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Social capital in the urban context: Diversity and social contacts in Chilean cities

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ABSTRACT

This study examines the relationship between social capital and neighborhood diversity in Chilean cities. We propose that differences exist between hierarchical forms of diversity, which might erode social trust, and cultural differences that might foster new social links in heterogeneous communities. In Chile, strong material inequalities represent the main form of hierarchical differentiation, while south-to-south immigrants convey qualitative differences based on race, ethnic origin, or cultural practices. In contrast to most Western industrialized countries, where material and ethnic differences tend to converge, they appear to be uncoupled in Chile, explaining the presence of immigrants at different levels of the social hierarchy. We analyze original data from a Latin American country with high domestic inequality. Multilevel models nested at the city level reveal that social capital is negatively correlated with socioeconomic diversity, but positively correlated with immigrant diversity, suggesting that uncoupling these differences has a positive effect on social capital development.

Introduction

During the last 4 decades, Chilean cities developed under a neoliberal system that deeply influenced their social relationships and urban form, introducing strong material inequalities and increasing the distance between social groups (Espinoza et al., 2013). Moreover, market-oriented housing policies have exacerbated socioeconomic segregation, spatial inequalities, and undermined social capital in poor neighborhoods (M. Garreton, 2017; Harvey, 2005; Posner, 2012; Salazar & Pinto, 1999). Despite a significant reduction in poverty and increased access to consumption, Chilean scholars have stressed the negative effects of privatized social policies and competition among individuals for social cohesion and citizens' trust in institutions (M. A. Garreton, 2016; Lechner, 2002; Salazar & Pinto, 1999). Chilean neighborhoods in large cities have also witnessed an increase in migrants from Latin American countries, from about 1% of the population in 1990 to 6.6% in 2020. Thus, the question of the effects of immigration on social cohesion in Chile has become increasingly relevant (Gonzalez et al., 2017). We underscore that many immigrants in Chile have an educational level above the Chilean average, which gives them a relatively higher social status than immigrants in other Western industrialized countries.

In this study, we examine the possible effects of socioeconomic and immigrant diversity on the quality of social life in Chilean cities by assessing the correlation of neighborhood composition variables with social capital at the individual level. Social diversity can take different configurations, either as hierarchical differences, such as social status, or qualitative differences, such as ethnic characteristics (Blau, 1977). This distinction is relevant because status segregation and competition for scarce resources might undermine trust among groups, hindering the development of social links

beyond close-knit networks (Cote & Erickson, 2009). In contrast, economic interdependence and multiple overlapping group affiliations can promote solidarity and cooperation among heterogeneous communities (Baldassarri & Abascal, 2020).

In Chile, the context of deep social inequalities and marked urban segregation seems rather unfavorable for positive intergroup contact and prejudice reduction (Araujo & Beyer, 2013; Kaztman, 2007; Larranaga & Valenzuela, 2011; Sabatini et al., 2001). However, the economic integration of immigrants and the absence of sharp status differences with the Chilean population could foster strategic interactions and pro-social behavior between different groups (Baldassarri & Abascal, 2020; Baeza Virgilio, 2019; Imilan et al., 2014).

To summarize, we hypothesize that the relatively similar social status of south-to-south immigrants and Chileans allows socioeconomic and cultural differentiation lines to be uncoupled, possibly enabling constructive relationships in culturally heterogeneous neighborhoods (Baldassarri & Abascal, 2020). Thus, we anticipate a negative correlation between the size of the interpersonal network and socioeconomic diversity and a positive correlation with immigrant diversity.

To test this hypothesis, we analyzed individual data from the 2016 ELSOC survey, a nationwide study that contains geo-referenced survey information. We matched individual records that contained interpersonal network information with neighborhood-level variables from the 2017 National Census regarding socioeconomic and immigrant diversity and other social composition variables. Thus, we provided evidence of an important distinction between hierarchical and qualitative social differences regarding the availability of social capital, which might have been overlooked by research in countries where these cleavages reinforce each other, with data from a country where they might be uncoupled. However, our results are based on cross-sectional data, and we do not aim to demonstrate any of the causal mechanisms that could drive these processes.

We begin the paper by first presenting a brief theoretical background on social capital and urban diversity. Second, we offer a general perspective of neoliberal policies in Chile, followed by a discussion on social interactions in urban contexts. Third, we present relevant contextual elements regarding social diversity and neighborhood effects in Chile. Fourth, we describe the data and methods used in this study. Fifth, we present the main findings of this study. Sixth, we discuss our results considering the relevant characteristics of the Chilean social context. Finally, we highlight the most relevant observations and their contributions to the social capital theory.

Social capital and diversity in urban contexts

Diversity can be defined as specific patterns of group differentiation that have been conceptualized by Blau (1977) as being vertical, when they imply differences in status, or horizontal otherwise. However, the term “social capital” has been subject to multiple definitions in sociology, political science, and economics (Bourdieu, 1986; Burt, 2005; Coleman, 1988; Lin, 2002; Portes, 1998; Putnam, 2000). Following Bourdieu’s definition, “social capital is a resource of individuals and families inherent in their network of relationships and capable of being transformed into other forms of capital—economic and cultural” (Portes & Vickstrom, 2015, p. 41). Putnam (2000) redefined and popularized this concept as a collective quality representing civic traditions, prosocial norms, and generalized trust in a given society. More recently, Putnam (2007) proposed that the interaction of ethnically distinct groups could reinforce prejudice and undermine social cohesion, a result that has been supported in other contexts (Wickes et al., 2014). However, this approach is problematic, as it focuses on ecological outcomes while obscuring the relevance of individual inequalities (Abascal & Baldassarri, 2015), and presents several problems of interpretation (Portes & Vickstrom, 2015).

Authors who study social capital as a public good tend to emphasize mechanisms of in-group solidarity, such as closure and density. Closure allows the maintenance of resources through the exclusion of others, with well-established boundaries of a group membership. The density of interactions involves frequent contact among all members of a group. In closed and dense structures, information loss is minimized across the network, facilitating sanctions that make it less risky

for group members to trust each other, facilitating norm abiding (Coleman, 1988; DiMaggio & Garip, 2012; Putnam, 2000). In sum, conceiving social cohesion as a phenomenon that occurs within groups assumes that social capital is dependent on the ability of the group to continue together. From this perspective, social heterogeneity is not a necessary condition for social capital development.

