Intention and Perceived Control: International Migrants' Assimilation in China

Zhenxiang Chen¹ · Xiaoguang Fan²

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Abstract

Using the unique Survey of Foreigner Residents in China from 2018 to 2019, this study examines the assimilation of international migrants in China by considering how migrants' intention to assimilate and perceptions of local control affect their behavior, which in turn affects their assimilation outcomes. The main behavior upon which we focus on is the formation of a host social network. Regression analyses and formal mediation analyses are performed to explore how intention and perceived control serve as motivators or barriers that facilitate or restrict international migrants' acculturation and structural assimilation via host social network formation or other behaviors. Our results show that migrants' intention to assimilate has significant effects on their acculturation and structural assimilation outcomes via the establishment of a host social network and via other behaviors. As a result, it has a strong total impact on migrants' assimilation outcomes, as tested with a formal Sobel test. Migrants' perceptions of local control, in contrast, have negative direct effects on both acculturation and structural assimilation, but no significant indirect effects are identified, which suggests that perceived local control may not affect migrants' formation of a host social network but may influence other behaviors. From the Sobel test, we find no evidence of total effects from the perceptions of local control.

Keywords Intention · Perceived control · Assimilation · International migration · China

✉ Xiaoguang Fan
xgfan@zju.edu.cn

¹ Department of Sociology, McGill University, Quebec, Montreal, Canada

² Department of Sociology, Zhejiang University, Zhejiang, Hangzhou, China

Introduction

In this study, we explore the acculturation and structural assimilation of international migrants in China using the Survey of Foreigner Residents in China from 2018 to 2019 (SFRC2018-2019). Acculturation is the process of adopting cultural behaviors and norms of the host society, such as language, dress, and daily customs while structural assimilation is the process of entering the social structure of the larger society (Gordon, 1964). As a country with great potential for future immigration, China is attracting an increasing number of international migrants from a large number of countries of origin and broad migration categories.

A new model of international economic cooperation proposed by China—The Belt and Road Initiative—is playing a significant role in shaping the potential immigration flow. It facilitates cultural exchanges and public opinion expressions, which highly increases the number and diversity of migrants coming to China. According to statistics from the Ministry of Education of China, 292,611 foreign students came to China in 2011 and that number increased to 492,185 by 2018—close to a 70% increase in 7 years (Ministry of Education, 2019). In 2019, China ranked second globally, after the USA, in terms of the number of international students received (Liang & Wang, 2021). The current immigration in China provides a unique opportunity to gain new insights into migration and assimilation. In particular, an exploration of the assimilation process of international migrants in China would add to our understanding of how migrants from diverged developing and developed countries assimilate into a growing, developing country like China.

Our analytical framework is based on the theory of planned behavior (TPB) (Ajzen, 1991). We aim to apply this theory to explore the behavioral pathways to assimilation for international migrants in China. Assimilation theories have comprehensively explained how migrants assimilate over time. Warner and Srole's (1945) "straight-line" assimilation theory suggests linear advancement in assimilation over generations. Within a generation, we can also observe that immigrants follow a specific linear path to acculturate in the host country (Scholten, 2011). Besides, in linear path, Gans (1992) suggests that assimilation can be non-linear across generations, that is, the so-called bumpy line assimilation. Later, Portes and Zhou (1993) further consider the possibility of assimilating into different sectors of US society, some of which can result in downward assimilation. The latest elaboration of the assimilation process with the intersectionality theory suggests that intersections of race, class, gender, and social space could largely shape local attitudes toward immigrants (Berg, 2010). Despite the vast literature on the assimilation process, no study has formally proposed or tested behavioral pathways to assimilation from migrants' perspective through often unobserved psychological factors. We aim to explore the initially driven forces to their behaviors, such as their aspirations, intentions, and perceptions. In particular, we take into account the ways that migrants' intention to assimilate and their perceptions of local control affect their behavior and, thus, their assimilation outcomes. We do not aim to explore the formation of their behavioral intention (i.e., migrants'

intention to assimilate); instead, we focus on the consequences of their behavioral intention and perceptions of control. These findings not only contribute to the literature on international migration in China but also shed light on the potential behavioral pathways for assimilation of international migrants.

We begin with regression analyses and follow with formal mediation analyses using general structural equation models (GSEMs). We also conduct multiple sets of sensitivity analyses, the results of which suggest that our results are robust. We find that the intention to assimilate has significant effects on migrants' acculturation and structural assimilation via forming a host social network and via other behaviors, leading to a substantial total impact. We also find evidence of the direct effects of perceived local control on both acculturation and structural assimilation, but no evidence to support the existence of indirect effects via the formation of a host social network. This suggests that although some behaviors are affected by perceived local control, host social network formation is not among them. Moreover, we find no significant total effects from perceived local control, likely because channels other than host social network formation may not be strong enough to influence assimilation outcomes.

We contribute to the literature on international migration by understanding the behavioral pathways for the assimilation of international migrants in China. We also contribute to the literature of migration and assimilation in a broader sense by proposing a behavioral model that takes into account how behaviors are formed by migrants' intention to assimilate and their perceptions of local control, which in turn affect their assimilation outcomes.

Background

International Migrants in China

Migration in China mostly comprises internal rural-to-urban migration and international emigration that stems from multiple areas and multiple groups across China. China's transition into a market economy and its growing economy have motivated both types of migration, leading to a sharp increase in the number of migrants over time. Nevertheless, international immigrants have grown significantly as well but have mainly been neglected, leading to an incomplete picture of migration in China. Although the relative extent of international immigration may not be significant when compared to China's population, its absolute magnitude is quite large. According to the International Migration Report 2017, China had 1 million international migrants in 2017 (United Nations, Department of Economic and Social Affairs, Population Division, 2017). The same report indicated that this number nearly doubled between 2000 and 2017. A precise prediction is not possible at this time, but based on the pattern, one can expect that the scale of immigration will continue to increase as China's economy grows (Liang, 2014).

