not own a car. Past research found that foreign-born populations are less likely to own cars than local-born populations in

the U.S. (*Blumenberg and Shiki*, 2007; *Chatman and Klein*, 2009). Reasons such as saving money for remittances and complicated driving conditions in the U.S. postponed newcomers' car ownership (*Chatman and Klein*, 2013). Even after a long duration of migration, foreign-born populations' car ownership is still lower than that of local-born populations (*Blumenberg and Shiki*, 2007; *Chatman and Klein*, 2009). These transportation constraints caused newcomers' difficulties participating in community commerce in our study. Furthermore, transportation constraints could limit newcomers' access to education, employment, and health care resources (*Bose*, 2014).

A potential opportunity here is for community commerce to provide transportation supports to help newcomers overcome transportation constraints. In fact, carpooling is common among foreign-born populations in the U.S. Some immigrant populations even make carpooling an informal business within their community (*Chatman and Klein*, 2013; *Lovejoy and Handy*, 2011). Only one participant purchased ride-sharing from community commerce, and this was from her local ethnic community. The other participants asked friends to drive them for a community commerce transaction. Few participants leveraged community commerce platforms, especially those with ethnically mixed communities, for ride-sharing services, so it is unclear whether other newcomers would, and why or why not. Future research could continue to explore how to provide transportation supports such as ride-sharing or ride-hailing services to newcomers through community commerce, which could benefit their access to social and cultural resources (*Kameswaran et al.*, 2018).

6.5.2 Design Implications to Support Newcomers' Trust in Community Commerce

Our results suggest that, among the six affordances, metavoicing and social connecting fostered newcomers' trust in an offline community. Among all forms of trust we found, trust in an offline community could be most critical because it is related

to newcomers' trust in their neighborhoods and cities. Therefore, our design implications focus on metavoicing and social connecting, because they could be impactful to newcomers' adaptation.

Metavoicing features such as posts and comments support the collective identity of a community commerce platform. My research team found that communities where users create posts that include personal content could foster newcomers' trust in the online community, affecting their trust in offline areas. Based on our findings, encouraging content with a personal touch could foster newcomers' trust, including stories behind an item to sell, or comments showing gratitude after a transaction. Such posts made newcomers feel the group was supportive and friendly to one another. These supportive attitudes among members could increase newcomers' trust in users on a community commerce platform, and thus increase their trust in local areas.

In addition to posting and commenting, social ratings, which allow a community to share their opinions on a member, are a technical feature that affords metavoicing. Participants mentioned that they looked at ratings of members when they had transactions on Nextdoor and utilized this information to judge a member's trustworthiness. Although social ratings could help users judge another user's trustworthiness, they could also lead to issues such as discrimination against certain populations, e.g., *Edelman and Luca* (2014); *Rosenblat et al.* (2017). Social ratings might also cause newcomers, who do not have past ratings, to have difficulty joining community commerce transactions. Future research could investigate how newcomers leverage social ratings to evaluate other users on community commerce platforms, and how social ratings affect newcomers' participation in community commerce.

Participants described that they looked at other community members' personal profiles and exchanged information with other members through direct messengers. These technical features afford social connecting. Our participants developed their own strategies to judge another consumer's trustworthiness, such as the other party's

engagement in the transaction or their word choices. However, participants also described how they spent time learning the social norms of P2P transactions in their area. This suggests that newcomers might need guidance when they have limited knowledge of local P2P transaction norms, i.e., when they are new. Therefore, for features that afford social connecting, community commerce platforms could provide instructions or guidance for newcomers to help them navigate their first few transactions. These instructions could help them learn to assess another community member's trustworthiness and develop knowledge of social norms around local P2P transactions.

6.6 Limitations

This study has the following limitations. First, all of our participants spoke basic or fluent English and had access to the Internet-enabled devices. These conditions suggest that our participants might have resources and abilities to adapt to the U.S. For newcomers who have little English proficiency and limited resources, it is unclear whether or how they leverage community commerce to support their adaptation in the United States.

Second, our study focused on the United States as a host country. Newcomers who move to other countries could have different experiences relying on community commerce for their adaptation. As we found, newcomers might be reluctant to migrate to platforms that they are not familiar with. The community commerce platforms that are popular in other countries could play a critical role in newcomers' participation in community commerce.

Third, most participants' duration in the U.S. overlapped with the COVID-19 pandemic, and several measurements that restricted social events were enforced in the U.S. Although our participants still went offline to pick up or deliver items or services for their community commerce transactions, they avoided face-to-face and long

interactions with the sellers/buyers. As some participants suggested, the lockdown limited their opportunities to develop face-to-face interactions with other community commerce members. Our study could not eliminate the COVID-19 pandemic's effects on newcomers' community commerce experiences, and thus we suggest that future research study newcomers' community commerce experiences at a post-pandemic time to extend this line of research.

6.7 Conclusion

Study 4 consisted of 24 semi-structured interviews to understand how community commerce influences transnational newcomers' adaptation in the United States. We explored this population's trust development in community commerce and identified concerns they might face. Our work contributes design implications to better support newcomers' trust development in community commerce and directions for future research to explore social media applications' roles in transnational newcomers' adaptation processes. Moreover, for policymakers, we argue the need to consider foreign-born populations' community development and adaptation when making policy decisions regarding application regulation.

CHAPTER VII

Study 5: Examining Social Support and Shared Identity's Effects on Immigrants' Trust in Local Communities

In my prior studies, I found that perceived social support and shared identity are key predictors of transnational newcomers' trust when they use technologies to interact with people in their local areas. Based on findings from my qualitative studies, the present survey study examined these findings with a larger sample size through survey and statistical analyses.

In the survey study, I proposed a theoretical model to model the relations between two technical affordances (metavoicing and social connecting), two socio-technical factors (perceived social support and shared identity) and newcomers' trust in their offline areas. In my prior studies, I explored broad types of platforms rather than a specific type of platform. I found that Facebook was widely used by my prior participants. In Study 2 to Study 4, most participants were members of some kind of Facebook group for their local areas (sometimes not using them for local buy-and-sell). This finding suggests that using Facebook groups for local areas could be very common among transnational newcomers. Thus in the present survey, I focused on

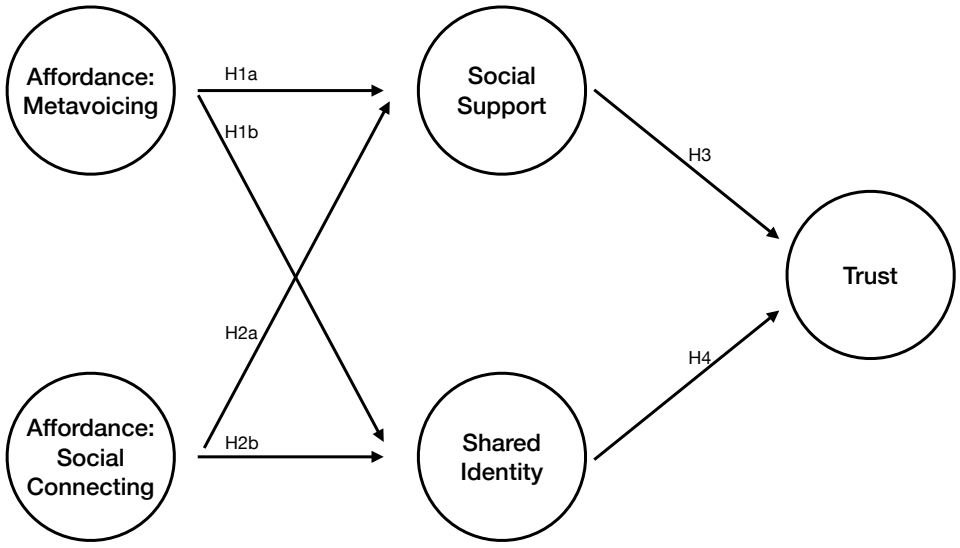


Figure 7.1: The theoretical model examined in the present study.

a specific platform—Facebook groups for local communities—to understand transnational newcomers' use of the platform for adaptation needs.

7.1 Hypotheses

Fig 7.1 presents the theoretical model that I examined in this survey study. In Study 4, I found that metavoicing and social connecting are two affordances that influence transnational newcomers' trust. I adapted these two platform affordances in Study 4 to examine how community commerce platforms affect newcomers' trust in local areas. *Metavoicing* refers to a platform's mechanisms that allow users to share their voices and opinions collectively, and *social connecting* refers to mechanisms that allow users to make connections with other individuals through the platform. Between these two affordances and transnational newcomers' trust in their local communities, I found that social support and shared identity are two key mediators. Therefore, the first two sets of my survey hypotheses are:

- H1a: The affordance of metavoicing has a positive effect on perceived social support,
- H1b: The affordance of metavoicing has a positive effect on perceived shared identity,
- H2a: The affordance of social connecting has a positive effect on perceived social support, and
- H2b: The affordance of social connecting has a positive effect on perceived shared identity.

Based on my past studies, perceived social support and shared identity are key predictors of transnational newcomers' trust. In fact, past research also suggested a relationship between these two predictors and trust, e.g., *Jiang et al.* (2019); *Street et al.* (2008); *Tanis and Postmes* (2005).

On the other hand, shared identity among a group of people allows people to have common ground to communicate. By lowering the barriers of communication, people are more likely to trust one another. At the group level, shared identity leads to a sense of belonging and empathy, which fosters a person's trust in a community. In the present study, I examined how the perceived social support and shared identity from the Facebook group for local areas contribute to transnational newcomers' trust in their offline communities.

- H3: Perceived social support has a positive effect on transnational newcomers' trust in their local communities, and
- H4: Perceived shared identity has a positive effect on transnational newcomers' trust in their local communities.

In the following section, I introduce my study methods, including data collection, survey design, data overview, and data analysis.

7.2 Methods

I found from prior recruitment experience that transnational newcomers are hard to reach. The coronavirus 2019 (COVID-19) pandemic also made my recruitment more difficult. For example, I had often worked with a local English-as-a-second-language (ESL) tutoring center and visited during its tutoring sessions. By doing so, I was able to build rapport with ESL learners who were newcomers and invite them to participate in my studies. This face-to-face technique was not possible during the pandemic. In fact, when I recruited participants for Study 3 in fall 2020, it took three months to successfully recruit 12 participants through convenience sampling online. This is evidence of the difficulties in reaching these participants and the impact that pandemic conditions had on recruitment.

7.2.1 Recruitment and Sampling

To overcome the difficulties of recruitment, I employed as many recruitment techniques as possible to enlarge my participant pool. In the end, I collected 490 valid responses for my survey. In the rest of this section, I detail the recruitment techniques I adopted and the breakdown of participant sources. Note that because this population was not easy to reach, I did not adopt techniques to balance participants' backgrounds such as race or ethnicity, home country cultures, or any other demographics. Although this convenience sampling is a limitation of my survey study, this study would not have been possible at the time without this broad recruitment strategy.

Professional Panel Services I purchased a survey panel from Lucid.com, which is a professional survey service company. Based on the budget, I asked for a sample size of 250–300 survey respondents.

Public Advertisements Based on immigrants' residential areas in the United States (U.S.), I selected 15 counties[1] that had more than 500,000 immigrants and posted advertisements to those counties on Craigslist. I also posted advertisements to ten Facebook groups in Southeast Michigan and two Facebook groups for survey exchange.

Recruitment through non-profit organizations I contacted 28 non-profit organizations (NPOs) across the U.S., including ESL tutoring organizations and immigrant-support associations, and asked them to share my survey with the people they served. However, only the local ESL center that I had worked with during my past studies responded to my request.

Snowball Sampling Last, I shared the survey with my personal network and asked my connections to spread the survey. I also invited participants of Study 3 and Study 4 to participate and to help spread the word about my study to their networks and communities.

For participants who were recruited through Lucid, Lucid took care of participants' compensation. For participants recruited through other approaches (e.g., public advertisements, NPOs, and snowball sampling), I did a raffle to compensate participants. I aggregated all the valid responses (except for responses from Lucid), and for every 30 valid responses, I randomly picked one participant to award a 30 USD e-gift card. This survey study was reviewed by the University of Michigan's institutional review board (IRB) and was marked as exempt from ongoing IRB oversight.

[1]Los Angeles, CA; Miami-Dade, FL; Harris, TX; Cook, IL; Queens, NY; Orange, CA; Kings, CA; San Diego, CA; Santa Clara; CA; Broward, FL; Dallas, TX; Maricopa, AZ; Alameda, CA; Riverside, CA; and King, WA. Data source: Institution of Migration Policy (`https://www.migrationpolicy.org/programs/data-hub/charts/us-immigrant-population-state-and-county`).

An unexpected issue in this study was a large number of invalid survey responses, especially responses through public advertisements. A high proportion of invalid responses came from public recruitment channels (about 85% were invalid) in the first week of my survey deployment. Examples of invalid responses include people born in the U.S. (who selected "other" as their country of birth, and specified the U.S. in the text entry field), meaningless content to open-ended questions (e.g., "asfdgfgsdfgwf..."), highly similar responses from different participants, and inconsistencies in different parts of a response (e.g., answered that they lived in Texas in one question but then answered that they lived in California in another question).