However, as noted by Granovetter (1977), local cohesion does not lead to integration at the macro-social level. Strong ties are never bridges between groups and, conversely, only weak ties have the ability to bridge distant social circles, while their absence might represent structural holes (Burt, 2005; Granovetter, 1977). Diversity in social contacts, coupled with sustained interaction among individuals from diverse backgrounds, are conditions for prosociality among different groups; otherwise, social segregation may pervade the social structure (DiPrete et al., 2011). For instance, some groups can take advantage of their social positions and severing linkages that provide access to scarce resources. Thus, group closure dynamics facilitate the emergence of identities and internal solidarity, while links across diverse groups ensure the circulation of resources and, eventually, can extend internal solidarity outside the limits of the group (Lukasiewicz et al., 2019).

High diversity in personal networks might carry several benefits: it could facilitate access to non-redundant resources (Burt, 1995), improve people's mobility opportunities (Lin, 2002), broaden the cultural repertoire, and raise health and happiness levels (B. Erickson, 2003; B. H. Erickson, 1996). At the macro level, diversity is conceived as an ecological quality of social spaces and refers to the different recognizable social or demographic groups in an environment (Blau, 1977; McPherson, 2004; Neal, 2015). Thus, individuals with high diversity networks are key mediators in the development of social capital across otherwise disconnected social circles in heterogeneous communities (Baldassarri & Abascal, 2020).

In sum, we must distinguish between two sources of social capital (1) relationships located *within* the groups and (2) relationships *between* groups (Neal, 2015). This distinction is nuanced and has given rise to various conceptual frameworks. Granovetter (1977) defined strong and weak ties as the frequency of contact, duration of the relationship, and degree of intimacy or trust. Some authors focus on concepts like "closure—restrictions to group membership" and "brokerage—the ability to link otherwise disconnected social circles," (Burt, 2005) while others refer to more nuanced forms of social capital, such as "bonding—ties directed inward," "bridging—ties going outwards, and "linking—ties across groups (Lukasiewicz et al., 2019; Putnam, 2000).

These conceptual distinctions are critical for formulating our hypothesis regarding the possible uncoupling of socioeconomic and cultural differentiation lines in the context of high domestic inequality and the relatively high status of south-to-south immigrants. On the one hand, the absence of weak ties between segregated socioeconomic groups with vertical differences should lead to smaller networks with stronger ties, while the mediation capacity of immigrants that convey horizontal diversity might be indirectly revealed by larger network sizes of their Chilean neighbors.

Social interactions in neoliberal cities with increasing immigration

Several studies have investigated the interaction of diversity in urban space and the formation of social networks, focusing on participation in organizations and prosocial attitudes (McPherson & Rotolo, 1996; Rotolo, 2000; Rotolo & Wilson, 2012), or on the ecological characteristics that can promote or restrict the formation of social capital in urban communities (Neal, 2015; Small, 2004). The proximity, composition, and configuration of social spaces and contexts are the factors for the structure of opportunities for interpersonal contact and, therefore, affect the distribution of the probabilities of bond formation between people or groups of people, to a certain extent (Blau, 1977). Moreover, these local interactions are enacted within a larger political, social, and cultural background, which in our case has been shaped by violent events and radical economic policies, which must be summarized for a proper understanding of actual evidence.

Since the late 1970s, Chile has been the experimental field for the first-ever national-scale implementation of a neoliberal model (Harvey, 2005). Sweeping reforms reduced public spending, greatly affecting the system of social protection, health and education services, as well as the regulatory and planning capacities of the state. Internal markets were deregulated and the Chilean economy moved overnight to free trade, bankrupting most of the national manufacturing in a few years. Public policies ceased to be universal, focusing only on the lowest government expenses. Social services, including pensions, health and education, as well as public housing services, are now managed by the private sector in a profit-making framework (Posner, 2012). The unprecedented scale and depth of this transformation were made possible by a dictatorial rule that applied harsh repression on any opponent.

For many years, a neoliberal society brought poverty to Chilean families, establishing soaring social inequalities that had a huge impact on life trajectories (Espinoza et al., 2013). On the one hand, a market economy allowed high-status groups to consolidate their positions of privilege and increase their resources, favoring the reproduction of inequalities across generations. Disadvantaged populations, on the other hand, experienced discrimination in labor markets, stigma, and segregation in poor neighborhoods (Kaztman, 2007). Market efficiency is the only measure of success in almost any sphere of social life. This ideology pervaded the Chilean society, even after the recovery of democracy in 1989. In fact, following rapid economic growth in the 1990s, rising living standards offered some ground to meritocratic utopia. The cultural trope of “individual responsibility” served to justify the precariousness of the labor market and social insecurity, while the poor were increasingly criminalized (Larranaga & Valenzuela, 2011; Ortega, 2014; Wacquant, 2010).

Social inequality pervades economic, cultural, and urban dimensions and finds support in the ethics of individualism and competitiveness (Araujo & Martuccelli, 2014). The contrasting lifestyles, reciprocal isolation, and fear between the privileged and disadvantaged were spatially structured by urban segregation, undermining social cohesion, and increasing social conflict in Latin American cities (Bayon & Saravi, 2013; Kaztman, 2007).

Arguably, socioeconomic inequalities, segregation, and a widespread culture of individualism have weakened social cohesion in Chilean cities (Araujo & Martuccelli, 2014). The so-called “malaise hypothesis” (PNUD, 1998) suggested that despite the macro-economic success, Chileans perceived unfairness in the distribution of social rewards, however, they were prevented from acting collectively by a pervasive process of individualization. Without solidarity, this malaise could not find its way into the public space, amid the absence of collective projects and the lack of popular influence on governance (Araujo & Martuccelli, 2014; Guell, 2005; Lechner, 2002; Yopo, 2013).