The consequences of large-scale international migration to China could be significant. The most urgent issue could be the assimilation of international migrants. From the migrants' perspective, assimilation can be directly linked with their

Figure 1 Immigration diversification, Hangzhou 2018–2019

well-being outcomes (Fan et al. 2020; Melzer & Muffels, 2017). From the perspective of local residents, the assimilation of migrants could have a significant link to social cohesion (Gowricharn (2002). Because international immigration to China remains in an early phase, in which the role of cumulative causation is strengthening and far from saturation (Bachmeier, 2013), a massive increase could be seen in the number of international migrants, including illegal migrants (Liang, 2014). Although the size of international migrants is relatively small compared to the population size of China, as the number further increases, the assimilation level of these international migrants could still have a significant influence on diverse communities in China (Lehmann & Leonard, 2019). For example, the risen of African communities in Guangzhou formed “African enclaves,” where hostility, suspicion, and mistrust emerged between local residents and African migrants, and thus affecting social cohesion in these communities (Lan, 2015; Li et al., 2012; Liang & Le Billon, 2020). Besides, at the macro-policy level, the level of assimilation could shape policymaking regarding international migrants in China.

International Migrants in Hangzhou

Hangzhou is a central city in the Yangtze River Delta, which is the crossing point of the extension of the “Silk Road Economic Belt.” Hangzhou has a significant number of foreigners. According to the most recent report, temporary foreigners (i.e., those staying in Hangzhou for <6 months) accounted for 700,000 to 1 million, and the number of permanent foreigners (i.e., those who hold residence visas) was around 20,000 (International Migration Team, 2019). Moreover, the development of Hangzhou’s digital economy, the implementation of international talent introduction programs, and the hosting of major international events (e.g., G20 and the 2022 Asian Games) could lead to significant growth in the number of foreigners.

Hangzhou is also a host to international migrants from a wide variety of origins (Figure 1). Summary statistics show that the respondents of the SFRC2018–2019 came from 123 countries and various regions. Moreover, according to the

latest analysis by Liang (2019), cities in China that host international migrants can be divided into self-sustained cities (e.g., Guangzhou, Beijing, Shanghai) and initial cities (e.g., Hangzhou, Xi'an). Self-sustained cities refer to traditional international migrants receiving, which can sustain the number of migrants over time while initial cities refer to new cities where more and more international migrants arrive for different and new reasons. This differentiation is essential to make for two reasons. First, from the research perspective, most of the studies have examined primarily international migrants in self-sustained cities and leaving the case of initial cities underexplored. Among these initial cities, Hangzhou could be the most representative one. Second, from the practical point of view, initial cities tend to be more dynamic in the sense that they are experiencing fast growth in development. As a result, these cities could play a more significant role in hosting international migrants in the future.

Studies of International Migrants in China

Relative to its importance, research into international migrants in China has been minimal. Most of the few studies on this target population have focused mainly on specific groups in specific locations in China, such as African traders in Guangzhou, Japanese labor migration in Dalian, English language teachers in Xiamen, and skilled migrant culinary entrepreneurs in Shanghai (Bodomo, 2010; Kawashima, 2017; Lehmann & Leonard, 2019). Although these studies have made invaluable contributions to our understanding of international migrants in China, they may suffer from external validity problems because the target populations of these studies were group-type-location specific. Furthermore, even fewer of these studies have explored the assimilation of international migrants, and no studies have examined how assimilation happens from the formal behavioral process (Fan et al., 2020; Ma, 2019).

Analytical Framework and Hypotheses

We seek to fill this gap in the literature by exploring the acculturation and structural assimilation of international migrants in China. Acculturation and structural assimilation are our outcomes of interest because they are the most important stages in the assimilation process, with acculturation being the first stage and structural assimilation being the capstone stage among the seven stages of assimilation (Gordon, 1964). The relationship between the two, however, can be complicated. Gordon (1964) suggests an ambivalent relationship between the two: (i) acculturation may happen first, but it can be independent of the other dimensions; and (ii) acculturation does not guarantee structural assimilation, while structural assimilation can guarantee acculturation. This ambivalent relationship has been also verified through formally testing it (Chen & Liu, 2018).

Besides, we also seek to study international migrants in China from a behavioral perspective. We apply the TPB and consider how migrants' intention to assimilate

and perceptions of local control shape their acculturation and structural assimilation via their behavior. We rely on social networking with local residents as the primary behavior of interest because social networking is an essential mechanism for migrants' assimilation. All other behavioral pathways are captured in the direct effects. Essentially, our analytical framework consider how behavior is guided by intention and perceived control—two often unobserved factors that could have strong heterogeneity—with a particular focus on the formation of a social network.

Migrants' Intention to Assimilate and Perceived Local Control

Studies of migration have successfully documented stable effects of individual, meso-, and macro-level factors on a variety of outcomes. Yet, many puzzles remain, such as why certain groups are faring better. The missing factors in migration research are those that are difficult to observe from the researchers' perspective. These unobservable factors may include migrants' intention to assimilate and their perceptions of local control.

Migrants may not intend to assimilate despite host society tends to be better than the home society, either economically or socially. Migrants' decisions go beyond cost-benefit calculations (Massey et al., 2002). For example, we can observe circular, temporary, and return migration, even when the economic gain is higher in the host society. Similarly, migrants who have a strong attachment to their home society and a weak attachment to their host society may not intend to assimilate even if the benefits are significant.

In addition, local residents may not want migrants to assimilate. Although the assimilation of migrants into the host society is essential for social cohesion, this idea is based on a macro-social welfare perspective. At the micro-level, local residents may not want to receive all migrants. Studies have shown that local residents prefer certain types of migrants over other types of migrants based on migrants' cultural and religious background, suggesting that local residents' attitudes toward immigrants are not homogeneous and can be even hostile depending on migrants' cultural, ethnic, and religious background (Ford, 2011; Hellwig & Sinno, 2017). Even toward the same group of migrants, local residents' attitudes can also be ambivalent (Zhou et al., 2016). Moreover, at the macro level, countries may implement policies to attract talented migrants that make it easier for them to assimilate while restricting other migrants (Bonn, 2015). Thus, migrants with different characteristics may experience different degrees of local control.