I used a few techniques to prevent invalid responses. For example, I banned Internet Protocol (IP) addresses that submitted responses more than three times. I decided to use *three times* as a threshold because some participants might live together and share the same IP address. The three-time threshold was designed to take this situation into account but also prevent the same person from spamming the survey. I also banned a series of common words and sentences that appeared too many times in a similar pattern across multiple responses, e.g., "beautiful and friendly environment," "21st street," and "Dashan." I also included a few open-ended questions to compare with other multi-choice questions. I elaborate on these verification questions later in the survey design description.

Next are my screening criteria for eligible participants:

- Currently 18 years old or older,
- Currently live in the U.S.,
- Born in a country other than the U.S., and
- Active Facebook user, i.e., browse Facebook for multiple times a week.

Two considerations need to be explained about the screening criteria. First, I did not screen participants' age when they moved to the U.S., nor did I screen how long they lived in the U.S. This setting was because I wanted to include both the generation

(1st or 1.5th) and newcomer identity as control variables in my model. These two factors are key predictors of immigrants' adaptation progress (*Leclere et al.*, 1994; *Maxwell et al.*, 2000; *Salant and Lauderdale*, 2003), so they are likely to play a role in immigrants' trust development as well.

Second, in my past studies, I found a high proportion of participants who used Facebook groups for local areas (i.e., neighborhoods, towns, or cities). I wanted to verify this past finding through the survey study. Therefore, I included immigrants who were Facebook users but not members of this type of Facebook group. This question could also reveal what platforms were used by immigrants to access local information, if any, and inform future research. Participants who were active Facebook users but did not use Facebook groups for local communities would answer a set of questions differently from participants who were members of these groups. I explain the question in the next subsection.

7.2.2 Survey Design

I created my survey on Qualtrics, a professional survey platform. The survey had 47 questions, including four questions for constructs that I decided to drop after my data collection. As stated in the prior subsection, not every participant needed to answer all of the questions. Participants who were members of Facebook groups for local areas were asked to answer 45 questions, and participants who did not use these groups were asked to answer 32 questions. I unpack each component in the following paragraphs.

Survey Information, Screening Questions, and Consent The survey's first page described the study's basic information, including an overview of the survey, compensation, and the research team's contact information. Participants were able

to download an information sheet of the study as a portable document format (pdf) file if they preferred.

Under the study information, participants were asked to respond to four screening questions and one consent statement. The four screening questions asked about participants' year of birth, whether their country of birth was a country other than the U.S., whether they currently lived in the U.S., and whether they browsed Facebook multiple times a week. The consent statement was "*I agree to participate in the research study. I understand the purpose and nature of this study and I am participating voluntarily. I understand that I can withdraw from the study at any time, without any penalty or consequences.*" Participants needed to pass all the screening questions and check the consent statement to proceed to the next page.

Attention-checking Questions Participants were provided with an attention-checking code right after they consented. We asked the participants to keep the code in mind throughout the survey. There were two attention-checking questions in the survey. If a participant failed to answer the attention-checking questions, we terminated their participation and their responses were excluded from the database.

Immigration Background In this component, I asked participants for their country of birth, the year and month of migration, and legal identity when they first moved to the U.S. Participants' country of birth was based on a built-in drop-down list of countries on Qualtrics. However, my pilot study showed that some participants wanted to describe their countries of birth on their own. I thus added an option of "*other countries*" and an open-ended question for these participants to fill out. Note that the U.S. was not excluded from the list. If participants chose the U.S. as their country of birth, they were directed to a termination page and their responses were counted as invalid. This was a way to prevent invalid responses where participants chose "*other countries*" of birth but described the U.S. in their text responses.

For participants' legal identities in their early days of migration, they were able to specify from the following options. They were also able to choose "prefer not to say" or "other" and provide details in free text.

Experience Using Facebook Groups of Local Areas I asked "*Are you a member of any Facebook groups for your local areas (e.g., neighborhood, town, or city that you live in the U.S.)?*" to capture whether a participant used any Facebook groups for their local areas.

If participants chose "*no*," they were then asked to answer the following: "*Is there any reason that you don't join FB [Facebook] groups for your local area? Please use two sentences to describe the reason(s).*" I also asked "*Do you use any other social media applications to interact with local communities in your neighborhoods or cities?*" and participants were able to choose from Twitter, Nextdoor, Quora, Reddit, or LinkedIn. They were also able to select "*other*" and describe other platforms that they used or "*prefer not to say.*" Last, if participants did not use any social media platforms to learn about local information, they could choose "*I don't use any social media applications to interact with my local communities.*" After responding to these questions, they proceeded to the trust component, which I describe next.

If they chose "*yes*" to using social media platforms, participants proceeded to respond to the following four scales: affordance–metavoicing and affordance–connecting, shared identity, social support, and trust. See the next section for details. The order of these components and the order of items within each of the components were randomized.

Affordance–Metavoicing and Affordance–Connecting The scale that measured the two affordances was drawn from *Dong et al.* (2016). I used Dong's scale to measure these two affordances in the context of social commerce, an e-commerce system in which people make transactions through general social media applications.

Study 4, which focused on transnational newcomers' participation in community commerce, was based on Dong's framework of affordances. Therefore, in Study 5 I extended Study 4 and drew on the scales from that work to estimate how these affordances affect immigrants' trust in their local communities.

The five items assessing affordance–metavoicing were: "*The group allows me to comment on posts*," "*The group allows me to react to other members' comments about the local area*," "*The group allows me to share my opinion about the local area*," "*The group allows me to join members' discussions about the local area*," and "*The group allows me to share my life experiences in the local area with other members*."

The four items assessing affordance–connecting were: "*The group allows me to connect with members who can offer me detailed information about the area by introducing me to other people*," "*The group enables me to make friends with members I have never met*," "*The group enables me to get local information through connections with other members*," and "*The group enables me to connect with other members to share local information together*."

Shared Identity The shared identity items measured participants' perception of similarity between themselves and other members of a Facebook group, and the similarity among group members. The scale contained four items to assess participants' perceived shared identity (*Howard and Magee*, 2013; *Leach et al.*, 2008): "*I have a lot in common with the average member of this group*," "*I am similar to the average member of this group*," "*This group's members have a lot in common with each other*," and "*This group's members are very similar to each other*."

Social Support I measured social support by adapting Cohen's Interpersonal Support Evaluation List (ISEL-12). This survey is widely used to measure social support from online platforms (*Cohen and Wills*, 1985). Items included: (1) "*I feel that there is no one in the FB [Facebook] group that I can share my most private worries and*

fears with," (2) "*If I were sick, I could easily find someone in the FB group to help me with my daily chores*," (3) "*There is someone in the FB group I can turn to for advice about handling problems with my family*," (4) "*If I decide one afternoon that I would like to go to a movie that evening, I could easily find someone in the FB group to go with me*," (5) "*When I need suggestions on how to deal with a personal problem, I know someone in the FB group I can turn to*," (6) "*I don't often get invited to do things with others in the FB group*," (7) "*If I had to go out of town for a few weeks, it would be difficult to find someone in the FB group who would look after my house or apartment (the plants, pets, garden, etc.)*," (8) "*If I wanted to have lunch with someone, I could easily find someone in the FB group to join me*," (9) "*If I was stranded 10 miles from home, there is someone in the FB group I could call who could come and get me*," (10) "*If a family crisis arose, it would be difficult to find someone in the FB group who could give me good advice about how to handle it*," (11) "*If I needed some help in moving to a new house or apartment, I would have a hard time finding someone in the FB group to help me*," and (12) "*If I wanted to go on a trip for a day (for example, to the country or mountains), I would have a hard time finding someone in the FB group to go with me.*" Note that the items 1, 6, 7, 10, 11, and 12 were reverse-coded.

Trust Last, I measured trust as participants' trust in their offline areas. The scale contained three items that I drew from *Kwon et al.* (2021): "*I trust people in my local community to be willing to look for better ways of doing things*," "*I trust people in my local community to work together to get things done in my community*," and "*I trust people in my local community to do what is best for the community.*"

Demographics For demographics, I asked for participants' gender, educational background, income level, car ownership status, the U.S. state where they lived, and

	Total	Valid	Users
Lucid	481	270	221
Public Ads	1,268	217	209
NPOs	8	6	6
Snowball Sampling	73	53	43
Sum	1,830	546	479

Table 7.1: The table shows the breakdown of response sources. The *Total* column shows the total number of received responses from the data source. The *Valid* column shows the number of valid responses, including participants who were members of Facebook groups of local areas and participants who were not. Last, the *Users* column shows the number of valid responses from people who were members of Facebook groups of local areas. NPO=non-profit organization

their ZIP code. Participants were able to skip any questions in this component if they were not willing to answer.

Contact Information Participants, except for those recruited from Lucid's panel, could participate in a raffle for the compensation. If they were interested in participating in the raffle, we asked them to leave their name and email address so that we could reach out to them after our data collection.

Verification Questions As stated, a high proportion of invalid responses came in when I launched the survey. I found that many invalid responses contained inconsistencies about the responders' immigration background. Therefore, I asked for participants' background information again using open-ended questions to help identify invalid responses. I added three open-ended verification questions to filter out potentially false data. The three verification questions were: "*Where is your country of birth?*," "*Where is the capital city of your country of birth?*," and "*How would you describe your primary identity/identities in your first year in the U.S.?*"

	Min	25%	Median	75%	Max
Age (in 2021)	18	25	31	37	82
Migration Age	0	13	20	25	80
Migration Duration (Years)	0.4	4.8	9.9	19.0	75.0

Table 7.2: Participants' age, age at migration, and the duration they had lived in the U.S.

7.2.3 Data Collection & Overview

I deployed the survey between May 24 and June 30, 2021. Table 7.1 shows the breakdown of my data sources. In the five-week deployment, I collected 1,830 total completed responses; 546 were valid responses, including participants who were members of Facebook groups of local communities and those who were not. Among the 546 valid responses, 479 were users of Facebook groups of local communities.

Table 7.2 and 7.3 show participants' demographic information. The data had slightly more men participants (N=265, 55.3%). The median participant age was 31. Newcomers (duration in the U.S. was 60 months or shorter) were a relatively small group among all participants (N=130, 27.1%). The median duration in the U.S. was 119 months (almost 10 years). About 2/3 of participants (N=321, 67%) were first-generation immigrants (age at migration was 18 years old or older). The median participant age when they migrated to the U.S. was 20 years old.

In terms of racial and ethnic backgrounds, White immigrants were the dominant group (N=213, 44.5%), followed by Asian (N=105, 21.9%), Black (N=90, 18.8%), Hispanic/Latinx (N=36, 7.5%), and Other (multi-races and prefer not to say; N=35, 7.3%).

Tables 7.4 through 7.6 show participants' home countries. The biggest group included immigrants from Canada (N=44). Other countries that had more than 20 participants included Taiwan (N=42), Australia (N=39), Kenya (N=29), the United Kingdom (N=27), Mexico (N=24), and China (N=21). Taiwanese immigrants were

	N	Percentage
Gender: Man	265	55.3%
Gender: Woman	213	44.5%
Gender: Prefer not to say	1	0.2%
Newcomer (migration length <= 60 months)	130	27.1%
First Generation (migration age >= 18)	321	67.0%
Race: White	213	44.5%
Race: Black	90	18.8%
Race: Asian	105	21.9%
Race: Hispanic/Latinx	36	7.5%
Race: Other (multi-races or unavailable)	35	7.3%
Western Culture	182	38.0%
High Income (>=80k)	191	39.9%
Mid Income (>=30k, <80k)	188	39.2%
Low Income (<30k)	82	17.1%
Income Info Unavailable	18	3.8%
Car Owner	384	80.2%

Table 7.3: Participants' demographic information.

Country of Birth	N	percentage
Canada	44	9.2%
Taiwan	42	8.8%
Australia	39	8.1%
Kenya	29	6.1%
The U.K.	27	5.6%
Mexico	24	5.0%
China	21	4.4%
France	19	4.0%
Germany	14	2.9%
Brazil	12	2.5%
India	12	2.5%
Colombia	10	2.1%
Nigeria	10	2.1%
Argentina	9	1.9%
Japan	8	1.7%
N/A	8	1.7%
Belgium	7	1.5%
Jamaica	6	1.3%
South Africa	5	1.0%
Switzerland	5	1.0%
Vietnam	5	1.0%
Austria	4	0.8%
Cuba	4	0.8%
Denmark	4	0.8%
Ghana	4	0.8%
Spain	4	0.8%

Table 7.4: Participants' home countries (part 1). Note that there are eight participants whose home countries were N/A. These were eligible participants I reviewed in the first week of data collection. Their countries of birth became N/A because I updated the original question and caused the data to become lost.