From an increasingly relational perspective, focusing on personal or collective networks, other studies have made relevant observations about social capital in the context of high socioeconomic inequality. Poor households have limited opportunities of escaping poverty if they lack social contact outside low-income segregated neighborhoods (Espinoza, 1999). Moreover, the Chilean society presents strong homophily patterns based on education, race, and occupation (Bargsted Valdes et al., 2020; Rodríguez, 2016; Torche, 2010), while labor income and prestige are correlated with the size and status of interpersonal networks (Contreras et al., 2019). Thus, the concentration of wealth and the social homogeneity of the upper strata have decreased the probability of upward social mobility (Espinoza et al., 2013; Espinoza & Canteros, 2001).

Socioeconomic segregation

Social diversity is heavily structured in Chile by sharp socioeconomic inequalities (Gini index of 0.48 in 2017), near the average of Latin America, which is the second most unequal continent after Africa (Amarante et al., 2016). Income inequalities are mainly driven by wealth accumulation in top income groups, as the richer decile has an average income 2.5 times higher compared to the second 10%; the top 1% of the population receives about 30% of the national income (Lopez et al., 2013). Although

rapid economic growth since the 1990s improved living conditions for most of the population, with a notable decrease in poverty rates (Contreras, 2003), the lower-middle classes are rather vulnerable to poverty relapse (Denis et al., 2007).

Social inequalities acquire a distinct expression in urban contexts: as in other Latin American countries, Chilean cities display high levels of socio-economic segregation because of market-oriented urban policies (M. Garretton, 2017; Lopez-Morales, 2011; Roberts & Wilson, 2009; Sabatini et al., 2001). Social housing policies are strongly stratified, reinforcing segregation, workers' vulnerability, and undermining cohesion in disadvantaged communities (Posner, 2012).

At the neighborhood level, these segregation patterns are associated with large differences in access to the labor market and other cultural and social resources (Fernandez et al., 2016; M. Garretton, 2017), which are likely to deteriorate the life chances of people living in poor neighborhoods. Deprivation in neighborhoods may reduce individuals' energy and abilities to cultivate social relationships, thus affecting their connectedness with family, friends, and larger networks (York Cornwell & Behler, 2015). Thus, neighborhood status could amplify individual-level inequalities in social capital and life prospects.

Immigrant diversity

Immigrant diversity has increased in Chile during the last 2 decades, mainly due to inflows from other Latin American countries. After the recovery of democracy in 1990, Chile became more attractive to immigrants, especially since 2000 (Durand & Massey, 2010; Rojas & Silva, 2016). At present, foreigners represent 6.6% of the Chilean population,¹ and the migratory process continues to grow and diversify. The main immigrant groups come from Venezuela, Peru, Haiti, and Colombia, with Latin Americans representing 75% of foreigners. Immigration in Chile is part of a larger south-to-south city-directed migration system in Latin America, which mainly involves professionals and unskilled workers (Durand & Massey, 2010).

On average, immigrants are more educated, having two more years of schooling than Chileans, and 71% are between 20 and 49 (Baeza Virgilio, 2019). They show high participation rates in religious and sports associations, but low participation in trade unions and neighborhood councils (Rojas & Silva, 2016). Except for Haitians, immigrants are relatively similar to Chileans in language and race, which helps social interaction in comparison to a sharper differentiation of immigrants in North America and Europe. Indeed, Latin Americans and many Caribbeans have a common colonial past, which continues to exist in a common language and the cultural influence of Catholicism.

Latin American immigrants, nonetheless, exhibit social diversity among themselves and with the Chileans. Differences among immigrants are apparent in social practices and rituals such as speech, cooking, religious practices, music, skin color, and economic niches, representing a potential source for developing strategic exchanges (Baldassarri & Abascal, 2020). The residential localization of immigrants in Chile also reveals great heterogeneity among and within cities in terms of the centrality and quality of neighborhoods.²

The three largest Chilean cities, Santiago Metropolitan Region, Greater Concepcion, and Greater Valparaiso, account for most of the final destinations of foreigners. Immigrants are initially located in central areas, which host numerous foreign communities; however, as they settle, they tend to move to residential areas in urban peripheries. Northern Chilean cities have also experienced intense inflows of migrants, mainly from neighboring Peru and Bolivia. In these cities, such as Antofagasta and Iquique, high mobility rates are observed in informal immigrant settlements, which are increasingly affected by social disorganization (Rojas & Silva, 2016).

To summarize, immigrants are educated, productive, and culturally related to Chileans, all of which suggest a good potential for economic and social integration. However, immigrant status is vulnerable due to weak protection in labor markets and limited access to social services.

Finally, the Chilean social structure differs significantly from that of Europe or the U.S., where the majority of information on social capital and diversity originates. Status differentiation in Chile has been historically structured by the concentration of wealth and political power in a closed elite and by

the segregation of the poor in vast urban areas, with inadequate education and services (M. Garreton, 2017). Foreign immigration introduces a new consequential principle of social differentiation, which is a relatively new occurrence. Moreover, contrary to stereotypical representations, immigrants in Chile are more integrated with the middle class than the lower class and can be placed at very different levels of the social hierarchy.

This analysis of Chilean society supports the hypothesis that social differentiation lines alongside socioeconomic status and cultural backgrounds of immigrants might be somewhat uncoupled, which may provide insights on the patterns of social capital development that can be different from those observed in Western industrialized countries.

Data sources, the definition of variables, and regression models

We analyze the association between variations in individual social capital and ecological variables, focusing on socioeconomic and immigrant diversity. Given the dearth of evidence on these topics for countries with high levels of economic inequality, particularly in Latin America, we intend to provide robust quantitative evidence from a country where differentiation lines of status and nationality dimensions are uncoupled, in contrast to their consolidation in most Western industrialized countries (Baldassarri & Abascal, 2020).

Data sources

The data for this study combine several sources, such as individual-level information from the 2016 ELSOC survey (N = 2984), a nationwide study of 40 cities, representative of Chilean inhabitants of cities with more than 10,000 inhabitants, which accounts for 80% of the total population (<http://www.elsoc.cl>). Individual records were geo-referenced and matched to neighborhood-level variables, calculated using data from the 2017 Chilean Population Census.

Dependent variable

The dependent variable is a measure of social capital based on the “position generator” in the ELSOC survey, which includes 13 socio-occupational positions, from low-qualified office cleaners to medical doctors, and the number of acquaintances in each of them. Position generators are widely used to measure the diversity of social contacts consistently across countries (Lin & Erickson, 2010; Lin et al., 2017). Additionally, the ELSOC survey measures the number of acquaintances within each category, expressing the depth of linkages in the corresponding socioeconomic status.