Studies of migrants' intention have focused mainly on the intention to migrate rather than the intention to assimilate (Carling & Collins, 2018). Some studies have focused on settlement intention (Fan, 2011), but significant differences exist between permanent settlement and the intention to assimilate. Many migrants who wish to settle in the host society may not wish to assimilate because a settlement is merely a matter of wanting a better life, not about becoming a part of the society.

Studies of migrants' perceived local control have been limited (Theodore & Habans, 2016). Most relevant studies have focused instead on local reception with a focus on local attitudes as the main outcome (Markaki & Longhi, 2013; Schütze,

Figure 2 Standard TPB framework

2020; Zhou et al., 2016). While local attitudes capture local residents' perspectives, they may not accurately capture the actual experience of local reception from the migrants' perspective.

Role of Migrants' Intention to Assimilate and Perceived Local Control: Theory of Planned Behavior

While it may not be plausible to argue that migrants' intention to assimilate and their perceptions of local control can determine their assimilation outcomes, it is plausible to argue that their intention to assimilate and perceptions of local control may affect certain behaviors that, in turn, define their assimilation outcomes. One of the most important contributions of the TPB (Ajzen, 1991) is that intention can be used as a proxy to measure behavior despite the relationship between the two is not perfect. Within the context of migration, we may observe that migrants' aspiration to integrate could have significant effects on their economic integration via working longer (Chen, 2019), which suggests that migrants' intentions may affect their actions.

Following the TPB (Ajzen, 1991), we expect that migrants' intention to assimilate and their perceived local control can have significant effects on their behavior to assimilate. In general, the TPB has three main components: attitudes, subjective norms, and perceived behavioral control (Ajzen, 1991). Attitudes refer to a person's overall evaluation of the behavior, which includes behavioral beliefs and outcome evaluations. Subjective norms refer to a person's estimate of the social pressure to perform a behavior, which depends on how important people around them want them to behave. Perceived behavioral control refers to the extent to which a person feels able to enact the behavior, which mainly includes the degree of control and confidence the person feels about the behavior. Therefore, a traditional approach to the TPB leads to the analytical framework shown in Figure 2. The perceived local control is the same as perceived behavioral control because migrants' perceived local control highly shapes the formation of their perceived behavioral control. That

Figure 3 Analytical framework

is, the external local control could largely determine how one feels about the likelihood of enacting a certain behavior.

However, we do not intend to apply this theory to determine how assimilation intention is formed via attitudes, subjective norms, and perceived behavioral control. We are mainly interested in how assimilation behaviors are formed and how they, in turn, affect assimilation outcomes. Therefore, our analytical framework includes assimilation outcomes and excludes the formation of the intention to assimilate. Essentially, we remove all the arrows toward intention to assimilate but keeping all the arrows that point toward assimilation behaviors and including assimilation as the outcome of interest (Figure 3). It is essential to keep the arrow of “perceived behavioral control to assimilate” toward behaviors because institutional threats can significantly affect migrants’ assimilation behaviors, such as participating in civic activities (Ebert & Okamoto, 2013). Each of the behaviors within the circle in Figure 3 affects the assimilation outcome. Because intention and perceptions cannot affect the outcomes on their own, the effects of other behaviors will be captured in the direct effects of the intention to assimilate and perceived local control. Therefore, we propose the following two hypotheses:

Hypothesis 1a. Migrants’ intention to assimilate and their perceptions of local control will have significant direct effects on migrants’ acculturation.

Hypothesis 1b. Migrants’ intention to assimilate and their perceptions of local control will have significant direct effects on migrants’ structural assimilation.

Main Behavioral Pathway to Assimilation: Social Network

Social network is one of the most meaningful mechanisms to assimilation. It plays a crucial role in migrants’ assimilation. Although its effects may differ by the dimension of assimilation, it determines assimilation outcomes to a large extent, regardless of whether it is a cultural, social, economic, or even political dimension (Jacobs & Tillie, 2004; Kalter & Kogan, 2014; Lu et al., 2013).

Once a social network is formed, its effects are evident. However, depending on the type of social network, whether it is weak ties or strong ties, resident ties or non-resident ties, the context of the study, or the dimension of assimilation, its role varies greatly (Paerregaard, 2018). Certain types of social networks may promote or restrict assimilation in certain dimensions in a specific context. Thus, it may not be accurate to make any claim without specifying the type of social network, the context of the study, and the dimension of assimilation.

In general, social networking with local residents can facilitate assimilation (Moroşanu, 2016; Yue et al., 2013). Although social networking with migrants from one's home country or co-ethnic network can be beneficial in multiple aspects of assimilation, it may also restrict assimilation (Xie & Gough, 2011). More importantly, co-ethnic network is less likely to work as the mediator compared to native network. For example, migrants may have co-ethnic network despite their assimilation intention, but migrants may more likely have native network if they have the intention to assimilate. Therefore, in this study, we focus on social networking with local residents as the main observed behavioral pathway. We propose the following hypotheses to test the host social network as a behavioral pathway to assimilation for international migrants in China:

Hypothesis 2a. A higher level of social networking with local residents is associated with a higher level of acculturation.

Hypothesis 2b. A higher level of social networking with local residents is associated with a higher level of structural assimilation.

We then shift to test whether the formation of a social network as a behavioral pathway is driven by migrants' intention and perceived local control:

Hypothesis 3a. Migrants' intention to assimilate and their perceived local control have significant indirect effects on migrants' acculturation via social networking with local residents.

Hypothesis 3b. Migrants' intention to assimilate and their perceived local control have significant indirect effects on migrants' structural assimilation via social networking with local residents.

Because migrants' intention to assimilate and their perceptions of local control affect assimilation via various behavioral pathways, we expect that they will have significant total effects. In particular, the total effects will be the aggregation of the indirect effects (i.e., the observed behavioral pathway via social networking) and the direct effects (i.e., all other unobserved or unaccounted behavioral pathways). We thus propose the following hypotheses:

Hypothesis 4a. Migrants' intention to assimilate and their perceived local control have significant total effects on migrants' acculturation.