Country of Birth	N	percentage
Barbados	3	0.6%
Belarus	3	0.6%
Cambodia	3	0.6%
Hungary	3	0.6%
Ireland	3	0.6%
Italy	3	0.6%
Malaysia	3	0.6%
Morocco	3	0.6%
Portugal	3	0.6%
Russian Federation	3	0.6%
South Korea (Republic of Korea)	3	0.6%
Thailand	3	0.6%
Uganda	3	0.6%
Albania	2	0.4%
Algeria	2	0.4%
Angola	2	0.4%
Bahamas	2	0.4%
Bangladesh	2	0.4%
Benin	2	0.4%
Dominican Republic	2	0.4%
Egypt	2	0.4%
El Salvador	2	0.4%
Iran (Islamic Republic of Iran)	2	0.4%
Lebanon	2	0.4%
New Zealand	2	0.4%
Other	2	0.4%
Peru	2	0.4%
Sweden	2	0.4%
Venezuela (The Bolivarian Republic of Venezuela)	2	0.4%

Table 7.5: Participants' home countries (part 2).

Country of Birth	N	percentage
Afghanistan	1	0.2%
Andorra	1	0.2%
Bahrain	1	0.2%
Belize	1	0.2%
Bosnia and Herzegovina	1	0.2%
Cameroon	1	0.2%
Central African Republic	1	0.2%
Chad	1	0.2%
Costa Rica	1	0.2%
Côte d'Ivoire	1	0.2%
Greece	1	0.2%
Guatemala	1	0.2%
Guyana	1	0.2%
Iceland	1	0.2%
Indonesia	1	0.2%
Israel	1	0.2%
Jordan	1	0.2%
Kazakhstan	1	0.2%
Latvia	1	0.2%
Lithuania	1	0.2%
Pakistan	1	0.2%
Philippines	1	0.2%
Saudi Arabia	1	0.2%
Senegal	1	0.2%
Serbia	1	0.2%
Singapore	1	0.2%
Syrian Arab Republic	1	0.2%
Tunisia	1	0.2%
Turkey	1	0.2%
Ukraine	1	0.2%
United Arab Emirates	1	0.2%
Yemen	1	0.2%

Table 7.6: Participants' home countries (part 3).

over-represented because of snowball sampling through my personal network, but this was not intentional.

Table 7.7 presents the states where participants lived. A large group of participants lived in California (N=110, 23.0%). The other states where 5% or more participants lived were New York (N=85, 17.7%), Texas (N=41, 8.6%), Florida (N=34, 7.1%), Massachusetts (N=25, 5.2%), and Michigan (N=24, 5.0%).

7.2.4 Data Analysis

To examine my model, I employed structural equation modeling (SEM) to conduct path analysis. In the following paragraphs, I describe how I calculated each measurement, my pre-analysis, and the SEM analysis I adapted.

Measurement In simple regression analyses, it is common to average all of the items that belong to the same construct and use the mean value as a single observation. However, this does not follow path analysis assumptions. In path analysis, all of the data entries are viewed as observations, which are measurable using questionnaire instruments. The constructs that these observations measure are often invisible and viewed as latent variables, which need to be calculated with statistical techniques. Next, I list the five latent variables measured from the following observations:

- Affordance–Metavoicing: 5 observations,
- Affordance–Connecting: 4 observations,
- Social Support: 12 observations,
- Shared Identity: 4 observations, and
- Trust: 3 observations.

For the demographic variables, I included the following five variables as control variables:

State	N	percentage
California	110	23.0%
New York	85	17.7%
Texas	41	8.6%
Florida	34	7.1%
Massachusetts	25	5.2%
Michigan	24	5.0%
Washington	18	3.8%
Georgia	15	3.1%
Illinois	15	3.1%
Pennsylvania	10	2.1%
Virginia	10	2.1%
New Jersey	9	1.9%
Arizona	8	1.7%
Alabama	6	1.3%
Oregon	6	1.3%
Arkansas	5	1.0%
Colorado	5	1.0%
North Carolina	5	1.0%
Wisconsin	5	1.0%
Kansas	4	0.8%
Maryland	4	0.8%
Missouri	4	0.8%
Tennessee	4	0.8%
Connecticut	3	0.6%
Louisiana	3	0.6%
Ohio	3	0.6%
South Carolina	3	0.6%
Alaska	2	0.4%
Delaware	2	0.4%
Kentucky	2	0.4%
Oklahoma	2	0.4%
South Dakota	2	0.4%
Minnesota	1	0.2%
Nebraska	1	0.2%
Rhode Island	1	0.2%
Utah	1	0.2%
Vermont	1	0.2%

Table 7.7: The states where participants lived.

Variable	Cronbach's α
Affordance–Metavoicing	0.890
Affordance–Connecting	0.847
Social Support	0.856
Shared Identity	0.877
Trust	0.900

Table 7.8: Cronbach's alphas for the scales.

- Gender (binary variable): 1=woman and prefer not to say (N=214); 0=man (N=265);
- Race/Ethnicity (five binary dummy variables): White, Black, Asian, Hispanic or Latinx, and Other (including multi-races);
- Newcomer (binary variable): 1 = duration in the U.S. of 60 months or less (as of June 2021); 0 = duration in the U.S. of longer than 60 months;
- First Generation (binary variable): 1 = 18 years old or older when they moved to the U.S.; 0 = younger than 18 years old when they moved to the U.S.; and
- Western culture (binary variable): 1 = participants from the 20 Western countries[2], 0 = participants from the other countries.

Data Pre-processing Before computing the model to examine my hypotheses, I employed a few techniques to assure that my data were reliable and valid. I first calculated the Cronbach's alpha to examine the reliability among the five latent variables, and the result is shown in Table 7.8. All of the Cronbach's alpha values were higher than 0.8, thus the data that I collected had sufficient reliability.

Next, I employed the exploratory factor analysis (EFA) to validate the scales I used. Although the scales used in my survey were validated in prior literature, the items were mostly tested with general populations but not immigrants. Therefore, EFA was necessary to examine whether the items accounted for the constructs they

[2]Including Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, New Zealand, Portugal, Spain, Sweden, Switzerland, and the United Kingdom. This list was drawn from past immigration studies (*Dinesen*, 2013). The original list also included the U.S., but this was not applicable in my study.

	Factor1	Factor2	Factor3	Factor4	Factor5
Metavoicing1	-0.01	**0.77**	0.02	0.15	0.16
Metavoicing2	0.08	**0.75**	0.03	0.16	0.14
Metavoicing3	0.19	**0.78**	0.06	0.13	0.05
Metavoicing4	0.10	**0.80**	0.05	0.16	0.09
Metavoicing5	0.29	**0.66**	0.10	0.14	0.09
Connecting1	0.39	**0.53**	0.04	0.10	0.27
Connecting2	**0.53**	0.37	0.10	0.16	0.24
Connecting3	0.30	**0.50**	0.02	0.02	0.33
Connecting4	0.26	**0.52**	0.04	0.14	0.32
Support1	0.18	0.05	**0.72**	0.05	0.03
Support2	**0.72**	0.07	0.03	0.21	0.18
Support3	**0.78**	0.20	0.06	0.17	0.15
Support4	**0.79**	0.09	0.06	0.17	0.18
Support5	**0.76**	0.21	0.08	0.25	0.15
Support6	0.15	0.17	**0.74**	0.03	0.05
Support7	0.12	-0.00	**0.76**	-0.06	0.07
Support8	**0.81**	0.18	0.10	0.17	0.14
Support9	**0.74**	0.19	0.05	0.21	0.10
Support10	-0.07	0.07	**0.76**	0.02	0.03
Support11	-0.03	-0.01	**0.73**	-0.07	0.01
Support12	-0.01	-0.00	**0.70**	0.01	-0.03
Identity1	0.35	0.23	0.03	**0.77**	0.22
Identity2	0.33	0.19	-0.02	**0.76**	0.14
Identity3	0.32	0.34	0.04	**0.55**	0.19
Identity4	0.30	0.22	-0.11	**0.57**	0.13
Trust1	0.28	0.34	0.03	0.24	**0.70**
Trust2	0.31	0.29	0.05	0.21	**0.71**
Trust3	0.35	0.27	0.08	0.20	**0.72**

Table 7.9: The first round of exploratory factor analysis (EFA).

were designed for in an immigrant population. Table 7.9 shows the first-round EFA with the five groups of constructs. As shown in the table, Supports 1, 6, 7, 10, 11, and 12 were detected as a factor separated from other social support items (Supports 2, 3, 4, 5, 8, 9). Instead, Affordance–Connecting did not load as a single factor.

This result led me to consider whether Supports 1, 6, 7, 10, 11, and 12 were not valid items in immigrants' cases. In fact, Supports 1, 6, 7, 10, 11, and 12 were reverse-coded questions. I excluded the reverse-coded items and did the second-round EFA, and the results are shown in Table 7.10. In this case, there is no overlapping between

	Factor1	Factor2	Factor3	Factor4	Factor5
Metavoicing1	-0.02	**0.74**	0.16	0.18	0.20
Metavoicing2	0.08	**0.74**	0.16	0.17	0.15
Metavoicing3	0.19	**0.75**	0.14	0.07	0.21
Metavoicing4	0.11	**0.80**	0.16	0.13	0.15
Metavoicing5	0.28	**0.63**	0.15	0.12	0.19
Connecting1	0.30	0.36	0.16	0.16	**0.67**
Connecting2	0.46	0.23	0.21	0.18	**0.50**
Connecting3	0.22	0.33	0.07	0.24	**0.60**
Connecting4	0.17	0.36	0.20	0.24	**0.58**
Support2	**0.71**	0.05	0.22	0.19	0.10
Support3	**0.77**	0.16	0.19	0.17	0.17
Support4	**0.79**	0.07	0.19	0.20	0.11
Support5	**0.74**	0.16	0.27	0.16	0.19
Support8	**0.80**	0.14	0.20	0.15	0.19
Support9	**0.73**	0.15	0.23	0.11	0.16
Identity1	0.31	0.18	**0.80**	0.21	0.16
Identity2	0.30	0.18	**0.77**	0.15	0.05
Identity3	0.29	0.29	**0.56**	0.20	0.17
Identity4	0.27	0.18	**0.59**	0.12	0.13
Trust1	0.25	0.27	0.25	**0.70**	0.23
Trust2	0.29	0.24	0.21	**0.76**	0.15
Trust3	0.31	0.19	0.22	**0.70**	0.29

Table 7.10: The second round of exploratory factor analysis (EFA). The reverse-coded items of Support 1, 6, 7, 10, 11, and 12 were excluded from the analysis.

instruments that measure different factors. This result suggests that Supports 1, 6, 7, 10, 11, and 12 were likely causing noise in a path model. Therefore in the path analysis later, I tested models that included these six items and models that excluded the six items to compare which models were better explained by the data.

Path Analysis I used R and R's *lavaan* package[3] to employ the effective screening medium (ESM) calculation to examine my model. To test the model I proposed, and also the possible effects of the reverse-coded support items (described in the prior subsection), I tested the following two models:

- Model 1: The basic model shown in Fig. 7.1;

[3] `https://lavaan.ugent.be/`

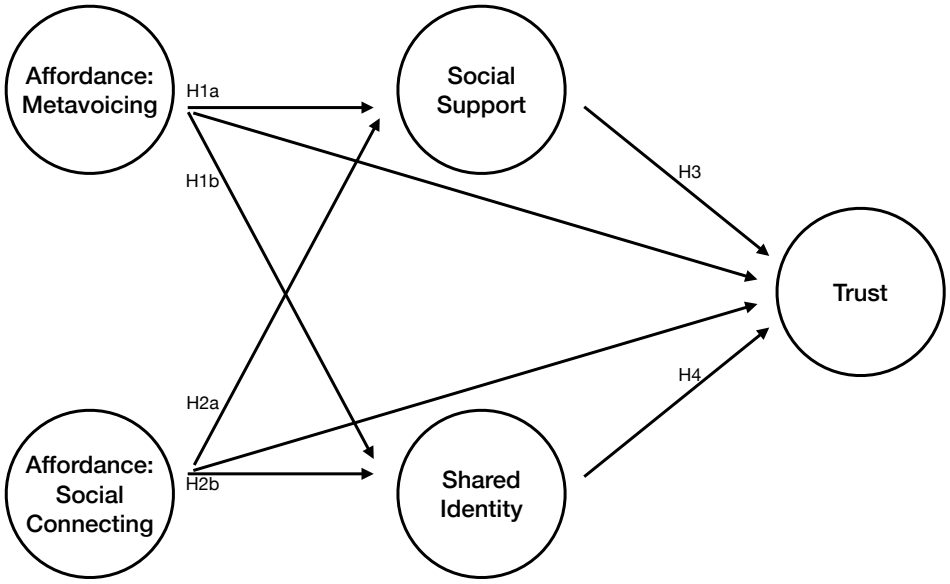


Figure 7.2: The theoretical model that models the two affordances' direct effects on immigrants' trust in local communities.

- Model 2: The basic model but with Supports 1, 6, 7, 10, 11, and 12 dropped from measuring social support.