Social capital comprises resources integrated with the social networks of individuals or groups, whose access depends on direct and indirect ties in one or several fields of social activity (Lin, 2002). High diversity in personal networks facilitates access to non-redundant resources (Burt, 1995) and improves people’s mobility opportunities (Lin, 2002) by increasing the probability of obtaining favorable results from instrumental actions carried out by individuals or communities. Following these arguments, several studies measure social capital as a simple count of categories present in personal networks (Van Der Gaag & Webber, 2008; Perry et al., 2018; among others). Others use heterogeneity measures such as the Blau index or Shannon’s entropy, which measure the probability of encounter between two random individuals belonging to different groups (McDonald & Dimmick, 2003; Oh et al., 2004). These measures of range or heterogeneity in social networks are usually interpreted as the capacity to use the leveraging capacity of bridging and linking capital (Lukasiewicz et al., 2019).

In addition to diversity, the number of contacts in a personal network indicates the volume of resources available; a large volume can offer the individual more opportunities to alternate among contacts as well as the acquisition of a wider repertoire of coordination fields (B. H. Erickson, 1996). In theory, a larger volume of social contacts can be suitable to sustain the production of individual well-

being and lead to better action results (Cote & Erickson, 2009; Lin, 2002). Moreover, a person will likely be acquainted with more people in categories closer to their social group, probably representing within-group links that are valuable in proportion to their quantity rather than diversity. This kind of bonding social capital is useful for the reproduction of privilege in high-status groups and for coping with adversity in low-income groups (Henly et al., 2005).

In this study, we examined both diversity and volume in social networks; the first was measured as Shannon's entropy for the number of different positions reported by the respondent among 13 occupational titles. The second was the total number of contacts, calculated by adding the number of contacts across occupational categories. Upon examination of both social capital measures, we found that in our sample, the volume of social capital was highly correlated with Shannon's entropy of contacts ($r = 0.88$). This correlation implies that individuals who report acquaintances in a wide range of categories tend to report higher numbers of contacts in each category. Thus, the volume of contacts has a heavily positively skewed distribution, because of a few individuals reporting unusually large numbers of total acquaintances. Hence, we applied a logarithmic transformation to avoid the estimation biases. The following analyses consider that the volume of interpersonal capital represents the social capital available to an individual.

Individual-level controls

We used the following sociodemographic characteristics as individual-level controls: years of formal education, working activity, age, and gender.

Several studies have indicated that socioeconomic status is highly relevant for social capital development (Abascal & Baldassarri, 2015; Letki, 2008; among others). In Chile, social capital, socioeconomic status, and income are strongly associated with the number of years of formal education (Agostini et al., 2016; Garreton et al., 2020; Mendez & Gayo, 2018). Moreover, there is a sharp distinction in status between professionals with a university or post-graduate degree and the rest of the population (Bargsted Valdes et al., 2020; Rodríguez & Castillo, 2014). Educational attainment has also proven to be a robust variable for the analysis of inequalities and segregation in Latin America (Amarante et al., 2016; Roberts & Wilson, 2009).

Labor relationships also contribute to social capital development, providing opportunities to establish mutually beneficial interactions in networks that are usually less homophilic than relations in other settings, usually adding diversity to family and neighborhood networks (Baldassarri & Abascal, 2020; B. Erickson, 2003; Moreland & Levine, 2002; Oh et al., 2004). Moreover, social capital is a relevant resource in workplaces, as it is associated with work performance, engagement, and life satisfaction (Clausen et al., 2019; Helliwell & Huang, 2010). Respondents who reported working for income were identified using a dummy variable.

Gender is also included as a dummy and age is measured in years.

Opinion about the neighborhood

Four variables about the individual's evaluation of the residential environment were included in the analyses, as they can be relevant for the development of trust and prosocial behaviors that mediate neighborhood interactions (Letki, 2008). First, the perception of safety in the neighborhood ranged from 1 (very unsafe) to 5 (very safe). Second was a composite index of the perceived quality of social interactions in the neighborhood, with a battery of four questions regarding friendships, social openness, and cooperation in the community. This index was calculated using the principal component analysis with optimal scaling, which allows maximization of the information in a single common dimension (De Leeuw & Mair, 2007). Third was a composite index of attachment to the neighborhood, with a battery of four questions regarding self-identification and self-integration in the community, also using optimal scaling. Fourth, we included a dummy variable recording the response to the question, "Were you able to choose your actual place of residence?"

(yes = 1, no = 0). The answer to this question measures how close residential expectations are to the actual outcome. This variable can also control for endogeneity bias in the composition and size of their social networks, as the presence of acquaintances in a neighborhood can be a motivation and/or a resource to move into it.

Ecological variables

Neighborhood-level variables were calculated with the block-level Census 2017 data in a 1000 m radius around the respondents' residences, which provides a proxy for the neighborhood influence on individual behaviors (Spielman & Logan, 2013). Indeed, the definition of a neighborhood involves identities, ethnicities, urban forms, and other characteristics that are difficult to grasp with statistical aggregates (Bayon & Saravi, 2013; Foster et al., 2015; Galster, 2001; Schnell & Harpaz, 2005). However, the selected radius offers a reasonable approximation for an area of proximity-based social interactions, as it is the median length of walking trips found in transport surveys in different Chilean cities,³ defining relatively familiar urban surroundings where random interactions are possible, as opposed to longer trips in private vehicles. Additionally, it represents a scale where a good compromise is found between the definition of a small enough area that captures local spatial heterogeneity and of a large enough amount of data for statistical consistency, especially in low-density neighborhoods (Reardon & O'Sullivan, 2004; Wong, 2004).