Hypothesis 4b. Migrants' intention to assimilate and their perceived local control have significant total effects on migrants' structural assimilation.

Data Description

Data

We test our hypotheses with the Hangzhou international immigrant subsample taken from Survey of Foreigner Residents in China (SFRC2018-2019), the first large-scale social survey of foreign residents in China. SFRC 2018-2019 surveyed adult foreign citizens who visited the Municipal Exit-Entry Administration Office to extend their visas in one of seven chosen cities in China during July and August in 2018 and 2019. SFRC collected the individual background, migration experience, social life, and social values of foreigners in China. In order to be comparable, we chose the same survey time and place, and adopted the same survey team, self-reported method, and quality control in both waves.

Data in Hangzhou¹, which is representative of the initial cities discussed above, is the first released and available for use. In particular, in Hangzhou, we collected 1,132 questionnaires in 2018 (with a complete rate of 92.9%) and 838 questionnaires in 2019 (with a complete rate of 92.5%). After listwise deletion (less than 10%), we are left with 1,719 observations.

Measures

Main Dependent Variables—Acculturation and Structural Assimilation

We use proficiency in Mandarin and the use of a Chinese name to measure acculturation. The respondents were asked how proficient they were in Mandarin and whether they had a Chinese name. We create a categorical variable with three options “fluent,” “good,” and “little or none” for language proficiency and include a dummy variable to indicate whether a respondent had a Chinese name. “Little” and “none” are combined because the distribution is highly skewed. Language proficiency is a main measure of acculturation. Having a native name is a strong measure for cultural assimilation (Carneiro et al., 2020; Gerhards and Hans 2009; Kang, 1971). If name-giving (foreign vs. local name) is a signal for acculturation, then having a Chinese name (foreign name vs. local name) could also be a signal for acculturation. Although we do not have the exact name information, the difference between a Chinese name and a non-Chinese name could be significant enough to capture the nativeness of the name.

As structural assimilation is defined as “large-scale entry into the cliques, clubs, and institutions of the host society, on the primary group level” (Gordon, 1964), we measure structural assimilation using two binary variables that capture the migrants’ participation in the main cliques: (1) participation in an interest group, and (2) participation in a volunteers’ group. Participating in these organization groups is an

¹ Other cities include Guangzhou, Xi’an, Changchun, Lanzhou, Yiwu, and Xuzhou. The data are expected to be released in the future.

important aspect of structural assimilation, especially for students. Besides, it is not likely that interest or volunteer groups will be composed of mostly non-Chinese because the international organizational level is quite low in China. In other words, it is not likely or possible that international migrants will establish the volunteer and interest group all by themselves.

Main Independent Variables—Intention to Assimilate and Perceived Local Control

Intention to assimilate is assessed by five survey questions regarding the respondents' intention regarding the following scenario: chat with Chinese; work with Chinese; have Chinese neighbors; make friends with Chinese; marry Chinese or let your children marry Chinese. The answers include “absolutely not willing to,” “no,” “don't mind,” “willing to,” and “more than willing to.” Because these items correspond to a uni-dimensional ordinal construct, we apply factor analysis to generate a single index to measure migrants' intention to assimilate. This method effectively reduces the number of variables in an analysis by describing linear combinations of the variables that contain most of the information. A higher score corresponds to a higher level of intention to assimilate. This measure could also be interpreted as a social distance measure suggested by Bogardus (1925). However, the willingness to have a close social distance is essentially one's intention to assimilate and be part of the host society. A more explicit way of observing this point is to go back to each of these items. For example, both having social networks with host residents and intermarriage with host residents are significant measures of assimilation. Thus, willing to do so is indeed an indication of willingness to assimilate.

We measure *perceived local control* using a continuous variable. The respondents were asked whether the Chinese police have checked their passports, and if so, how many times. We use this factor to measure perceived local control because such an experience could, to a large extent, affect migrants' perceptions of the potential barriers to their assimilation. In the context of China, passport check tends to be the main tool for local control of migrants and thus the main local control that they can experience and perceive. Zhou et al. (2016) noted that many African migrants have quite negative experiences with local law enforcement and view police checks as harassment and as the biggest challenge they face in their daily lives. However, the check should not be interpreted as discrimination but mostly as statistical discrimination because these experiences may not depend on their visa status, as shown by Lan (2015). We are aware that the perfect measure of perceived behavioral control in the TPB framework should be perceived control rather than actual control. Nevertheless, it is the actual local passport check that shapes their perceptions of behavioral control.

Main Mediator—Social Network

We measure *social networking with China local residents* (number of people have known) as a categorical variable with cut-off points of “between 1 and 10,” “11 and 50,” and “51 and more” based on the distribution of the categories. We also use

alternative cut-off points to explore how the size of migrants' social networks with Chinese influences their assimilation and the results are consistent.

Independent/Control Variables

The independent/control variables include age (in years), migration duration in China (in months), hometown ties (in times of return), and a few categorical variables: gender (female and male [reference]), marital status (married and never married [reference]), employment status in China (self-employed, employed, no job, student [reference]), hometown type (rural, small city, big city [reference]), socioeconomic status in hometown (very high, high, middle, low [reference]), visa type (tourist visa, business visa, work visa, student visa, other [reference]), origin country by income (low-income, middle-income, high-income [reference]), origin country by culture (African, Anglo-Saxon, Confucian, Middle East, Southeast Asia, other [reference])² (Mensah & Chen, 2013), and homeownership in one's hometown (no, yes [reference]). Table 1 shows summary statistics of our sample.

Data Analyses

We first estimate logistic regression and ordered logistic regression models for acculturation and structural assimilation depending on whether the outcome is binary or ordinal. We also use multinomial logistic models as a sensitivity test to identify variables associated with Mandarin proficiency because the ladder of ability may not be consistent across levels. The results are consistent and are available upon request. To examine the behavioral pathway via the host social network, we apply GSEM after controlling for sociodemographic variables. GSEM allows logit, probit, and other types of models under a generalized linear modeling approach (Stata Corporation, 2019) and thus it can be used to estimate effects in structural equation models in which endogenous variables are dichotomous or categorical, as with the host social network. All statistical analyses are performed using Stata 16.0.