I also calculated two models that hypothesized that the two affordances had direct effects on participants' trust in their offline areas:

- Model 3: Model includes direct effects between metavoicing–connecting and trust (Fig. 7.2);
- Model 4: Model includes direct effects between metavoicing–connecting and trust (Fig. 7.2) but with Supports 1, 6, 7, 10, 11, and 12 dropped from measuring social support.

7.3 Results

Table 7.11 presents the fit measurements. The fit measurements suggest that Model 4 had the best fit with the collected data, followed by Model 2 (higher comparative fit index [CFI] and Tucker–Lewis index [TLI]; lower Akaike information cri-

	CFI	TLI	AIC	BIC	RMSEA	P-value RMSEA <= 0.05
Model 1	0.782	0.751	40946.491	41376.176	0.089	0.000
Model 2	0.922	0.906	29152.376	29532.000	0.061	0.000
Model 3	0.788	0.757	40889.993	40994.764	0.088	0.000
Model 4	0.930	0.915	29094.924	29482.893	0.058	0.003

Table 7.11: The four models' fit measurements.

terion [AIC], Bayesian information criterion [BIC], and root mean square error of approximation [RMSEA]). Model 1 and Model 3 were the models that included the reverse-coded support items as observations, and they showed lower model fit. This suggests that the reverse-coded items in this study might have caused noise in measuring participants' social support, and thus reduced the model fit. For the rest of this section, I focus on Models 2 and 4 to discuss my hypotheses. Note that in this section, I use *FB groups* for short to refer to Facebook groups of local areas.

7.3.1 Hypothesis Examination

Figure 7.3 and 7.4 present the results of the Model 2 and Model 4. From Model 2, all of the hypotheses were significant ($df = 338, \chi^2 = 938.11$), except for H1a (*Affordance–metavoicing had a positive effect on social support*). That is, based on Model 2, a Facebook group's affordance for collective actions did not have a significant effect on immigrant members' perceived social support. On the other hand, the other hypotheses (H1b, H2a, H2b, H3, and H4) were all supported by Model 2. Affordance–metavoicing had a significant effect on immigrant members' perceived shared identity ($b = 0.255^{**}$)[4]. Affordance–connecting had significant effects on both immigrant members' perceived social support ($b = 0.868^{***}$) and shared identity

[4]The notations of the significance level: $^{***}: p < .001$; $^{**}: p < .01$; $^{*}: p < .05$; marginally significant: $p < .1$

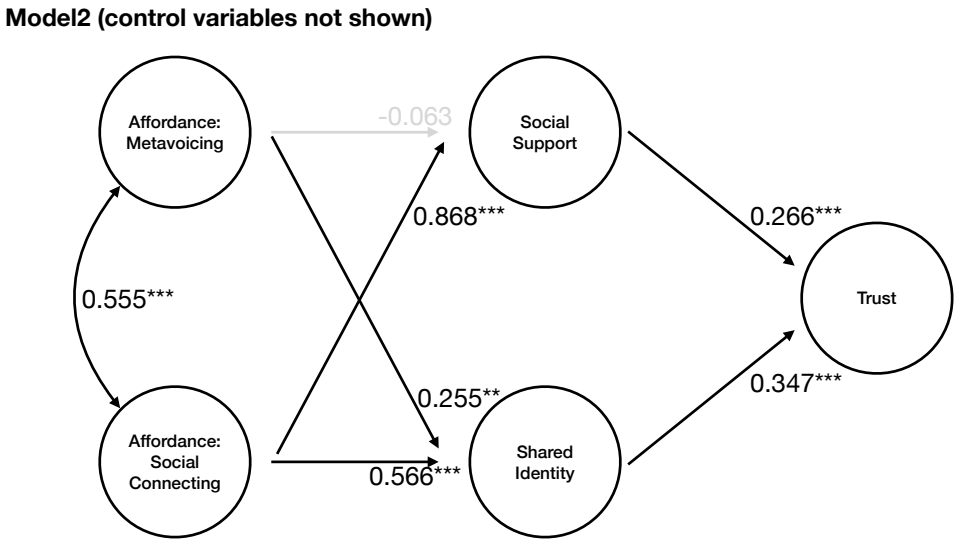


Figure 7.3: Model 2's structural equation modeling (SEM) results.

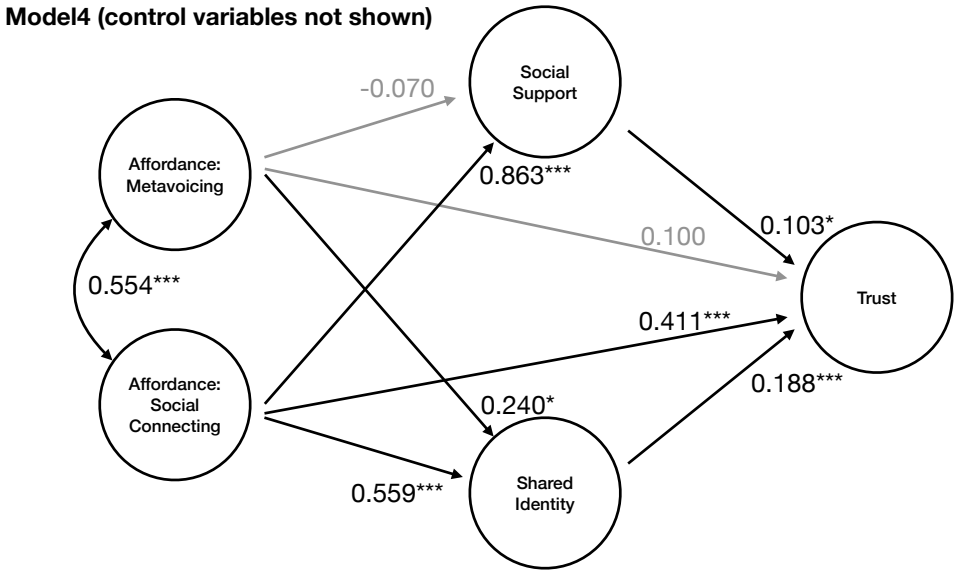


Figure 7.4: Model 4's structural equation modeling (SEM) results.

($b = 0.566^{***}$). Last, immigrants' perceived social support ($b = 0.266^{***}$) and shared identity ($b = 0.347^{***}$) from an FB group had a significant effect on immigrants' trust in local communities.

Model 4's results were overall similar to Model 2's, except that affordance–connecting had a very strong direct effect on immigrants' trust in local communities. All of the

hypotheses were significant ($df = 336, \chi^2 = 876.66$), except for H1a (*Affordance–metavoicing has a positive effect on social support*). That is, based on Model 4, a Facebook group's metavoicing affordance does not have a significant effect on immigrant members' perceived social support. On the other hand, the other hypotheses (H1b, H2a, H2b, H3a, and H3b) were all supported by the model. Affordance–metavoicing had a significant effect on immigrants' perceived shared identity in an FB group ($b = 0.240^{*}$). Affordance–connecting, in contrast, had significant effects on both immigrant members' perceived social support ($b = 0.863^{***}$) and shared identity ($b = 0.559^{***}$). Last, immigrants' perceived social support ($b = 0.103^{*}$) and shared identity ($b = 0.188^{***}$) from a Facebook group had a significant effect on their trust in local communities. Interestingly, affordance–connecting had a strong direct effect on immigrants' trust ($b = 0.411^{***}$) but affordance–metavoicing did not have a significant direct effect on their trust.

7.3.2 Demographic Variables' Effects

Model 2 and Model 4 showed similar results of demographic variables, which were used as control variables in the model. Next I list all of the demographic variables with significant effects on the key factors I examined in my hypotheses.

Newcomers Newcomers were less likely to feel that FB groups supported social connection than long-term immigrants were (Model 2: $b = -0.252^{*}$; Model 4: $b = -0.252^{*}$). Newcomers were also less likely than long-term immigrants to feel that FB groups provided social support (Model 2: $b = -0.233$, marginally significant; Model 4: $b = -0.235$, marginally significant).

Immigrant Women Immigrant women were less likely than immigrant men to feel that FB groups supported social connection (Model 2: $b = -0.400^{***}$; Model 4:

$b = -0.395^{***}$). Immigrant women were less likely to feel FB groups' providing social support than immigrant men were (Model 2: $b = -0.372^{***}$; Model 4: $b = -0.371^{***}$).

Black Immigrants Black immigrants were more likely to feel that FB groups supported metavoicing than White immigrants (reference group) were (Model 2: $b = 0.345^{**}$; Model 4: $b = 0.346^{**}$). This population was also more likely than White immigrants to feel that FB groups supported social connection (Model 2: $b = 0.392^{**}$; Model 4: $b = 0.391^{**}$).

Asian Immigrants Asian immigrants were less likely than White immigrants to feel that FB groups' provided social support (Model 2: $b = -0.790^{***}$; Model 4: $b = -0.794^{***}$). Asian immigrants were less likely to feel that FB groups supported shared identities than White immigrants were (Model 2: $b = -0.277$, marginally significant; Model 4: $b = -0.278$, marginally significant).

Latinx Immigrants Latinx immigrants were more likely than White immigrants to feel that FB groups supported social connecting (Model 2: $b = 0.371$, marginally significant; Model 4: $b = 0.369$, marginally significant;).

7.4 Discussion

7.4.1 Summary of Results

This survey study more closely examined the findings of my prior studies. With nearly 500 responses from immigrants in the U.S., I found that affordance–metavoicing, i.e., affordances that support community members' collective actions, had a positive effect on immigrants' perceived shared identity. Affordance–connecting, i.e., affordances that support community members in making connections with one another, had a positive effect on immigrants' perceived social support and shared identity.

Interestingly, affordance–connecting also had a strong direct effect on immigrants' trust in their local communities. Both of the mediators I examined in the model, i.e., perceived social support and shared identity, had a positive effect on immigrants' trust in their local communities.

Overall, all the hypotheses were supported in my analysis, with one exception: affordance–metavoicing had no significant effect on perceived social support.

7.4.2 Differences among Subgroups of Immigrants

Newcomers Newcomers were less likely to connect with other members through FB groups of local areas. Simultaneously, they were also less likely to feel these FB groups were supportive. This finding reveals newcomers' social isolation and challenges in networking.

As mentioned in the prior subsection, affordance–connecting had a strong positive effect on immigrants' trust in local communities. For newcomers, it might be difficult to develop trust through these FB groups of local communities because they did not feel these groups supported them in connecting with other members in the group.

Immigrant Women Immigrant women appeared to be more vulnerable than immigrant men. They were less likely to feel supported by FB groups of local communities and were less likely to connect with other members of these groups.

7.5 Limitations

Although the data overall supported my theoretical model, there are some limitations to keep in mind when interpreting the findings. First, a survey is a retrospective method. With my deployment, I was only able to assess participants' trust, perceived social support, and shared identity at one certain point in time. However, these social–psychological factors might change over time with immigrants' adaptation process.

Future research might need to employ techniques such as multi-wave surveys or diary studies to capture the changing nature of these factors.

Second, the survey data were collected in spring 2021, about one year after the COVID-19 pandemic began. At this time, global immigration had slowed and social activities were largely constrained by COVID-19 safety measurements. Furthermore, social movements regarding race issues such as "Black Lives Matter" and "Stop Asian Hate" also happened in the U.S. in 2020 and early 2021. The COVID-19 outbreak and these social movements might affect immigrants' perceived social support, shared identity, and trust in local communities. Future research could further look into these external factors' influence on immigrants' adaptation and technology use.

Third, my survey did not include participants' frequencies of use as a control variable. Frequency of using an online community platform represents a user's engagement and trust in an online community and is associated with trust development (*Molinillo et al.*, 2021; *Rishika et al.*, 2012). In this time-shifting sense, frequency of use should be included to make this model more comprehensive.

CHAPTER VIII

Discussion and Conclusion

In the previous chapters, I described my studies on various social media technologies' roles in transnational newcomers' adaptation and related concerns. In the present chapter, I review and synthesize the key findings across my studies and provide emerging themes that answer my overarching research question: "*How do social media technologies support transnational newcomers' social network development and resource-seeking in the host country, and what needs are not addressed by the existing technologies*?" Following the emerging themes, I reflect on the methodology and theories that I applied to my studies. Last, I highlight my contributions to three key domains of literature.

8.1 Emerging Themes across My Studies

Through the lens of Social Exchange Theory (SET), I identified how transnational newcomers interact with populations in the host country and the resources they seek through social media technologies. In this section, I highlight the following emerging themes across my studies: (1) indirect exchanges as a comfortable way of interacting, (2) informational and instrumental resources as key social supports, (3) social support and shared ethnicity as keys to trust and engagement, and (4) challenges on platforms—lurker and free-rider perceptions.

8.1.1 Indirect Exchanges as a Comfortable Way of Interacting

Different social media technologies supported different forms of social exchange, which caused newcomers to interact with other local people differently. For example, people-nearby applications (PNAs) are social-matching applications that match individuals, so direct exchanges such as reciprocal and negotiated exchanges were more likely to happen through PNAs. In contrast, community commerce platforms accounted for more indirect exchanges, such as group-based or link-based exchanges.