We included three variables that measured different types of diversity in this geographical radius. First, socioeconomic diversity was calculated as the standard deviation of education years of household heads, a variable closely associated with social status and income in Latin America.⁴ Second, immigrant diversity was calculated using Shannon's entropy index (McDonald & Dimmick, 2003), including foreign residents with their respective nationalities. Third, the diversity of native peoples, measured with the same index, including a self-declared identity for any of the nine officially recognized ethnicities. Mapuches account for about 80% of the total population of native people, mostly residing in the biggest Chilean cities and in the Araucania region, where they represent more than 60% of the rural population. Aymaras and Diaguitas are the second (7.2%) and third (4.1%) largest native minorities, respectively, and they mostly reside in the north of the country. In Chile, native people are mixed with European descendants, especially in urban areas, and their ethnic boundaries are blurred.⁵

To control for neighborhood composition factors that are distinct but related to the aforementioned diversity measures, we included (1) neighborhood status, proxied by the average education years of the household heads, (2) share of immigrants, and (3) share of native peoples. We also included population density to control for the eventual effects of urban form (i.e., center vs. suburbs) in social interactions.

City level

Previous studies suggest that bonds that are formed at the local level are relevant mechanisms for social capital development, significantly improving multilevel models nesting at the neighborhood level (Letki, 2008). However, labor markets and exchanges of services have a larger city-wide extent, so cities may be very important for the development of social capital. Indeed, urban contexts are the result of macro-structural processes and micro-social decisions that produce varied results. Chilean cities demonstrate high geographic and socioeconomic heterogeneity from north to south because of their size, economic base, local cultures, migration patterns, and socioeconomic composition.

Social capital also presents significant differences between urban and rural contexts (Lannoo et al., 2012), which could also be the case for small cities that are closely related to their hinterlands. Therefore, it is likely to observe clustering of social behavior at the city level, with groups defined by distinct urban agglomerations where most daily activities and physical social interactions take place. Thus, one should expect strong variations in social capital endowments at the city level, which may be even stronger than the neighborhood-level effects. Consequently, we clustered observations in cities for multilevel regressions.

Finally, we included the logarithm of the total population of the cities from the sample as a control for city size. The logarithmic transformation compensates for the strong positive skew of this variable (Tables 1 and 2).

Multilevel regressions

The multivariate correlations of social capital with the aforementioned variables were evaluated through a series of multilevel regression models for individuals nested at the city level. Ideally, we should also nest at lower geographical levels, such as neighborhoods, but the ELSOC survey does not provide sufficiently large clusters below the city level. To this end, we used the *lmer* function of the *lme4* package in R (Bates et al., 2015).

First, we fitted three separate models with variables that represent different explanatory domains: individual characteristics, opinions about the neighborhood, and ecological variables, as described above. The fourth model contains all independent variables, which helps observe the consistency of variables after the inclusion of all controls. The last model combines the variables that are significant and consistent in the previous ones to focus the discussion on the results of a parsimonious model, including only the most robust variables.

Individual, neighborhood, and urban covariates of social capital in Chile

We aimed to identify the interactions of social capital, as measured by the volume of interpersonal contacts, with ecological urban variables of social diversity controlled by individual and neighborhood attributes. Table 3 presents descriptive statistics for the variables of interest according to the educational level of the respondents.

Table 1. Variable definitions.

Variable	Definition
Network volume	Logarithm of the number of social acquaintances reported in ELSOC position generator, across 13 occupational categories
Age	Age of the respondent
Gender	Male (0) or Female (1)
Years of education	Years of formal education
Employed	Works for income (1) or not (0)
Residence was chosen	Respondent chose their actual residence (1) or not (0)
Score of neighborhood attachment	Attachment to the neighborhood. Optimal scaling score of four questions about self-identification and self-integration in the community
Score of neighborhood social interaction	Social interactions in the neighborhood. Optimal scaling score of four questions about friendship, social openness, and cooperation with the community
Neighborhood safety	Perception of safety in the neighborhood, ranging from 1 (very unsafe) to 5 (very safe)
Mean years of education in neighborhoods	Mean number of years of formal education of household heads in a 1 km. radius around subjects' residences
Neighborhood density	Population density within a 1 km. radius around subjects' residences
Native peoples' proportion in neighborhoods	Proportion of indigenous people in a 1 km. radius around subjects' residences
Percentage of immigrants in neighborhoods	Proportion of non-Chileans in a 1 km. radius around subjects' residences
Education diversity in neighborhoods	Standard deviation for years of formal education of household heads in a 1 km. radius around subjects' residences
Native peoples' diversity in neighborhoods	Diversity of native people, calculated with Shannon's entropy index in a 1 km. radius around subjects' residences
Immigrant diversity in neighborhoods	Diversity of foreign immigrants, calculated with Shannon's entropy index, in a 1 km. radius around subjects' residences
Religious diversity in neighborhoods	Diversity of religious beliefs, calculated with Shannon's entropy index, in a 1 km. radius around subjects' residences
Logarithm of city size	Logarithm of the number of inhabitants in the city of residence
City of residence	Respondent's city of residence

Table 2. Descriptive statistics and sources for variables.

Variable	Min	Max	Mean	SD	Source
Network volume (dependent variable)					ELSOC
Logarithm of the number of acquaintances	0.00	5.21	2.69	1.11	
Individual controls					
Age	18.00	88.00	46.57	15.23	
Gender	0.00	1.00	0.61	-	
Years of education	0.00	20.00	10.43	4.93	
Employed respondent	0.00	1.00	0.61	-	
Opinion about the neighborhood					
Residence was chosen	0.00	1.00	0.46	-	
Score of neighborhood attachment	0.00	1.00	0.65	0.21	
Score of neighborhood social interaction	0.00	1.00	0.63	0.18	
Neighborhood safety	1.00	5.00	3.40	1.04	
Ecological variables					National Census 2017
Mean years of education in neighborhoods	7.99	17.87	11.55	1.86	
Neighborhood density	0.83	330.91	99.40	62.45	
Native peoples' proportion in neighborhoods	0.01	0.41	0.10	0.06	
Percentage of immigrants in neighborhoods	0.00	0.23	0.01	0.02	
Education diversity in neighborhoods	1.94	5.21	3.93	0.44	
Native peoples' diversity in neighborhoods	0.00	2.44	0.58	0.52	
Immigrant diversity in neighborhoods	0.00	4.65	2.89	0.88	
Religious diversity in neighborhoods	1.27	2.13	1.87	0.13	
City level					
Logarithm of city size	5.32	11.27	9.67	0.81	
City of residence	1	38	-	-	

In further analysis, all variables were normalized to the 0–1 range to simplify the comparison of coefficients.