The main concern in our analyses is that intention could be endogenous³. To deal with this concern, we conduct additional analyses. First, we use an instrumental variable approach with the exogenous distance between the capital of the home country to the capital of China as the instrument. The distance between the capital of the home country to the capital of China is a valid instrument as (a) it significantly affects one's intention, and (b) it cannot affect one's assimilation unless through one's intention.

² See Mensah and Chen (2013) for the specific countries included in each group.

³ Either omitted variable bias or reverse causality. The other main predictor—police check—is less likely to be endogenous. Police check is partly random. Nonrandom check should be driven by observable factors which we have controlled most of them. In addition, assimilation level tends to be unobservable (either name, language, participation) to the police and thus cannot affect police check.

Table 1 Descriptive statistics

	Mean/prop.	SD	Min.	Max.
Dependent variables				
<i>Acculturation</i>				
Proficiency in Mandarin				
None	.08		0	1
Little	.42		0	1
Good	.37		0	1
Fluent	.13		0	1
Chinese name	.68		0	1
<i>Structural Assimilation</i>				
Interest group	.34		0	1
Volunteer group	.25		0	1
Independent variables				
Intention to assimilate	.06	.96	-4.45	1.34
Frequency of passport check	.07	.23	.00	5.00
Social demographic variables				
Female	.33		0	1
Age (year)	27.29	8.30	16.00	73.00
Married	.22		0	1
Occupation in China				
Self-employed	.10		0	1
Employed	.12		0	1
No job	.11		0	1
Student	.67		0	1
Origin SES				
Very high	.09		0	1
High	.36		0	1
Middle	.53		0	1
Low	.03		0	1
Very low	.01		0	1
Visa type				
Tourist	.02		0	1
Business	.03		0	1
Work	.22		0	1
Student	.65		0	1
Other	.08		0	1
Origin country in income				
Low income	.21		0	1
Mid income	.56		0	1
High income	.23		0	1
Origin country in culture				
African	.36		0	1
Anglo-Saxon	.08		0	1

Table 1 (continued)

	Mean/prop.	SD	Min.	Max.
Confucian	.08		0	1
Mid-East	.12		0	1
Southeast Asia	.20		0	1
Other	.14		0	1
Real estate in hometown	.43		0	1
Hometown type				
Rural	.08		0	1
Small city	.34		0	1
Big city	.59		0	1
Duration	37.82	36.84	.00	351.00
Home ties	1.04	2.17	.00	50.00
Year (=2019)	.45		0	1

Source: SFRC2018-19

Multiple studies have shown that home-host distance can significantly affect migrants' settlement intention (Chen & Wang, 2019; Dang et al., 2019). Moreover, there is no link⁴ between distance and assimilation with all the factors controlled. For example, the distance may be related to the following factors that affect assimilation: total migration duration (through likelihood and frequency of return) or cultural similarities (through border crossing). However, we have all these variables controlled.

In addition, we also use LASSO cross-fit partialing-out to fix omitted variable bias. Finally, we also conduct a robustness analysis by calculating the percentage of bias to invalidate the reference (Xu et al., 2019).

Another concern is about student migration since our sample has 67% of the students. We conduct analyses by students and non-students. While this is simply the fact of the current international migration in the initial cities in China and we do not see this as a threat to external validity, we want to disentangle further the potential heterogeneous treatment effects between students and non-students. As discussed before, social network formation is more accessible for students than for others.

Main Findings

Table 2 consists of six logistic regression models. Models 1 through 3 focus on the effects of the intention to assimilate and passport checks on Mandarin proficiency, controlling for status variables (model 1), migration variables (model 2), and linkage

⁴ Migrants who come from countries near China's borders may have some advantages in acculturation compared to countries in other parts of the world. However, as we are in the globalization and internet era, the direct advantages from the distance may not be significant.

Table 2 Regression analyses of the effects of intention to assimilate and perceived local control on proficiency in Mandarin

	Proficiency in Mandarin					
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Intention to assimilate	0.317*** (0.049)	0.322*** (0.052)	0.279*** (0.048)	0.274*** (0.050)	0.293*** (0.053)	0.231*** (0.049)
Frequency of passport check	−0.805*** (0.222)	−0.345 (0.210)	−0.833*** (0.219)	−0.762*** (0.224)	−0.334 (0.211)	−0.803*** (0.221)
Employment status	Yes			Yes		
Origin status	Yes			Yes		
Origin city	Yes			Yes		
Duration		Yes			Yes	
Visa type		Yes			Yes	
Origin country in income		Yes			Yes	
Origin country in culture		Yes			Yes	
Home ties			Yes			Yes
Real estate in hometown			Yes			Yes
Network of Chinese local residents						
11–50				0.478*** (0.112)	0.358** (0.116)	0.455*** (0.112)
51≤				1.136*** (0.123)	0.785*** (0.129)	1.044*** (0.122)
Year	Yes	Yes	Yes	Yes	Yes	Yes
Social demographic	Yes	Yes	Yes	Yes	Yes	Yes
N	1719	1719	1719	1719	1719	1719

Standard errors are in parentheses

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

variables (model 3). Models 4 through 6 present models that include the host social network. Each of these models controlled for age, gender, and marital status.

First, the intention to assimilate is a significant predictor of Mandarin proficiency ($p < 0.001$). Those who have a strong intention to assimilate are better at the Mandarin language than those who have a weak intention, and the findings are consistent across all models in Table 2. In contrast to the intention to assimilate, perceived local control shows a negative association with Mandarin language skills. These results indicate that intention to assimilate and perceived local control could both affect certain behaviors that further influence Mandarin proficiency. Focusing on models 4 through 6, we find that the host social network has significant and positive effects on Mandarin proficiency.