Overall, transnational newcomers felt more comfortable using platforms that support indirect exchanges to interact with local populations. Transnational newcomers' perceived uncertainties and risks of networking and resource-seeking were lower through indirect exchanges. My findings echo past literature on trust in social exchange, which found that indirect social exchanges were more likely to lead to a social actor's trust in the outcome relationships than direct exchanges (*Molm*, 1990).

Note that indirect exchange does not always foster a social actor's interpersonal trust. Instead, it could foster a person's trust in a community, which indirectly fosters her/his trust in another member of the group. For example, *Buchan et al.* (2002) found that individuals are more likely to make social exchanges in a group setting than in a one-on-one setting. *Buchan et al.* argued that this difference was caused by *social distance*. Essentially, being in the same social group reduces a person's perceived social distance, so being in a group makes a person more comfortable with having social exchanges with another individual in the group.

My research findings, especially Study 3, revealed how shared identity impacts transnational newcomers in their participation in social exchange with other people through local consumer-to-consumer (C2C) e-commerce platforms. My results suggest that, even beyond the sense of community, the shared identities between transnational newcomers and other users could reduce newcomers' perceived social distance. Shared identity thus became a key factor influencing transnational new-

comers' perceived social distance. The importance of shared identity to transnational newcomers' indirect exchange is thus a key takeaway of my dissertation research.

8.1.2 Informational and Instrumental Resources as Key Social Support

I found that informational and instrumental supports were the social support types that transnational newcomers looked for through social media platforms. Informational and instrumental resources directly benefited participants' settlement (e.g., finding a place to live or securing employment) and sociocultural adaptation (e.g., learning of social norms). Informational resources are intangible and can be easily conveyed through social media technologies. Transnational newcomers can easily access informational resources by observing community members' interactions and learning about local cultural norms.

On the other hand, instrumental resources could not directly help "psychological and sociocultural" adaptation because most tangible resources are objective (e.g., second-hand furniture or services). Instead, it is the process of exchanging instrumental resources that fosters transnational newcomers' adaptation. Transnational newcomers often need to meet other community members offline to acquire instrumental resources. These offline encounters thus expose transnational newcomers to new local networks and foster their trust in local communities. This finding echoes past research on other platforms designed for resource exchanges, such as local exchange platform (*Lampinen et al.*, 2015), timebanking (*Bellotti et al.*, 2014), and sharing economy applications (*Kameswaran et al.*, 2018).

In contrast to informational and instrumental support, my studies did not show evidence that transnational newcomers looked for emotional support through local-based social media technologies. In recent human–computer information (HCI) research, *Dosono and Semaan* (2019, 2020) studied how Asian American immigrants, including Asian immigrants in the U.S., grew their resilience on Reddit. The process

of becoming more resilient was based on exchanging emotional support with other Asian Americans in the United States (U.S.). My research, on the other hand, focused on "local communities" that transnational newcomers moved to in the U.S. Although local communities and transnational newcomers share the same offline environment, this does not mean that they share similar life experiences, which could lead to difficulty in seeking emotional support. In my studies, social media technologies allowed transnational newcomers to break the offline boundaries by connecting them with one another and allowing them to seek emotional support from other immigrants in their local communities who shared similar experiences.

8.1.3 Social Connecting: The Most Effective Affordance for Developing Trust

From Studies 4 and Study 5, I found that the social connecting affordance has strong direct effects on transnational newcomers' trust. This finding means that if a local-based social media technology allows transnational newcomers to connect with other local community members, then these newcomers are more likely to develop trust in local communities.

Dong et al. (2016) defined a social connecting affordance as any technology design that allows users to understand other users' information and have opportunities to connect. As examples, personal profiles and private messengers afford social connecting. Study 3 examined local C2C e-commerce platforms such as Craigslist and OfferUp, and Study 4 examined community commerce platforms such as Nextdoor, Facebook groups for buy-and-sell, and WeChat groups. On local C2C e-commerce platforms, users are likely to create an account for the e-commerce platform without importing their social media profile information. In contrast, community commerce platforms are essentially part of a large social media platform. Users' personal profiles on these platforms could be easily linked through community commerce groups.

Thus, on community commerce platforms, users could review another users' personal information *beyond* transaction-related information, and rely on external information to evaluate her/his trustworthiness. This echoes the *warranting theory*, which suggests that people look for cues, i.e., *warrants*, that a person has little control over to judge a person's trustworthiness (*Walther and Parks*, 2002).

Badges could be a warrant to highlight a person's role in an online community and increase a newcomer's intention to connect with her/him. For example, Facebook groups automatically assign badges such as *moderator*, *new member*, and *conversation starter* to highlight members' roles. Recent studies also found that these badges foster tenured members' sense of achievement and role development (*Gibson et al.*, 2013; *Halavais et al.*, 2014). Members who do not have badges might be motivated to earn these badges and increase their engagement in the group (*Cavusoglu et al.*, 2015; *Li et al.*, 2012). Therefore badges such as *local guides* or *friendly volunteers* might help transnational newcomers identify trustworthy and reliable members who can provide useful local resources.

Furthermore, my study findings suggest that transnational newcomers are more likely to trust people who share similar backgrounds. Thus, in addition to assigning a group-level badge, making a member's identity and experiences visible to a newcomer who has a similar background might foster the connection and thus benefit the newcomer's adaptation to local communities.

8.1.4 Challenges on Platforms: Lurker and Freerider Perceptions

Being lurkers is a common strategy among transnational newcomers when they join a local-based social media platform. By doing so, transnational newcomers can evaluate whether they fit the entire community. According to my findings, transnational newcomers were concerned about their behavior because they felt they did not have enough knowledge about local cultural norms, so they tended to be lurkers and

resource-takers to avoid being offensive or impolite to other members. Interestingly, I found that after transnational newcomers stay in these communities a while, some of them develop *indebtedness*, which further prevents them from deep engagement in the community. This indebtedness happens because transnational newcomers sometimes feel that they are not able to contribute to the local community while they are receiving help and thus they owe the community.

Indebtedness has been found to be common among users who participate in resource exchanges through online platforms (*Israni et al.*, 2021; *Lampinen et al.*, 2013). However, transnational newcomers, or other populations that have limited resources, e.g., residents in low-income areas (*Israni et al.*, 2021), could find it hard to contribute back to their local communities. Platform designers should highlight that it is acceptable to be a resource receiver. This is one of the design recommendations made by *Lampinen et al.* (2013) to mitigate users' indebtedness in local social exchange: *highlighting the value of being a recipient*. The other two recommendations were *matching users with similar needs* and *clarifying the exchange processes and outcomes*. These recommendations could mitigate general users' indebtedness in online local social exchange and are thus likely to address transnational newcomers' indebtedness, as well.

In addition to the recommendations made by *Lampinen et al.* (2013), my research findings also suggest that highlighting transnational newcomers' distinctiveness could mitigate their indebtedness. Transnational newcomers' cultural knowledge and immigration experience are resources that they can provide to increase a community's cultural diversity. For example, my participants stated that they wanted to share their migration experiences and bring traditional gifts from their home countries to their local communities. Encouraging transnational newcomers to share this information could increase their engagement in these communities and thus mitigate their feelings of indebtedness.

8.2 Reflection and Limitations

In this section, I reflect on three aspects of my dissertation research — methodologies, theoretical frameworks, and the role of non-profit organizations. The following reflection highlights the pros and cons of the methods and theories that I used in my research. I also discuss other alternatives. Lastly, I close this section with takeaway messages for non-profit organizations serving immigrants.

8.2.1 Reflection on Methodology

8.2.1.1 Qualitative, Quantitative, and Mixed-methods Approach

Among the five studies in my dissertation, four were based on interviews and one was based on a survey. Study 4 and Study 5 were tightly linked because the former explored the research space through qualitative approaches, and the latter examined the predictors with a larger sample size through quantitative methods. To the best of my knowledge, little research has employed mixed-methods approaches to study immigrant adaptation. In past sociology and psychology research on immigrants, few qualitative studies and quantitative studies were combined to triangulate findings across studies. Furthermore, among past HCI studies on immigrants, most were based on qualitative methods, e.g., *Almohamed and Vyas* (2016, 2019); *Almohamed et al.* (2017, 2018, 2020); *Coles-Kemp et al.* (2018); *Dosono and Semaan* (2019, 2020); *Guberek et al.* (2018); *Wong-Villacres et al.* (2019a,b). Only a few studies adapted quantitative methods to understand immigrants' needs and technology uses, e.g., *Farzan et al.* (2017); *Rao and Hemphill* (2016).

I employed a mixed-methods approach to tackle this research space to combine these two approaches' advantages. The results of my research confirm that mixed-methods research provides a nice end-to-end approach to exploring transnational newcomers' needs in their technology use. More and more HCI studies have adopted

a similar mixed-methods approach to understand the needs of special populations, such as low-income job seekers (*Dillahunt and Hsiao*, 2020), children (*Lee-Cultura et al.*, 2021) and populations with mental health challenges (*Pretorius et al.*, 2020). I thus urge HCI scholars who are interested in studying transnational newcomers' needs to adapt mixed-methods techniques to this research space.

Note that, however, mixed-methods research needs more consideration in practice. For example, the time and monetary costs of mixed-methods research could be higher than those in qualitative or quantitative research. The researcher's skills to manage and interpret data across different forms are also critical in mixed-methods research. In addition, if scholars want to focus on a specific immigrant group with a smaller population, then quantitative approaches might not be applicable. These are all considerations that a researcher needs to think about when employing mixed-methods techniques to understand immigrants.

8.2.1.2 Recruitment Techniques

In my dissertation research, participant recruitment was challenging. The time between Study 2 and Study 3 was long, and the research design changed significantly over that time. After finishing Study 2 in 2018, I spent time planning studies to complete my dissertation. The main plan was to collaborate with local non-profit organizations to look for opportunities of longitudinal field research. For example, I contacted a time-banking organization in Dearborn, Michigan, and discussed the possibility of research collaboration. Dearborn had a large population of Middle Eastern immigrants, and the time-banking platform in the city was a mature system for residents to use. I also had discussions with the Washtenaw Literacy Center, which provided tutoring sessions and social events to English-as-a-second-language (ESL) learners, about collecting long-term data during workshops. These collabora-

tions were designed to allow me access to a stable participant pool and to observe transnational newcomers' adaptations over time.

Unfortunately, the coronavirus 2019 (COVID-19) pandemic began in spring 2020, which impacted my study progress. The pandemic forced many non-profit organizations throughout the United States (U.S.) to re-organize. The organizations that I worked with were in the same situation and had no additional bandwidth to hold external collaborations. Furthermore, the COVID-19 outbreak prevented people from meeting together offline. There was a period of time that people were adjusting to online meetings and gatherings. The organizations' offline activities were all canceled, but online activities were not mature yet. This time of transition exacerbated the difficulty of my study recruitment.

In addition to the COVID-19 pandemic, several social movements related to race, ethnicity, and culture happened during the time of pandemic. For example, the killing of George Floyd, a 46-year-old Black man in Minneapolis, Minnesota, and a series of other killings of Black people at the hands of police, led to widespread protests in the latest Black Lives Matter movement. At the same time, the severe acute respiratory virus 2 (SARS-CoV-2), the virus that causes COVID-19, was found to have originated in Wuhan, China, and this exacerbated discrimination and violence against people of Asian descent. The Stop Asian Hate movement thus happened to advocate for Asian descendants' rights. While these movements amplified the minority populations' voices, they might have also raised minority populations' concerns about revealing their identities publicly via participation in research studies. These combined events might have increased my recruitment difficulties.

Despite the difficulty of recruitment, I still collected enough data for my research. Across my studies, I adapted snowball sampling, convenience sampling, and reputational case sampling to recruit participants. Among these recruitment techniques, snowball sampling was the most effective. By effective, I mean the recruitment was

fast and the data quality was good. I recruited participants through my own network, given I am also an immigrant, and through prior participants' networks. Participants recruited through snowball sampling were least likely to provide ineligible data.

In contrast to snowball sampling, the advantage of convenience sampling was the simple recruitment preparation. Posting advertisements to online public spaces, such as Facebook groups and Craigslist, made it easy to reach a large number of potential participants. Nevertheless, data collected through convenience sampling were likely to include spam or otherwise ineligible responses. This can be most critical when recruiting special populations like those in my research. The data obtained from eligible participants (qualitative research) and valid responses (quantitative research) comprised only a small portion of the data I obtained. Take Study 5, for example. Although I collected more than 1,000 survey responses in a month through convenience sampling, only about 15% were valid responses. A big portion of invalid responses came from ineligible participants (e.g., Americans or second-generation immigrants) or spam (e.g., people who entered meaningless responses to open-ended survey questions). For this reason, convenience sampling requires researchers to spend more time cleaning up responses, which increases the effort needed for preprocessing data.

Last, reputational case sampling can be effective for data collection only when researchers spend time and effort participating in community partners' own activities and events. For instance, in Study 2, I started recruitment by asking the Washtenaw Literacy Center to pass out study flyers to their clients. However, the flyers led to few participants in my study. The recruitment through the Washtenaw Literacy Center became effective only after I started to participate in their tutoring sessions in person and borrowed a few minutes in the sessions to advertise my research. Participating in these activities inspired me to consider long-term collaboration with the Washtenaw Literacy Center, but this did not happen because of the pandemic, as described in prior paragraphs.