Table 3. Average values of selected variables by educational attainment groups.

Education level	Primary School	Secondary School	Technical	University (College)
Number of respondents	908	738	546	291
Mean number of acquaintances	15.1	21.9	30.5	39.0
Mean respondent's age	53.8	44.1	39.1	44.2
Percentage employed	48%	65%	67%	76%
Percentage having chosen residence	41%	42%	49%	65%
Mean years of education of household heads in neighborhoods	10.9	11.3	12.1	13.2
Mean standard deviation of education years of heads of households in neighborhoods	4.01	3.96	3.89	3.69
Mean percentage of immigrants in neighborhoods	0.7%	1.0%	1.6%	2.0%
Mean entropy of immigrants in neighborhoods	2.69	2.78	3.10	3.35

For individuals, the level of education indicates a strong association with social capital, ranging from an average of 15 contacts for the less educated to 39 for people with a college education. Employment in paid work ranged from 48% to 76% between the same groups. College education also increases the probability of choosing a residence. At the ecological level, the average years of education in the respondent's neighborhood increases with individuals' education, as educational heterogeneity decreases (higher-status neighborhoods are more segregated in Chile). As opposed to the usual patterns in Western industrialized countries, immigrants are located more frequently and with higher diversity among more educated neighbors (Table 3).

Table 4 presents descriptive statistics for individual variables according to age groups. Ecological variables are omitted because age has no significant correlation with them when it is controlled by education and work (Table 6).

The age of the respondents was associated with other individual characteristics in recognizable patterns. The number of social contacts in the personal network drops abruptly for respondents over the age of 60, from 23.8 to 16.5, reflecting the limited social life of the elderly in Chile. The same

Table 4. Average values of selected variables by age groups.

Age group	18–30	31–45	46–60	> 60
Number of respondents	460	696	821	506
Mean number of acquaintances	25.6	26.1	23.8	16.5
Mean education years	12.8	11.7	9.7	7.6
Percentage employed	61%	77%	67%	28%

association occurs with years of education and paid work, plummeting for seniors. Years of education decrease with age, mainly due to the increasing enrollment in secondary and university education over the last 3 decades in Chile. Employed respondents decreased among older people because of retirement. It can be conjectured that involvement in educational institutions and the labor market has a positive effect on the size of personal networks in Chile.

Table 5 displays the Pearson correlation coefficients for two individual and four contextual variables, including social capital, education, and immigration, which are the main focus of the present discussion. These correlation coefficients are presented for descriptive purposes because they do not consider multivariate controls nor the multilevel character of the data (Table 6).

Correlations among these variables are mostly positive, apart from educational diversity in the neighborhood (5 in Table 5), which correlates negatively and significantly with every other variable. Respondents’ number of social contacts (1) was positively correlated with their years of education (2), education of household heads in the neighborhood (3), diversity of immigrants (6), and percentage of immigrants in the neighborhood (4). Respondents’ education (2) has significant correlations with every other variable, indicating the centrality of education in the structuring of social relations in Chile (Mendez & Gayo, 2018). The association of the respondent’s education with the percentage and diversity of migrants in the neighborhood indicates that migrants tend to dwell in areas of higher levels of education in Chile. The education of household heads also indicates a positive correlation with the percentage and diversity of migrants, which points in the same direction.

Multilevel analysis of social capital in neighborhoods

Table 6 displays five multilevel models that estimate the effects of the variables of interest on social capital. Model A includes individual-level variables. Model B contains variables that represent individual perceptions about the quality of the neighborhood. Model C includes neighborhood-level indicators of social composition and diversity. Model D incorporates all variables. Model E considers only variables with consistently significant coefficients in the previous models, which are the most robust correlates of social capital. Fit statistics consider standard measures: the AIC (Akaike Information Criterion) and the BIC (Bayesian Information Criterion). Both report the value of the log-likelihood function, using different assumptions for the penalization of the number of parameters in the model, which is stricter for BIC. Marginal R-squared reports the model variance that is explained by the independent variables

Table 5. Pearson correlation coefficients between selected individual and contextual variables.

	1) Acq.	2) Ed.	3) Ed. N.	4) Im. N.	5) Ed. D.	6) Im. D.
1) Logarithm of the number of acquaintances	1					
2) Respondent’s years of education	0.36***	1				
3) Average years of education of household heads in neighborhoods	0.16***	0.38***	1			
4) Percentage of immigrants in neighborhoods	0.04*	0.20***	0.44***	1		
5) Standard deviation of years of education of household heads in neighborhoods	-0.12***	-0.18***	-0.49***	-0.36***	1	
6) Entropy of immigrants in neighborhoods	0.17***	0.24***	0.66***	0.02	-0.19***	1

Significance: *** > 99.9%/** > 99%/* > 95%

Table 6. Multilevel regression models of social capital on individual and neighborhood variables.

	Model A. Individual traits		Model B. Perception of neighborhood		Model C. Neighborhood characteristics		Model D. All variables		Model E. Robust variables	
	Estimate	Std. Error	Estimate	Std. Error	Estimate	Std. Error	Estimate	Std. Error	Estimate	Std. Error
AIC	-1317.87		-914.08		-955.19		-1330.34		-1334.69	
BIC	-1277.15		-873.36		-891.20		-1213.99		-1288.16	
Observations	2483		2483		2483		2483		2483	
Groups	38		38		38		38		38	
Marginal R2	0.13		0.01		0.04		0.16		0.14	
Conditional R2	0.34		0.23		0.22		0.33		0.34	
Intercept	0.33***	0.02	0.46***	0.02	0.56***	0.06	0.39***	0.06	0.34***	0.03
Age	0.00	0.02					-0.02	0.02		
Gender	-0.01	0.01					-0.01	0.01		
Respondent's years of education	0.28***	0.02					0.26***	0.02	0.26***	0.02
Employed	0.06***	0.01					0.06***	0.01	0.06***	0.01
Residence was chosen			0.04***	0.01			0.02**	0.01	0.02*	0.01
Score of neighborhood attachment			-0.02	0.02			0.01	0.02		
Score of social interaction in neighborhoods			0.02	0.03			0.02	0.02		
Neighborhood safety			0.03	0.02			0.01	0.02		
Mean years of education in neighborhoods					0.02!	0.05	-0.11*!	0.05		
Neighborhood density					-0.05	0.03	-0.06!	0.04		
Native peoples' proportion in neighborhoods					0.01	0.06	-0.02	0.06		
Percentage of immigrants in neighborhoods					-0.06	0.07	-0.09!	0.06		
Educational diversity in neighborhoods					-0.15***	0.05	-0.14***	0.04	-0.07*	0.03
Native peoples' diversity in neighborhoods					0.08	0.06	0.07	0.06		
Immigrant diversity in neighborhoods					0.14**	0.04	0.10*	0.04	0.06*	0.02
Religious diversity in neighborhoods					-0.08	0.05	-0.05	0.05		
Logarithm of city size							0.04!	0.06		