Table 3 shows how the intention to assimilate and perceived local control affect the likelihood of having a Chinese name. Similar patterns are identified. Those who have a strong intention to assimilate are more likely to have a Chinese name, and those who perceive a high level of local control are less likely to have a Chinese

Table 3 Regression analyses of the effects of intention to assimilate and perceived local control on having a Chinese name

	Chinese name					
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Intention to assimilate	0.267*** (0.062)	0.224** (0.070)	0.119* (0.057)	0.240*** (0.063)	0.210** (0.070)	0.098 (0.058)
Frequency of passport check	−0.959*** (0.286)	−0.598* (0.267)	−0.976*** (0.272)	−0.932** (0.287)	−0.601* (0.268)	−0.961*** (0.273)
Employment status	Yes			Yes		
Origin status	Yes			Yes		
Origin city	Yes			Yes		
Duration		Yes			Yes	
Visa type		Yes			Yes	
Origin country in income		Yes			Yes	
Origin country in culture		Yes			Yes	
Home ties			Yes			Yes
Real estate in hometown			Yes			Yes
Network of Chinese local residents						
11–50				−0.020 (0.142)	−0.069 (0.157)	−0.011 (0.135)
51≤				0.489** (0.159)	0.263 (0.177)	0.301* (0.147)
Year	Yes	Yes	Yes	Yes	Yes	Yes
Social demographic	Yes	Yes	Yes	Yes	Yes	Yes
N	1719	1719	1719	1719	1719	1719

Standard errors are in parentheses

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

name. Models that controlled for social networking also suggest that the formation of a social network could increase migrants' likelihood of having a Chinese name.

These results support hypothesis 1a and hypothesis 2a. First, the direct effects of intention to assimilate and perceived local control on both Chinese proficiency and having a Chinese name are statistically significant even after controlling for the social network. These results support hypothesis 1a and suggest that intention to assimilate and perceived local control could shape migrants' acculturation via certain behavioral pathways, such as spending more time learning Mandarin and becoming more active in having a Chinese name. Second, the host's social network has significant effects on both the Mandarin proficiency level and the likelihood of having a Chinese name. Although the effects of social networking on a Chinese name are much weaker than its effects on Mandarin proficiency, these findings still support hypothesis 2a, which suggests its central role in influencing acculturation.

We now turn to structural assimilation. Tables 4 and 5 present the effects of intention to assimilate on structural assimilation. Models 1 through 6 in Table 4 show

Table 4 Regression analyses of the effects of intention to assimilate and perceived local control on participation in an interest group

	Interest group					
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Intention to assimilate	0.296*** (0.059)	0.300*** (0.061)	0.239*** (0.057)	0.263*** (0.060)	0.276*** (0.062)	0.206*** (0.058)
Frequency of Passport check	-0.969** (0.362)	-0.651 (0.345)	-0.982** (0.346)	-0.916* (0.364)	-0.644 (0.349)	-0.955** (0.349)
Employment status	Yes			Yes		
Origin status	Yes			Yes		
Origin city	Yes			Yes		
Duration		Yes			Yes	
Visa type		Yes			Yes	
Origin country in income		Yes			Yes	
Origin country in culture		Yes			Yes	
Home ties			Yes			Yes
Real estate in hometown			Yes			Yes
Network of Chinese local residents						
11–50				0.433** (0.133)	0.337* (0.135)	0.423** (0.132)
51≤				0.790*** (0.142)	0.611*** (0.148)	0.727*** (0.140)
Year	Yes	Yes	Yes	Yes	Yes	Yes
Social demographic	Yes	Yes	Yes	Yes	Yes	Yes
Constant	-0.714 (0.626)	-0.985 (0.635)	-0.534 (0.609)	-0.760 (0.629)	-1.018 (0.636)	-0.544 (0.611)
N	1719	1719	1719	1719	1719	1719

Standard errors are in parentheses

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

that respondents who have a high intention to assimilate are more likely to join an interest group in China. We also observe that perceived local control decreases the likelihood that migrants would participate in an interest group. These findings suggest that intention to assimilate and perceived local control could together affect certain behavioral pathways, such as actively/inactively seeking more information, that link to structural assimilation. The results are consistent after the host social network (models 4 through 6) is added. The effects of the host social network are positive for the likelihood of joining an interest group.

The effects of both the intention to assimilate and perceived local control on joining a volunteer group are relatively weak. For the intention to assimilate, its effects on joining a volunteer group is minimal. Perceived local control has no direct effects on joining a volunteer group. The coefficients for the host social network, however, are still significant.

Table 5 Regression analyses of the effects of intention to assimilate and perceived local control on participation in a volunteer group

	Interest group					
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Intention to assimilate	0.161* (0.063)	0.178** (0.066)	0.101 (0.061)	0.119 (0.065)	0.144* (0.067)	0.060 (0.062)
Frequency of passport check	-0.270 (0.304)	0.018 (0.289)	-0.335 (0.298)	-0.207 (0.305)	0.034 (0.294)	-0.299 (0.303)
Employment status	Yes			Yes		
Origin status	Yes			Yes		
Origin city	Yes			Yes		
Duration		Yes			Yes	
Visa type		Yes			Yes	
Origin country in income		Yes			Yes	
Origin country in culture		Yes			Yes	
Home ties			Yes			Yes
Real estate in hometown			Yes			Yes
Network of Chinese local residents						
11–50				0.278 (0.149)	0.174 (0.153)	0.291* (0.147)
51≤				0.822*** (0.155)	0.704*** (0.163)	0.757*** (0.152)
Year	Yes	Yes	Yes	Yes	Yes	Yes
Social demographic	Yes	Yes	Yes	Yes	Yes	Yes
Constant	-2.525** (0.827)	-2.699** (0.876)	-2.554** (0.819)	-2.459** (0.819)	-2.515** (0.858)	-2.453** (0.810)
N	1719	1719	1719	1719	1719	1719

Standard errors are in parentheses

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

These results, in general, support our hypothesis 1b and hypothesis 2b. Hypothesis 1b is supported because the intention to assimilate and perceived local control do affect participation in an interest group. This finding suggests that those who intend to assimilate may be more actively/inactively looking for information about the interest group. The null or weak effects of intention to assimilate and perceived local control on volunteer activities likely suggest that migrants may not have enough opportunities or channels to volunteer. Therefore, whether they wish to participate or whether they perceive high or low control may not make a difference. The strong positive and statistically significant effects of the host social network on both types of social participation indicate that the host social network is crucial in migrants' structural assimilation and supported our hypothesis 2b.