8.2.2 Reflection on Theory

8.2.2.1 Alternative Frameworks to SET

In Chapter II, I stated that SET has been well studied in past research. SET provided a good foundation for me to explore trust based on its rich past research, which is the advantage of using SET. However, as discussed in Chapter II, SET has a key assumption that humans are rational—that they make decisions that can maximize the gains. This assumption is the foundation of SET but also leads to some limitations. For example, emotion has been a factor that was considered irrational until recently, when scholars started arguing that emotion should be considered as part of the rational decision process (*Lawler et al.*, 2000; *Lawler*, 2001).

Alternative theoretical frameworks could be the broad *social capital theory*, social support (i.e., a subset of social capital theory that focuses on the resources in a relationship), or altruism (i.e., a framework that emphasizes humans' nature to help one another). However, these theories might need some adjustments to be applicable to immigrants' contexts. For example, transnational newcomers have fewer connections in the destination country, which suggests that they have less social capital. They need to first spend time developing their own networks before they have a chance to utilize this capital for their adaptation. Using SET, I was able to capture this network development process through exchange. My participants, especially those who received rich resources from local communities, stated that they desired to provide a return to their local communities in the near future, which would complete the exchange cycle.

Similarly, altruism assumes that people are willing to help one another without expecting returns. This theory could explain why local residents of the host country provide help to immigrants. For example, a recent study found that local residents of the destination country are more likely to demonstrate altruistic behavior toward

immigrants if they have long-term exposure to immigrants (*Bursztyn et al.*, 2021). However, compared to local residents, immigrants are minorities and are thus less likely to have resources that allow them to demonstrate altruistic behaviors. Under this situation, whether altruism is applicable to transnational newcomers also needs more investigation.

8.2.2.2 Alternative Frameworks to Affordance Framework

When analyzing the design of technical components, I applied the affordance framework for social commerce platforms to analyze how the design of a neighborhood-based platforms affects transnational newcomers' trust and engagement in the community. However, in the early days of my dissertation research, I also thought about using the *socialization tactics framework* (*Van Maanen and Schein*, 1979) to analyze how a local community treats members who are transnational newcomers. *Socialization* refers to "*the process by which an individual acquires the social knowledge and skills necessary to assume an organizational role*" (*Van Maanen and Schein*, 1979, p.3). In my study's context, socialization could be considered equal to adaptation, which is "*changes that take place in individuals or groups in response to environmental demands*" (*Berry*, 1997, p.13). Socialization tactics refer to techniques that a community uses to help general newcomers' socialization to the community, and there are five dimensions: collective/individual, formal/informal, sequential/random, fixed/variable, serial/disjunctive, and investiture/divestiture. Each of these dimensions depicts certain ways to support newcomers' identity development in a community. HCI scholars have also adapted socialization tactics to analyze Wikipedia communities' support to newcomers (*Li et al.*, 2020a).

I decided to use affordances because affordances are directly related to technology design, while socialization tactics focused on a community's collective behaviors to treat newcomers. Therefore, I employed the affordances framework so I could study

how different platform designs influence transnational newcomers' adaptation. The socialization tactics framework is more applicable when a study aims to understand how a community accepts transnational newcomers. Note that the affordances framework and socialization tactics framework are not mutually exclusive. Instead, they could be used to look into this research space from different points of view. Future research might study the community's view and consider what socialization tactics could help transnational newcomers' adaptation, and provide recommendations of practice to communities that are welcoming transnational newcomers.

8.2.3 The Role of Non-profit Organizations

In the process of working with these non-profit organizations (NPOs), I learned how these organizations served with their immigrant clients and the staff's observations of immigrants' resource-seeking and networking. I focused on immigrants' sides in my studies, so I did not further study these instances. I believe it is worthwhile to discuss these anecdotes with my research findings to generate preliminary insights for NPOs to leverage social media technologies in communication with immigrants.

First, a non-profit organization might want to consider extending their interactions with immigrants *beyond* their organization activities. The organizations that I communicated with had constraints on their staff's interactions with immigrant clients. The only communication channel between NPO staff and immigrant clients was email, because it was more formal and easy to track. However, including other social media technologies in the NPO-immigrant communication could improve immigrants' adaptation. As Study 3's findings suggest, a group-based platform supporting daily casual activities can help transnational newcomers develop trust and commitment in local communities. A group on Facebook or Whatsapp might foster interactions among immigrants and with friendly local residents (i.e., NPO staff) and benefit their adaptation. There could be some safety and privacy issues to consider when using

setting up these group-based online interactions. An NPO can take these concerns into accounts and plan online group interactions to support immigrants, especially newcomers, in adaptation.

Second, non-profit organizations might support existing sharing and exchanges among their clients using social media. An anecdote that I learned was that some of their immigrant clients formed a babysitting group. Four of their immigrant clients who were mothers took turns babysitting their children so that the other three mothers could hang out. This exchange provided these mothers with a trustworthy babysitting service. The children were also able to learn languages that other families spoke, which benefited their development. This instance was a small self-formed group, and an NPO can provide an online platform to encourage these in-community exchanges among their clients. In this case, an NPO plays a role of assurance to guarantee the exchanges, and the clients in the group can develop a sense of belonging. This could help immigrants' resource-seeking and their engagement with the local community.

8.3 Contributions

As researchers on immigration studies have found, technologies are a necessary element of immigrants' migration. Therefore, to understand how immigrants adapt to a new country, we need to also understand how technologies support or hinder their transition from a newcomer immigrant to a new identity (i.e., a tenured immigrant who stays in the host country or a sojourner who decides to move to another country). My dissertation makes both practical and theoretical contributions to this space. The practical contributions can benefit designers and practitioners who support immigrants. To help transnational newcomers engage and develop trust in their offline communities through online platforms, my dissertation provides insight into what technical affordances can mitigate their concerns about uncertainties and risks of networking and resource-seeking. Improving the way members connect with one

another on these platforms could make huge positive changes in newcomers' trust. Designing features that foster the shared identity of a community and the social support provided among members is also beneficial to their trust. For practitioners who manage community platforms for local areas, either ethnicity-based or not, my dissertation suggests principles to make these communities more inclusive. Mitigating transnational newcomers' sense of indebtedness and barriers to transportation could encourage their participation in a community's offline encounters, which could foster their trust in offline communities, as well. These recommendations can benefit transportational newcomers' adaptation by increasing their engagement and trust in local communities.

Theoretically, my dissertation contributes knowledge of key predictors of immigrants' trust development. My studies also provide real-world evidence to support past research on social exchange that suggests indirect exchanges are more likely to foster social actors' (i.e., transnational newcomers) trust in other social actors. My dissertation thus offers new knowledge to the intersection of research on human–computer interaction, immigration, and trust in social exchange. In observing participants' shared identity's multifaceted nature, I discovered what aspects of their perceived shared identities were critical (e.g., shared locality or ethnicity) when they participated in communities across online–offline boundaries. These findings extend the research on community commerce and hybrid community platforms that are more than platforms for information-sharing and commercial transactions. Last, my dissertation findings suggest that immigrants' perception as newcomers might not last as long as past research suggests (i.e., five years). Instead, this period could be as short as one year. This discrepancy can add new evidence to debates on the duration of immigrant adaptation in the cross-cultural psychology literature.

8.4 Future Work

How to design social media technologies to support immigrants' adaptation is still an under-explored area. My dissertation contributes findings and implications to foster transnational newcomers' trust in their offline areas through technology design. Although my research sheds light on this research space, this domain is still full of opportunities for future work. I conclude my dissertation by highlighting a few open questions for future work.

How do social media applications affect newcomers' trust, shared identity, and perceived support over time? Adaptation is a process, and the factors that I identified in these studies such as trust, perceived identity, and perceived support all change along the adaptation process. My studies captured a particular timing of participants' adaptation. Although some participants described the differences they felt between their early days in the U.S. and their recent feelings, these are retrospective evidence. My studies did not allow me to capture participants' long-term trust development and adaptation progress, and thus this is an open question for future research.

Just like past research's understanding of newcomers to online communities, newcomers have more opportunities to be exposed to a community over time. Past studies on online communities and organizational research suggested that newcomers go through identity transitions. Newcomers move from resource receivers to givers as their time in a community increases, and their trust in the community can also develop as other psychological factors develop (such as sense of belonging). For example, Dosono and colleagues' studies on Asian American and Pacific Islander (AAPI) communities on Reddit identified how AAPI immigrants' social identities developed through collective resilience practices such as recording collective memory and revising cultural narratives (*Dosono and Semaan*, 2019, 2020). How these changes happen

to broader transnational newcomers who need to adjust to their new online and offline environments is worth further exploration.

How do the use of social media applications differ among newcomers with different acculturation strategies? All of the participants in my qualitative studies had basic English literacy skills to be interviewed, and most of them were willing to get in touch with American mainstream society. The backgrounds of these participants suggest that their strategies of acculturation were likely to be staying in contact with the host country society. However, my studies were not able to provide evidence to distinguish whether their strategies were integration (i.e., retaining their heritage culture) or assimilation (i.e., discarding their heritage culture). Therefore, it is unclear whether these two groups had different behavior when they used social media applications for local areas.

Past research found that immigrants who used local media (including traditional media such as TV, radio, and newspapers; and online media such as websites or applications) were more likely to have a smooth adaptation (*Chen*, 2010). In my studies, some participants mentioned that they felt more comfortable staying on platforms with local communities who had similar cultural backgrounds, and other participants tended to rely on platforms with members from the American mainstream societies.

At the end of day, integration and assimilation are not two discrete strategies. Instead, they are on a continuous spectrum. Immigrants sometimes change their strategies on the spectrum over time. Furthermore, it is very likely that no participants employed separation or marginalization strategies in my studies. Technologies' roles are thus unclear in the adaptation of newcomers who employ the strategies of separation and marginalization. How these differences in acculturation strategies were interwoven with their technology use is an open question in the research space.

What are transnational newcomers' needs in transportation, and how to support these needs? Transnational newcomers' lack of transportation was a common theme that emerged across my studies. Although the lack of transportation was not directly related to transnational newcomers' interactions with other community members *online*, it hindered transnational newcomers' *offline* interactions. In fact, the lack of transportation could prevent immigrants from accessing local resources and networks (*Bohon et al.*, 2008; *Lo et al.*, 2010). When transnational newcomers developed interest in meeting other community members offline, they often did not own a car or have access to convenient public transportation. In fact, transnational newcomers were less likely to own a car compared to local populations and long-term immigrants (*Chatman and Klein*, 2013, 2009; *Kim*, 2009). Public transportation systems, however, are not well developed in many areas of the U.S. Such transportation limitations make it difficult for transnational newcomers, and likely general newcomers, to meet other community members offline.

Future research should continue to explore transnational newcomers' transportation needs and how technologies can help. A few research directions are as follows. First, on-demand ride-hailing applications such as Uber and Lyft have been popular. In addition to providing rides, ride-hailing applications provide opportunities for passengers to develop social and cultural capital by talking to the driver or traveling through neighborhoods (*Kameswaran et al.*, 2018). To transnational newcomers, real-time ridesharing services like Uber and Lyft provide opportunities to meet local community residents and access local information, but few of my participants mentioned using these applications. In addition, concerns such as discrimination and safety issues are common among people who might use ride-hailing applications (*Chaudhry et al.*, 2018; *Ge et al.*, 2016). Future research could further investigate how ride-hailing applications could benefit transnational newcomers, and whether this population has concerns that differ from the general population.

Another opportunity is to build a community-based ride-sharing system to provide transnational newcomers with reliable transportation. My participants mentioned that ride-sharing was one of the instrumental resources that they looked for from neighborhood-based online groups. Past research also argues for neighborhood-level solutions to address immigrants' transportation needs, which could improve their adaptation (*Chatman*, 2013). However, the ride-sharing services used by my participants were based on *a set of individuals* instead of *a collective*. A collective mechanism that emphasizes shared value and co-production among members, such as time-banking (*Bellotti et al.*, 2014) or platform co-ops (*Scholz*, 2016), can increase members' access to local resources and enhance marginalized groups' engagement in a community (*Marks*, 2012; *Ozanne*, 2010). If a local community could organize such collective mechanisms for ride-sharing, transnational newcomers and other populations who lack transportation could largely benefit from these services. Future research could explore opportunities for community-based ride-sharing systems to support transnational newcomers.

APPENDICES

APPENDIX A

Study 1's Interview Protocol

Opening

1. Introduce the study to the participant: "*We are going to interview you for your experience using people-nearby applications. The interview will be no more than one hour. You can feel free to stop or interrupt whenever necessary.*"
2. Ask the participants to read the consent form and see if she/he has any question.
3. Ask the participant to introduce himself/herself: "*Please briefly introduce yourself, like your job, personality, hobbies.*"
4. Could you describe your experience living in your current area? If so, can you describe some local events you participated in?