Significance: *** > 99.9%/** > 99%/ * > 95%
 Coefficients that have a variance inflation factor (VIF) over 3 are marked with "!"

only and conditional R-squared reports the total explained variance, also including the effect of clustering within cities. To simplify comparisons, data are normalized in a 0 to 1 range, which gives a rough approximation of the relative strength of correlations with the dependent variable.

In all models, clustering data dramatically improved the explained variance, suggesting a strong influence of the city of residence on social capital development. In fact, the conditional R-squared more than doubles the marginal R-squared, implying that the average number of acquaintances strongly varies among cities. This supports the hypothesis that ecological conditions at the city level are determinants for the development of social capital. The magnitude of these clustering effects highlights the need to include adequate city-level controls when analyzing social capital covariates. Developing a thorough understanding of the nature of city-level effects would require quantitative and qualitative inquiries that go beyond the scope of this study, but we underscore this subject as an interesting avenue for future research.

Both AIC and BIC statistics confirm that Model E has the best fit, which provides the most complete and parsimonious representation of significant correlations. However, these indexes do not coincide with the choice of the second-best model. Model D has a worse (higher) BIC and presents multicollinearity issues (three variables marked with “!”), suggesting that interactions among the independent variables could bias the coefficients. Consequently, Model A, which includes only individual-level variables, seems more reliable.

We now proceed to a closer analysis of the significance and consistency of independent variables across models, focusing on relevant correlations with social capital.

Individual factors

By far, the strongest covariate of social capital is the respondent's years of education, which is a good measure of status in Chile and is also associated with opportunities to expand peer networks in successive stages of education. The coefficient is significant in Models A, D, and E, with little change in the presence of ecological controls. In Model E, a coefficient of 0.26 implies that a 1% change in education years is associated with a 0.3%⁶ increase in the number of acquaintances.

Employment is also a robust covariate of social capital, which is stable in Models A, D, and E, suggesting that it has little interaction with ecological variables. In Model E, a coefficient of 0.06 implies that a gainfully employed respondent has 6.2% more acquaintances when compared to people outside the labor force.

Age and gender present no significant effects in any of the models. The expansion of education for younger generations and the reduced labor participation rates of seniors (Table 4) seem to overbear the effects of age on social capital variation.

Perceptual factors

Among the indicators of affinity for the neighborhood, choice of residence stands out as the only significant covariate of social capital, despite its relatively weak coefficient (0.02 in Model E). Existing social contacts in the neighborhood might influence residence choice, and moving close to them should reinforce interpersonal networks, being an endogenous interaction that must be controlled. Other subjective opinions about the neighborhood, such as perceived safety, quality of social interactions, and attachment, do not have significant coefficients in any model.

Ecological factors

Coefficients for socioeconomic and immigrant diversity are significant and consistent neighborhood-level variables in Models C, D, and E; interestingly, they show opposite signs. As in the case of other ecological variables, the magnitude of their coefficients strongly varies when individual-level variables are included, highlighting the relevance of including individual controls to avoid ecological fallacy misinterpretations (Portes & Vickstrom, 2015).

Socioeconomic diversity has a negative coefficient of -0.07 in Model E, which implies that a 1% change in the standard deviation of household head's education years in the neighborhood is associated with a reduction of 0.067% in the number of acquaintances. In contrast, immigrant diversity has a positive coefficient of 0.06 in Model E, implying that a 1% change in Shannon's entropy of immigrants in the neighborhood is associated with a 0.062% increase in the number of acquaintances.

Remarkably, the corresponding composition variables, the neighborhoods' average education level, and their immigrant's share have inconsistent or non-significant coefficients in Models C and D (Table 6).

The education average, which proxies the neighborhood status, has a positive non-significant coefficient in Model C, but a negative significant coefficient in Model D. The change in sign is due to the incorporation of individuals' education years in Model D; therefore the positive coefficient in Model C actually indicates that more educated people live in high-status neighborhoods, without implying an ecological effect. Moreover, the significant negative coefficient in Model D has a high variance inflation factor (VIF) of 3.96, which makes this estimate unreliable.

Other ecological variables have no significant coefficients in any model, so they will not be further discussed in this article.

Discussion

Descriptive statistics and multivariate models indicate that respondents' years of education are the strongest covariate of social capital in Chile. This suggests a strong effect of the unequal distribution of social capital along socio-economic cleavages, given the close association between educational achievement and socioeconomic status in Chile (Agostini et al., 2016). Moreover, formal education provides opportunities to increase and diversify the scope of personal social networks, which in turn reinforces the chances of establishing fruitful social relationships in workplaces (Morgan, 2009; Saks & Gruman, 2018).

Regarding the correlation of ecological covariates with social capital, the negative sign of educational diversity suggests that individuals of different statuses are often perceived as a threat, possibly fostering closure mechanisms that constrain the extension of interpersonal networks toward other social strata. Bargsted Valdes et al. (2020) observed strong homophily in Chile, according to educational level, age, political ideology, and religious beliefs, while Wormald et al. (2012) reported that people living in diverse Chilean neighborhoods seldom interacted with neighbors of different social statuses, perceiving this kind of contact as uncomfortable and conflictive. Thus, living in a neighborhood with high educational diversity could reduce the probability of developing local networks, as meaningful interactions may be somewhat constrained to individuals of the same status group.