To test hypotheses 3ab and 4ab, we implement formal mediation analyses. Before we examine the results from formal mediation analyses, we turn to the suggestive

results from Tables 2 through 5 concerning the use of the formation of a social network as the behavioral pathway. The results from Tables 2 through 5 suggest that social networking is the behavioral pathway led by the intention to assimilate. In particular, by comparing models 1 through 3 with models 4 through 6 for Mandarin proficiency and use of a Chinese name, the coefficients on the intention to assimilate decrease after controlling for social networking. These findings indicate that the host social network likely serves as a behavioral pathway between intention to assimilate and acculturation. In a similar way, a comparison of models 1 through 3 with models 4 through 6 for participation in an interest group shows a consistent decrease of coefficients on the intention to assimilate, which suggests that social networking is also a likely behavioral pathway between intention to assimilate and structural assimilation. Nevertheless, host social networking is not the behavioral pathway that serves as a link between perceived local control and cultural or structural assimilation. In other words, perceived local control might not affect social networking behavior, which in turn influenced migrants' assimilation.

To formally test hypotheses 3ab and 4ab, which deal with the statistical significance of the indirect effects and total effects, we turn to the results of formal mediation analyses listed in Tables 6 and 7. The estimates show that the effects of intention to assimilate on Mandarin language skills are partially mediated by the host social network (Table 6). Indeed, significant indirect effects are seen from intention to assimilate to Mandarin proficiency via the host social network. The effect proportions indicate that the network size in 11 to 50 significantly mediated the relationship between intention to assimilate and Mandarin ability and explained almost 24.47% of the entire effects, whereas the network in 51 or more accounted for nearly 39.00% of the total effects. However, the host social network is not a significant mediator between intention to assimilate and use of a Chinese name. The perceived local control does not show significant indirect effects on proficiency with the Mandarin language or the use of a Chinese name, consistent with our expectations from the previous analyses. In general, these results partly support hypothesis 3a.

Table 7 indicates that the social network serves as a mediator between intention to assimilate and participation in a volunteer group or interest group because the intention to assimilate has indirect effects on both types of participation via a high level (51 or more) of host social network. Moreover, the ratio of explanation is significant for both cases. As predicted from regression, the host social network may not serve as a mediator between perceived local control and structural assimilation. Hypothesis 3b is then also partially supported. Together, these findings verify that the formation of a social network is indeed a behavioral pathway to assimilation driven by the intention to assimilate but not perceived local control.

We now consider the overall impact of intention to assimilate and perceived local control on migrants' assimilation. A formal Sobel test shows that the total effects of intention to assimilate are positive and significant for both acculturation and structural assimilation, thus verifying its important role in influencing social network behaviors and other assimilation behaviors, which in turn promote the level of assimilation and support our hypotheses 4a and 4b. Despite its direct impact, perceived local control does not show any significant total effects on assimilation outcomes, likely because no indirect effects are seen via the host social network for

Table 6 Mediation analysis of acculturation

Hypothesized association	Direct effects	Indirect effects	Total effects	Sobel test
Migrants' intention to assimilate → Language	0.284(0.181 0.386)***			
A1. Middle level		0.082(0.018 0.147)*	0.365(0.246 0.485)***	2.508*
A2. High level		0.181(0.084 0.278)***	0.464(0.326 0.602)***	3.650***
Perceived local control → Language	-0.320(-0.733 0.092)			
A1. Middle level		-0.026(-0.162 0.109)	-0.347(-0.781 0.087)	-0.380
A2. High level		-0.058(-0.356 0.240)	-0.379(-0.887 0.130)	-0.382
Migrants' intention to assimilate → Name	0.211(0.072 0.349)**			
A1. Middle level		-0.012(-0.086 0.061)	0.198(0.045 0.351)*	-0.333
A2. High level		0.069(-0.189 0.156)	0.280(0.124 0.435)***	1.539
Perceived local control → Name	-0.577(-1.105 -0.050)*			
A1. Middle level		0.004(-0.271 0.035)	-0.573(-1.101 -0.046)*	0.252
A2. High level		-0.022(-0.138 0.094)	-0.599(-1.139 -0.060)*	-0.373

Coefficients with confidence intervals in parentheses are reported with asterisks as indicators of the significance level: (*** p value<0.001; ** p value<0.01; * p value<0.05)

Table 7 Mediation analysis of structural assimilation

Hypothesized association	Direct effects	Indirect effects	Total effects	Sobel test
Migrants' intention to assimilate → Interest group	0.270(0.149 0.390)***			
A1. Middle level		0.073(0.003 0.143)*	0.343(0.205 0.480)***	0.257*
A2. High level		0.141(0.050 0.231)**	0.410(0.264 0.556)***	3.045**
Perceived local control → Interest group	-0.550(-1.219 0.120)			
A1. Middle level		-0.023(-0.145 0.098)	-0.573(-1.253 0.107)*	-0.378
A2. High level		-0.045(-0.277 0.187)	-0.595(-1.303 0.114)	-0.381
Migrants' intention to assimilate → Volunteer group	0.140(0.009 0.272)*			
A1. Middle level		0.037(-0.036 0.109)	0.177(0.029 0.325)*	0.99
A2. High level		0.163(0.061 0.26)**	0.304(0.143 0.464)***	3.122**
Perceived local control → Volunteer group	0.091(-0.476 0.658)			
A1. Middle level		-0.012(-0.076 0.053)	0.079(-0.490 0.649)	-0.358
A2. High level		-0.052(-0.322 0.217)	0.039(-0.588 0.666)	-0.381

Coefficients with confidence intervals in parentheses are reported with asterisks as indicators of the significance level: (****p* value<0.001; ***p* value<0.01; **p* value<0.05)

perceived local control. This suggests that the formation of a host social network is likely the central behavioral pathway to a higher level of assimilation. Thus, when this pathway is blocked, no total effects will likely be seen.