Use of People Nearby Applications

1. Explain PNA's definition: "*People-Nearby applications are mobile applications that allow users to discover new people using geographical proximity search and online communication. For example, Tinder, Banjo, or Badoo. Which PNA do you use?*"

2. "*Please describe your experience using the application.*" Follow-up with questions such as: "*how long have you had this application, why did you installed it...*"
3. "*Please describe your motivation of using this application.*" Follow-up with questions such as: "*Have you ever used this for finding any specific information? Any specific events?*
4. "*Have you met someone you have never met before using this application?*"
   (a) (If yes) "*Can you describe some experience about meeting new people through the application. Are they from the same or near neighborhood, or one nearby? Did you approach them or they approach you?*"
   (b) "*Did you learn any thing from them? Can you talk about what you learn?*"
   (c) "*Did you share any information with them?*"
5. "*Have you ever met your own friends using the application?*"
6. "*Can you describe the type of information you consumed from the application itself?*" Follow up with questions such as, "*was the information useful or no use?*"
7. "*Have you learned about new events using this app? If so, did you attend the event? Can you describe the event you last attended?*"
8. "*Did you learn anything new from the application itself? If so, what did you learn? Do you share the information with any other people? If so, what did you share?*"
9. "*Can you show me how you use the app in the past?*" Ask the participant to open the app and show how they usually use it. Follow up with questions such as, "*How do you find new information? How do you meet new people?*"
10. "*Have you tried any other similar applications? If so, what are they? Any reasons about using them/why you stopped using them?*"

11. "*We have some other similar applications (collected from extant literature, pilot study, or web ratings), what are your thoughts on these apps?*"
12. "*Do you have any other friends using this app? How and why do they use the app?*"

APPENDIX B

Study 2's Interview Protocol

Opening

1. "*Can you tell me a little about yourself*?" Probe for how long they have lived in the U.S., their motivation of moving to the U.S., etc..., and their support systems.
2. "*Can you describe the people you know in the U.S.?*"
   (a) "*How and where did you meet them? Are there other ways that you meet others?*" Probe with "*Through other people, organizations, or any other ways?*"
   (b) "*Can you describe what your relationships are like? How frequently do you contact each other online and offline*?"
   (c) "*How do you keep contact with each other? Who typically initiates the contact?*"
3. What do you think about meeting new people in the U.S.? Probe with "*Is it easy or challenging*?"
4. "*What do you find to be your toughest challenges living here?*" Probe for finding jobs, making new friends, shopping, transportation, etc.

Social Media Technology Use

"*Now, I would like to ask you a few questions about the applications and websites you used most frequently.*"

1. "*Can you tell me the 10 apps you use most frequently on your phone and 10 websites you browse most frequently?*" Note: may include applications that provide social aspects but not necessarily typical social network sites.
2. (Pick up any apps/websites that may have social aspects) "*Can you go through your use of this application/website with me?*" Follow up with the following questions, and iterate for 3 - 5 application/websites.
   (a) "*Who do you usually interact with on the app/website?*"
   (b) "*Have you met any new people on these platforms? If so, please share your experience meeting new people with me.*"
3. "*Can you tell me the differences between your use of [A application] and [B application]?*"

Perception of Meeting New People Online

"*Now, I'd like to ask you a few questions about using social media applications to meet new people.*"

1. "*Have you ever used any social media applications to meet new people*?"
   (a) (If yes) "*Can you share your latest experience using social media applications to meet new people with us*?" and "*Are there any specific types of people in mind that you would like to meet on these applications? Why or why not?*"
   (b) (If no) "*Why didn't you meet people using any social media applications to meet new people*?"
2. "*What purposes do you think these applications should serve?*"
3. "*What features do you think the application should have?*"

4. "*Are there any opportunities that you think you could benefit from from using social media technologies to meet new people?*" (Probe with "learn about local communities", "find similar/dissimilar people", and "find people outside of the city.")
5. "*Do you know of any applications that exist that work in this way?*"
   (a) (If yes) "*Please describe your perceptions of these applications.*"

Networking

1. "*What kind of people do you usually hang out with? (Probe: people with similar cultural background? People with the same mother tongue? Locals?)*"
2. "*Have you met any people from your home country who have stayed in your area longer/shorter than you? Can you talk a little bit about your interactions and relationships?*"
3. "*Have you met any people (who are not from your home country)? Can you talk a little bit about your interactions and relationships?*"
4. "*Do you know any organizations supporting immigrants (in your race) in your area?*"
   (a) "*Do you know the organizations' services?*"
   (b) "*Have you interacted with them?*"

Brainstorming

"*Now, I would like to ask you to do a quick brainstorming.*"

1. "*If you can create some technology to solve problems for immigrants just like you, what technology or service would you create? Why or why not?*"

APPENDIX C

Study 3's Interview Protocol

General Experience of Online Social Exchange through Local C2C E-commerce Platforms

1. "*Before we talk about your experience in online local sharing, can you briefly describe your experience moving to the U.S.?*"
2. "*What was the biggest challenge in your life in America, and what did you do to address these challenges?*"
3. "*Can you tell me about the experience you mentioned in your response to the sign-up survey?*" Probe with the following questions if necessary:
   (a) "*What was the social media platform that you used for that certain sharing?*"
   (b) "*What was the resource you provided or received at that time? What else had you provided or received before?*"
   (c) "*How often do you use this platform to find local sharing? And how often do you share items or services on the platform?*"
   (d) "*Besides sharing items and services, is there anything you do on the platform/in the group?*"

Experience as a Transnational Newcomer on Local C2C E-commerce Platforms

1. "*How does this platform affect your transition to the U.S. society?*"
2. "*How does your identity as a newcomer/an immigrant affect your feeling and usage of the platform?*"
3. "*Has anything changed when you used the [platform] when you just arrived in the U.S.?*"

Trust Development on Local C2C E-commerce Platforms

1. "*When you used the platform for local sharing, was there a time you felt trust or distrust in the user community on the platform? What happened and why did you feel so?*"
2. "*When you used the platform for local sharing, was there a time you felt trust or distrust in the website/application provider? What happened and why did you feel so?*"

Perceived Shared Identity on Local C2C E-commerce Platforms

"*Thinking about your past experience using [platform]. Has there ever been a time that you felt that other members on the platform were so similar or so different from you?*"

1. "*What made you feel that people on the platform were similar to/different from you?*"
2. "*How did this feeling affect your use of the platform?*"

Notes

- Study 3's was a pilot study for testing the interview script, and the revised version was used in Study 4. After I finished data collection for Study 3, I

decided to focus on shared identity and discarded other aspects because of the data quality. Thus, I only include interview questions that contributed to Study 3's findings here.

- The "social sharing" in this script refers to "social exchange" in my other studies. I found "social exchange" was confusing to participants when I started study 3, so I replaced it with "social sharing", which was easier for participants to understand.

APPENDIX D

Study 4's Interview Protocol

General Experience of Online Social Exchange through Community Commerce Platforms

1. "*Before we talk about your experience in online local sharing, can you briefly describe your experience moving to the U.S.?*"
2. "*What was the biggest challenge in your life in America, and what did you do to address these challenges?*"
3. "*Can you tell me about the experience you mentioned in your response to the sign-up survey?*" Probe with the following questions if necessary:
   (a) "*What was the social media platform that you used for that certain sharing?*"
   (b) "*What was the resource you provided or received at that time? What else had you provided or received before?*"
   (c) "*How often do you use this platform to find local sharing? And how often do you share items or services on the platform?*"
   (d) "*Besides sharing items and services, is there anything you do on the platform/in the group?*"

Experience as a Transnational Newcomer on Community Commerce Platforms

1. "*How does this platform affect your transition to the U.S. society?*"
2. "*How does your identity as a newcomer/an immigrant affect your feeling and usage of the platform?*"
3. "*Has anything changed when you used the [platform] when you just arrived in the U.S.?*"

Trust Development on Community Commerce Platforms

1. "*When you used the platform for local sharing, was there a time that you trusted or distrusted in the user community on the platform? What happened and why did you feel so?*"
2. "*When you used the platform for local sharing, was there a time that you trusted or distrusted in the website/application provider? What happened and why did you feel so?*"

Perceived Social Presence on Community Commerce Platforms

"*First, I'd like to discuss the concept of social presence. Social presence means that your sense that other users on the platform are real and not fake. You think these people actively using the platform. Thinking about your past experience of local social exchange using the [platform].*"

1. "*Has there ever been a time that you felt that other members on the platform were real or unreal?*"
2. "*What made you believe that people on the platform were real or unreal?*"
3. "*How did this feeling affect your use of the platform?*"

Perceived Social Support on Community Commerce Platforms

"*The next concept I'd like to talk about is social support. Social support means that you sense the people on the platform are supportive. The interaction with members on the platform was enjoyable and encouraging. Thinking about your past experience of local social exchange using [platform].*"

1. "*Has there ever been a time that you felt that other members on the platform were supportive or not supportive?*
2. "*What made you feel that people on the platform were supportive or not supportive?*"
3. "*How did this feeling affect your use of the platform?*"

Perceived Shared Identity on Community Commerce Platforms

"*The next concept I'd like to talk about is shared identity. Shared identity means that you sense the people on the platform are similar to you. Thinking about your past experience using [platform].*"

1. "*Has there ever been a time that you felt that other members on the platform were so similar or so different from you?*"
2. "*What made you feel that people on the platform were similar to/different from you?*"
3. "*How did this feeling affect your use of the platform?*"

Perceived Information Quality on Community Commerce Platforms

"*The next concept I'd like to talk about is information quality. Information quality means whether the information is sufficient, is accurate, or is new enough. The information on the platform is good enough for people to decide to exchange things. Thinking about your past experience of local social exchange using [platform].*"

1. "*Has there ever been a time that you felt the information has good quality or bad quality?*"
2. "*What made you feel the information has a good/bad quality?*"
3. "*How did this feeling affect your use of the platform?*"

Perceived Safety on Community Commerce Platforms

"*The next concept I'd like to talk about is perceived safety. Perceived safety means you feel the exchange and exchange-related information is secured on this platform. Thinking about your past experience of local social exchange using [platform].*"

1. "*Has there ever been a time that you felt the information is safe or not?*"
2. "*What made you feel safe/unsafe on this platform?*"
3. "*How did this feeling affect your use of the platform?*"

APPENDIX E

Study 5's Survey Instruments

Consent & Instruction

Exploring Transnational Newcomers' Experience in Facebook Groups for Local Communities

The Social Innovations Group at the University of Michigan's School of Information is looking for **foreign-born populations who use Facebook in the U.S.** If you agree to be part of the research study, you will be asked to respond to a 15-minute survey.

Compensation

- We will raffle a $30 e-gift card (your choice of Amazon, Walmart, or Target) for every 30 valid responses we receive. We will communicate with the respondents using email about the raffle results before the end of June 2021.
- If you respond to this survey multiple times from different platforms/websites, only your earliest response will be considered valid for the raffle. If you've received direct incentives for this survey study from other online panel platforms, you will not be eligible for the raffle.
- Low quality responses will be considered invalid. You will not be able to attend the raffle if your response is in a low quality.

Eligibility

To be eligible for the survey, you need to satisfy all the following criteria:

- You are currently 18 years or older;
- Your country of birth is not the United States;

- You currently live in the U.S., regardless of your legal identity (permanent resident, international student, foreign worker, etc.), and you are not a short-term traveler or tourist;
- You browse Facebook a few times a week or more frequently.

Risks and Discomforts

There are no immediate risks from participating in this research other than revisiting those you encountered in day-to-day life.

Contact

If you have questions about this research study, please contact:

- Research Team: umsi-newcomer-study@umich.edu
- Principal Investigator: Chiao-Yin Hsiao, PhD Candidate, School of Information, University of Michigan, jcyhsiao@umich.edu
- Faculty Advisor: Dr. Tawanna Dillahunt, Associate Professor, School of Information, University of Michigan, tdillahu@umich.edu

As part of their review, the University of Michigan Institutional Review Board (IRB) Health Sciences and Behavioral Sciences has numbered this project HUM00199170 and determined that this study poses no more than minimal risk and is exempt from ongoing IRB oversight.

Please see the information sheet below for detailed information (The link opens a new tab/window of your browser).

Survey Information Sheet

What is your year of birth? (Please enter a 4-digit year)

Were you born outside the U.S.?

- ◯ Yes
- ◯ No

Do you currently live in the U.S.?

- ◯ Yes
- ◯ No

Do you browse Facebook a few times a week or more frequently?

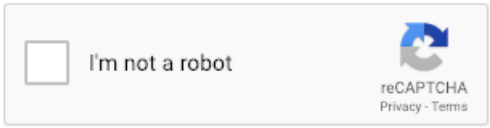
- ◯ Yes
- ◯ No

Please check the following statements before you proceed.

- ◯ **I agree to participate in the research study. I understand the purpose and nature of this study and I am participating voluntarily. I understand that I can withdraw from the study at any time, without any penalty or consequences.**

Attention Checking Code

Before you proceed to the survey, please complete the Captha below.