In contrast, the positive correlation between immigrant diversity and the size of interpersonal networks suggests that immigrants who strive to integrate themselves into a new society contribute to the development of Chileans' social capital by establishing inter-group relationships with them⁷ (Granovetter, 1977). Baldassarri and Abascal (2020) have thus argued that diverse skills and resources might create a favorable environment for mutually beneficial exchanges, where the coexistence of different cultural groups could have positive effects on social capital development. In other words, individual incentives to create links that cut across cultural cleavages might favor the development of social capital in collective terms (Neal, 2015; Watts & Strogatz, 1998). Our results suggest that immigrant diversity in Chile incentivizes mutually beneficial interactions among culturally diverse people, thus increasing the probability of creating stable links across different groups and contributing to social capital development.

Moreover, the lack of significance in the percentage of immigrants in neighborhoods supports the argument that the relevant factor for social capital development is cultural diversity, not the immigrants' share (Baldassarri & Abascal, 2020). In Chile, the share of immigrants is uncorrelated with their diversity (Table 5), because the most numerous communities tend to concentrate in particular

neighborhoods through preexisting networks (Imilan et al., 2014). Therefore, if foreigners install themselves among fellow countrymen, they might have less to establish strategic interactions with Chileans, because they would be able to rely on compatriot networks for living and employment (Baeza Virgilio, 2019; Lukaszewicz et al., 2019).

In sum, these results confirm that the size of interpersonal networks in Chile has a negative correlation with socioeconomic diversity but a positive correlation with immigrant diversity in neighborhoods. This contrast could be explained by the uncoupling of socioeconomic and immigrant social differentiation lines that occur in Chile, and possibly in other Latin American countries where south-to-south migration is dominant (Baldassarri & Abascal, 2020).

On a larger scale, social capital displays huge variations across cities, which might be associated with urban identities, history, labor markets, transport systems, or other specific urban characteristics. Further research is needed to understand the nature of the ecological effects of cities on social capital development.

These results are based on cross-sectional data; therefore, they do not provide evidence of causal relationships or mechanisms for social capital development. Regarding our dependent variable, more information would be necessary to discern the specific associations of bonding, linking, and bridging forms of social capital. Moreover, we did not consider variables that could account for prejudice, trust, prosociality, and other behaviors that are relevant for understanding the interactions between interpersonal networks and macrosocial processes such as conflict or social cohesion. In future research, we intend to overcome these limitations with new waves of the ELSOC panel survey that will add temporal depth and complementary variables to examine these processes from a causal perspective.

Conclusion

In this study, we examined the correlations of individuals' social capital with socioeconomic and immigrant diversity in their neighborhoods, using data from the 2016 ELSOC survey and the National Population Census of 2017. Multilevel models, including individual controls, opinions about the neighborhood, ecological variables, and city-level nesting indicate that the size of interpersonal networks is negatively correlated with educational diversity but positively correlated with immigrant diversity. Moreover, they corroborate that diversity variables are more relevant covariates of social capital than neighborhood status or immigrants' share (Table 6).

These results support the hypothesis that socioeconomic and cultural differentiation lines are uncoupled in Chile because of its history of high domestic inequalities and widespread urban segregation by social status, in contrast to relatively recent inflows of south-to-south immigrants that mostly have a middle or even upper-middle-class status in Chile. We argue that larger interpersonal networks in culturally diverse neighborhoods could result from mutually beneficial interactions among individuals with different cultural backgrounds that do not have huge status differences across otherwise disconnected social circles (Baldassarri & Abascal, 2020).

This study offers an original perspective that contributes to the debate over the positive or negative effects of diversity on social capital development (Abascal & Baldassarri, 2015; Portes & Vickstrom, 2015; Putnam, 2007). In particular, it adds to evidence from a Latin American country where social differentiation does not follow patterns that have been observed in Western industrialized countries, where most research on this subject has been developed (Baldassarri & Abascal, 2020; Espinoza et al., 2013; Letki, 2008; Putnam, 2007; Wickes et al., 2014).

Our results highlight the need to discern between distinct configurations of social diversity, as hierarchical differences such as social status or income might have opposite effects on social capital development than qualitative differences such as race or nationality (Blau, 1977). This distinction is relevant because status segregation and competition for scarce resources might undermine trust among groups, hindering the development of social links beyond close-knit networks (Cote &

Erickson, 2009). On the contrary, economic interdependence and multiple overlapping group affiliations might enable constructive relationships, possibly promoting solidarity and cooperation in heterogeneous communities (Baldassarri & Abascal, 2020).

In sum, the positive correlation of immigrants' diversity with social capital in Chile suggests that economic migration in strongly unequal contexts could act as a counterweight to social segregation, fostering strategic interactions of foreigners that might contribute to the collective development of social capital in heterogeneous communities, possibly mediating across otherwise unconnected circles (Baldassarri & Abascal, 2020; Lukasiewicz et al., 2019).

This article has opened two main questions that deserve further research. First, the huge effect of city-level nesting in multilevel models should be thoroughly analyzed, with qualitative case studies and more appropriate city-level variables. This question underscores that urban entities are a relevant geographical level for the analysis of social capital, alongside neighborhood or regional contexts. We have also formulated several conjectures regarding the causal effects of socio-economic or immigrant diversity for the development of social capital that requires a longitudinal study. We expect that future studies can address these challenges with an original perspective from a Latin American context.

Notes

1. Estimations by the National Institute of Statistics (INE) <https://www.ine.cl/prensa/2019/09/16/seg%C3%BA-estimaciones-la-cantidad-de-personas-extranjeras-residentes-habituales-en-chile-super%C3%B3-los-1-2-millones-al-31-de-diciembre-de-2018>
2. The following description is based on the authors' analysis of Census 2017 data.
3. Estimation based on authors' analysis of Origin-Destination surveys.
4. Income information is usually less consistent, due to self-reporting errors and missing data.
5. Historical claims for autonomy and land restitution are manifest in rural Mapuche communities in the Araucanía region; these are not included in this study, which is based on an urban sample.
6. The dependent variable has a logarithmic transformation, so this percentage is calculated by exponentiation: $\exp(\text{coefficient}) - 1$.
7. The sampling design of the ELSOC survey does not include immigrants, so we are not observing effects on foreigners' networks.

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