Sensitivity Analyses

To deal with the potential endogeneity in intention, we have conducted an instrumental variable approach using the exogenous distance between the capital of the home country to the capital of China as the instrument. However, the Wald test of exogeneity suggests that intention may not be endogenous and that our original model could be better, as suggested in Table A1. The results from the LASSO models in Table A2 show the same results, suggesting that our original results are consistent. Table A3 shows the percentage of bias needed to invalidate the inference on the impact of intention on the assimilation outcomes. The results show that there is a need for quite a large percentage to invalidate our results, further suggesting that the omitted variable bias may not likely affect our conclusions.

Tables A4 and A5 show the results of the subsample analyses. They suggest that international students drive the main findings. This is expected as school can facilitate the assimilation process. As discussed before, they have higher access to social network than non-students. Therefore, their acculturation and structural assimilation are easier to realize than non-students. In other words, the behavioral pathways are easier to pass through for students. We do not see this posing a threat to the external validity of our results as we do not intend to claim that our findings will be applicable to all international migration cases. Instead, we argue that these findings will be meaningful in understanding the assimilation of international migrants in countries that are becoming new migration destinations where international students could account for a significant portion of the migrants. Besides, Table A6 shows that there is no statistically significant difference in the intention to stay between students and non-students. From this point of view, a lot of student migrants may stay and work in China and are not much different from non-student migrants in terms of the importance or applicability of the assimilation process.

Conclusions

This study examines the acculturation and structural assimilation of international migrants in China. Based on the TPB, we consider how migrants' intention to assimilate and perceived local control affects their behavior, which in turn affects their assimilation outcomes. For behaviors, we focus on social network formation because it is one of the most important behavioral pathways to greater assimilation. We rely on regression approaches and formal mediation analyses with GSEMs to test our framework. Our results suggest that intention to assimilate has strong and positive direct, indirect, and total effects on both acculturation and structural assimilation, which indicates that intention to assimilate indeed affects multiple behavioral pathways (including the formation of a social network) that later have significant

effects on acculturation and structural assimilation. The direct effects of perceived local control are substantial for both acculturation and structural assimilation, but no indirect effects through the host social network are found, and consequently, there are no significant total effects. On the one hand, this finding suggests that perceived local control does affect certain behavioral pathways to assimilation, but on the other hand, it shows that the formation of a host social network is likely one of the leading behavioral channels to assimilation.

Beyond our contribution in providing new insights regarding the assimilation process of international migrants in China, the approach we apply also makes a general contribution to the literature of international migration by showing the importance of accounting for behavioral pathways driven by the intention and perceptions in the assimilation process. Our study also suggests directions for future research. First, as international migration to China moves to the next phase when more migrants, including many who used to be student migrants, remain in China to work, it will be essential to apply this framework to understand whether the intention to assimilate and perceived local control influence economic assimilation.

Second, a more comprehensive index for perceived local control must be used to further understand the importance of perceived local control. In this study, we use passport checks as a measure of perceived local control. However, there could be other dimensions such as access to the labor market and access to the welfare system that may generate the perceived local control. Future studies should try to include other measures that can more directly and comprehensively capture migrants' perceived local control.

Third, it is important to study other mediators. The formation of a social network or social networking behavior is likely the most important, but many behavioral pathways exist. Several potential mediators may include intermarriage with Chinese, buying a house in China, or obtaining Chinese citizenship. These mediators are interesting to be explored under the context of China because of the policy restrictions that China has imposed on them. For example, obtaining Chinese citizenship is an interesting mediator to study in China because (i) it is extremely hard and rare for foreigners to obtain Chinese citizenship, and (ii) dual nationality is not recognized in the Chinese Nationality Law. An exploration of these mediators could allow further understanding of the role of intention to assimilate and perceived local control in shaping migrants' behaviors.

Finally, it is important to consider the potential impact of COVID-19. After COVID-19, international migration trend to China may be different, and that the experiences of international migrants in China could change as well (Castillo & Amoah, 2020). Some international migrants may have more intention to assimilate while others may have stronger perceived control. However, no accurate prediction is possible at this time. We deem this as a potential future research opportunity. Relying on a new (undergoing) wave of data collection from SFRC, we could explicitly verify our theoretical framework after COVID-19 and explore the impact of COVID-19.

Our findings also have substantial policy implications. It is more effective to influence migrants' assimilation intention, which could further determine their assimilation behaviors than to try to change behaviors directly if the goal is for migrants to

realize greater assimilation. Moreover, although we do not find a significant total impact of perceived local control, the existence of substantial direct effects suggests that it could be helpful to show greater sensitivity to migrants' perceived local control. Although China's policies and regulations on international immigration have been continuously improved over the past 20 years, the management system lacks emphasis on service and immigration rights (Zhang, 2020). On the one hand, the Chinese government has always adopted strict control of the "Three Non-personnel" (illegal entry, illegal stay, and illegal employment), so most foreigners in China have legal status. The control of the Immigration Bureau in China is relatively independent of local governments, and the control of local agencies will be more stringent in terms of implementation standards. On the other hand, because foreigners in China are largely dispersed across regions, there is also a lot of diversity in the control system. For example, the control adopted in Guangzhou where African foreigners are concentrated is relatively strict, while the control adopted in Yiwu where Arab businessmen are concentrated emphasis more on the "service" because they can largely contribute to the local economy (Xu, 2018). We are not suggesting that there should be no local control at all as this is not feasible, but it would be beneficial if the local control of international migrants under the context of China could be conducted in a way that minimizes international migrants' perceived local control so that migrants are not discouraged to assimilate.

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Declarations

Competing Interests The authors declare no competing interests.

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