Attention Check Code: 2FACC063

We will ask you what the code is in the survey. Please keep this code in mind when you respond to the survey.

Immigration Experience

Where is your country of birth (i.e., the country where you were born)?

If your country(s) of birth is (are) not listed in the prior question, please describe it (them) here.

How would you describe your primary identity/identities in **your first year in the U.S.**? Please select all that apply.

- [ ] An employee approved to work in the U.S.
- [ ] Family of an employee(s) who worked in the U.S
- [ ] Family of a U.S. citizen(s) or permanent resident(s)
- [ ] International, exchange, or visiting student
- [ ] Permanent resident who won a green card lottery
- [ ] Family of an international or visiting student(s)
- [ ] Other, please specify
- [ ] Prefer not to disclose

In what year did you move to the United States? (Please enter a 4-digit year)

In what month did you move to the United States? (Please enter 1 - 12)

In what year did you move to your current U.S. city/town? (Please enter a 4-digit year)

In what month did you move to your current U.S. city/town? (Please enter 1 - 12)

Group use: Y/N?

Are you a member of any Facebook (FB) group for your local areas (e.g., neighborhood, town, or city that you live in the U.S.)?

- ◯ Yes
- ◯ No

Attention checking 1

What was the **Attention Check Code** presented on the first page? Selecting the incorrect attention check code will end the survey directly.

- ◯ 2FACC063
- ◯ 4ACD556
- ◯ 5CCBD981

No-group Experience

What is your reason for not joining local FB groups? Please use two sentences to describe the reason(s).

How do you learn about local information? Please use two sentences to describe.

Do you use any other social media applications to interact with local communities in your neighborhoods or cities?

- [ ] Reddit
- [ ] NextDoor
- [ ] Quora
- [ ] Twitter
- [ ] LinkedIn
- [ ] Other (please specify)
- [ ] I don't use any social media applications to interact with my local communities
- [ ] Prefer not to say

Community Experience

Think about the Facebook (FB) group for **your local area** that you browse the most often. Are the people in the group from your local city, town, or neighborhood in the U.S.?

- ◯ City or town
- ◯ Village or neighborhood
- ◯ Other (please specify)
- ◯ They are not local from where I live in the U.S.

Think about the FB group for your local area that you mentioned in the previous question.

Who are the members of this FB group? Please use two sentences to describe the community in the FB group.

Think about the FB group for your local area that you mentioned in the previous question.

What area is this group about (e.g. New York City, Orange County, Great Hill Neighborhood, etc.)? Please use a sentence to describe it.

How many members does this FB group have? You can answer with an approximate number such as "about 3000", "approximately 15000", or "about 500".

What is the privacy level of this FB group?

- ◯ Open: anyone on or off Facebook can see who's in the group and what they post.
- ◯ Closed: only members can see who's in the group and what they post.

In what year did you join this FB group? (Please enter a 4-digit year)

In what month did you join this FB group? (Please enter a number between 1 - 12)

Affordance: metavoicing

Think about your experience in the FB group you mentioned earlier, how much do you agree with the following statements?

	Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree

	Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree
The group allows me to share my opinion about the area.	○	○	○	○	○	○	○
The group allows me to comment on posts.	○	○	○	○	○	○	○
The group allows me to react to other members' comments about the area.	○	○	○	○	○	○	○
The group allows me to share my life experiences in the area with other members.	○	○	○	○	○	○	○
The group allows me to join members' discussions about the area.	○	○	○	○	○	○	○

Affordance: social connecting

Think about your experience in the FB group you mentioned earlier, how much do you agree with the following statements?

	Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree
The group enables me to make friends with members I have never met.	○	○	○	○	○	○	○
The group enables me to connect with other members to share local information together.	○	○	○	○	○	○	○
The group allows me to connect with members who can offer me detailed information about the area by introducing me to other people.	○	○	○	○	○	○	○
The group enables me to get local information through connections with other members.	○	○	○	○	○	○	○

Perceived social presence (Data not used)

Think about your experience in the FB group you mentioned earlier, how much do you agree with the following statements?

	Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree
There is a sense of sociability in the group.	○	○	○	○	○	○	○
There is a sense of human contact in the group.	○	○	○	○	○	○	○
There is a sense of human warmth in the group.	○	○	○	○	○	○	○
There is a sense of human sensitivity in the group.	○	○	○	○	○	○	○
There is a sense of personalness (i.e. feels like real people) in the group.	○	○	○	○	○	○	○

Perceived social support

Think about your experience in the FB group you mentioned earlier, how much do you agree with the following statements?

	Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree
I don't often get invited to do things with others in the FB group.	○	○	○	○	○	○	○
If I wanted to have lunch with someone, I could easily find someone in the FB group to join me.	○	○	○	○	○	○	○
When I need suggestions on how to deal with a personal problem, I know someone in the FB group I can turn to.	○	○	○	○	○	○	○
If I had to go out of town for a few weeks, it would be difficult to find someone in the FB group who would look after my house or apartment (the plants, pets, garden, etc.)	○	○	○	○	○	○	○
	Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree

	Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree
If I were sick, I could easily find someone in the FB group to help me with my daily chores.	○	○	○	○	○	○	○
If I needed some help in moving to a new house or apartment, I would have a hard time finding someone in the FB group to help me.	○	○	○	○	○	○	○
If I wanted to go on a trip for a day (for example, to the country or mountains), I would have a hard time finding someone in the FB group to go with me.	○	○	○	○	○	○	○
There is someone in the FB group I can turn to for advice about handling problems with my family.	○	○	○	○	○	○	○

	Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree
If a family crisis arose, it would be difficult to find someone in the FB group who could give me good advice about how to handle it	○	○	○	○	○	○	○
I feel that there is no one in the FB group that I can share my most private worries and fears with.	○	○	○	○	○	○	○
If I decide one afternoon that I would like to go to a movie that evening, I could easily find someone in the FB group to go with me.	○	○	○	○	○	○	○
If I was stranded 10 miles from home, there is someone in the FB group I could call who could come and get me.	○	○	○	○	○	○	○

Perceived shared identity

Think about your experience in the FB group you mentioned earlier, how much do you agree with the following statements?

	Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree
I am similar to the average member of this group.	○	○	○	○	○	○	○
This group's members have a lot in common with each other.	○	○	○	○	○	○	○
I have a lot in common with the average member of this group.	○	○	○	○	○	○	○
This group's members are very similar to each other.	○	○	○	○	○	○	○

In addition to living in the same area, do members in the FB group share anything else in common? Select all that apply.

- ☐ Same/similar social identities (e.g., parenthoods, occupations, health status)
- ☐ Same/similar institutions (e.g., school, company)
- ☐ Same/similar gender or sexual orientation
- ☐ Same/similar interest (e.g., sports, cooking, movies)
- ☐ Same/similar ethnic, national, and racial identities
- ☐ _____ Other
- ☐ The group members do not have anything in common

Affective engagement (Data not used)

Think about your experience in the FB group you mentioned earlier, how much do you agree with the following statements?

	Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree or Disagree	Somewhat Agree	Agree	Strongly Agree
I feel enthusiastic about the community in the FB group	○	○	○	○	○	○	○
I am interested in everything about the FB group	○	○	○	○	○	○	○
I find the FB group interesting	○	○	○	○	○	○	○

	Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree or Disagree	Somewhat Agree	Agree	Strongly Agree
	Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree or Disagree	Somewhat Agree	Agree	Strongly Agree
When interacting with the FB group, I feel happy	○	○	○	○	○	○	○
I get pleasure from interacting with the FB group	○	○	○	○	○	○	○
Interacting with the FB group is like a treat for me	○	○	○	○	○	○	○

Behavioral engagement (Data not used)

Think about your experience in the FB group you mentioned earlier, how much do you agree with the following statements?

	Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree or Disagree	Somewhat Agree	Agree	Strongly Agree
I say positive things about the FB group to other people	○	○	○	○	○	○	○
I try to get others interested in the FB group	○	○	○	○	○	○	○
I seek help from the FB group	○	○	○	○	○	○	○
I promote the FB group	○	○	○	○	○	○	○
I share interesting content with the FB group	○	○	○	○	○	○	○
	Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree or Disagree	Somewhat Agree	Agree	Strongly Agree
I actively defend the FB group from its critics	○	○	○	○	○	○	○
I seek ideas or information from FB group	○	○	○	○	○	○	○
I share my ideas with the FB group	○	○	○	○	○	○	○
I offer help to members in the FB group	○	○	○	○	○	○	○
I ask questions in the FB group	○	○	○	○	○	○	○

Cognitive engagement (Data not used)

Think about your experience in the FB group you mentioned earlier, how much do you agree with the following statements?

	Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree or Disagree	Somewhat Agree	Agree	Strongly Agree
When I am interacting with the FB group, I get carried away (i.e. so excited that I cannot control myself)	○	○	○	○	○	○	○
When interacting with the FB group, I forget everything else around me	○	○	○	○	○	○	○
I make time to think about the FB group	○	○	○	○	○	○	○

	Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree or Disagree	Somewhat Agree	Agree	Strongly Agree
I spend a lot of time thinking about the FB group	○	○	○	○	○	○	○
When interacting with the FB group, it is difficult to detach myself	○	○	○	○	○	○	○
Time flies when I am interacting with the FB group	○	○	○	○	○	○	○

Trust

Think about the community in your local area (i.e., neighborhoods, towns, or cities) in the U.S., how much do you agree with the following statements?

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
I trust people in my local community to be willing to look for better ways of doing things.	○	○	○	○	○	○	○
I trust people in my local community to work together to get things done in my community.	○	○	○	○	○	○	○
I trust people in my local community to do what's best for the community.	○	○	○	○	○	○	○

Attention checking 2

What was the **Attention Check Code** presented on the first page? Selecting the incorrect attention check code will end the survey directly.

- ◯ 2DD9CF08
- ◯ 11BDC945
- ◯ 2FACC063

Demographics

What is your **gender**?

- ◯ Woman
- ◯ Man
- ◯ Non-binary
- ◯ Prefer not to say
- ◯ [ ] Prefer to self-describe (please specify)

Please indicate the answer that includes your entire household income in 2020 before taxes.

- ◯ Less than $10,000
- ◯ $10,000 to $19,999
- ◯ $20,000 to $29,999
- ◯ $30,000 to $39,999
- ◯ $40,000 to $49,999
- ◯ $50,000 to $59,999
- ◯ $60,000 to $69,999
- ◯ $70,000 to $79,999
- ◯ $80,000 to $89,999
- ◯ $90,000 to $99,999

- ◯ $100,000 and more
- ◯ Prefer not to say

What is the highest grade of education you have completed?

- ◯ Less than high school
- ◯ High school graduate
- ◯ Some college
- ◯ 2 year degree (Associates)
- ◯ 4 year degree (Bachelor's)
- ◯ Some graduate training
- ◯ Professional degree
- ◯ Master's degree
- ◯ Doctorate
- ◯ Prefer not to say
- ◯ _____ Other (please specify)

Choose the racial and ethnic group(s) that you consider yourself to be (please select all that apply):

- ☐ American Indian or Alaska Native
- ☐ Native Hawaiian or Pacific Islander
- ☐ Asian
- ☐ Hispanic, Latino, or Spanish origin
- ☐ Black or African American
- ☐ White
- ☐ _____ Other (please specify)
- ☐ Prefer not to say

Do you own a car or access to a car?

- ◯ Yes
- ◯ No

What transportation do you use when/if you do not drive? Select all that apply.

- ☐ Ride-sharing or carpooling with others (e.g., family, friends, or neighbors)
- ☐ Car-sharing applications (e.g., Turo)
- ☐ Car rental services (e.g., Enterprize, Hertz)
- ☐ Car-hailing services (e.g., taxis)
- ☐ Public transportation (e.g., bus, subway)
- ☐ Walking or riding a bike
- ☐ Car-hailing applications (e.g., Uber, Lyft)
- ☐ Car rental applications (e.g., Zipcar)
- ☐ [ ] Other (please specify)
- ☐ Prefer not to say

In which state do you currently reside?

[▾]

What is your ZIP code?

[ ]

How many people live in your household (including yourself and your dependents)?

[ ]

Verification Questions

Where is your country of birth? (Verification Question)

Where is the capital city of your country of birth?

How would you describe your primary identity/identities in **your first year in the U.S.**? (Verification Question)

Contact information

We will raffle a $30 e-gift card (your choice of Amazon, Walmart, or Target) for every 30 valid responses we receive. If you want to be included in the raffle, please leave your contact information below. We will contact you in late June 2021 for the raffle results through email.

We will not use your contact information for any other purposes.

Your full name

Email address

We may reach out to you for follow-up questions through email after we review your response. Would you be willing to be contacted for follow-up questions?

- ◯ Yes
- ◯ No

Where did you hear about our survey (e.g., Craigslist, Facebook, referred by friends, etc.)?

Thank you for responding to our survey. If you have any comments or questions for the research team, please leave them here. Please proceed to the next page to properly close the survey.

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