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The (Diverse) Company You Keep: Content and Structure of Immigrants' Social Networks as a Window Into Intercultural Relations in Catalonia

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Abstract

This research examines how the social networks of immigrants residing in a European bicultural and bilingual context (Catalonia) relate to levels of adjustment (both psychological and sociocultural) and to bicultural identity integration (BII). Moroccan, Pakistani, Ecuadorian, and Romanian immigrants residing in Barcelona nominated 25 individuals (i.e., alters) from their habitual social networks and provided demographic (e.g., ethnicity), relationship type (e.g., family, friend, neighbor), and structural (who knew whom) information for each of these alters. Even after controlling for individual-level demographic and acculturation variables, the content and structure of immigrants' personal social networks had unique associations with both types of adjustment and with BII. Specifically, the overall degree of cultural diversity in the network and the amount of Catalan (but not Spanish) "weak" ties (i.e., acquaintances, colleagues, neighbors) positively predicted these outcomes. Amount of interconnectedness between local coethnic and Catalan/Spanish alters also predicted sociocultural adjustment and BII positively. Finally, against a "culture and language similarity" hypothesis, Moroccan and Pakistani participants had social networks that were more culturally integrated, relative to Ecuadorians and Romanians. Results from this study attest to the importance of examining actual intercultural relations and going beyond individuals' reported acculturation preferences to understand immigrants' overall adaptation and cultural identity dynamics. Furthermore, results highlight the interplay between interculturalism experienced at the intrapersonal, subjective level (i.e., BII), and at the meso-level (i.e., having culturally diverse networks that also include interethnic ties among alters).

Keywords

personal social networks, interculturalism, acculturation, immigration, bicultural identity integration, adjustment

Spain's foreign population sextupled from 2.3% in 2000 to 12.2% in 2010, with people coming from a variety of different regions in the world (the majority being from Europe, Latin America,

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and Africa; Instituto Nacional de Estadística, 2017). The magnitude of this migration wave and the cultural as well as linguistic diversity of both, the received immigration and the receiving context, make Spain an excellent case to study the intercultural relations of immigrant groups with distinct backgrounds. From an intercultural perspective, Catalonia is a particularly interesting region within Spain as it has received large amounts of both domestic and international immigrants (Bayona-Carrasco & Gil-Alonso, 2012). It is also special in that the immigrants living in Catalonia are faced with the task of interacting with two dominant cultures and two official languages (Spanish and Catalan), thus challenging the commonly made assumption in acculturation research that the receiving context is culturally homogeneous (Bornstein, 2017; Pujolar, 2010).

With the goal of understanding how habitual intercultural relations (i.e., those that evolve from everyday life situations) in a culturally complex immigration-receiving context (Catalonia) relate to both adjustment (i.e., psychological, sociocultural) and the management of bicultural identity, the present study examined the personal social networks of immigrants residing in Barcelona. This study's participants belonged to four large immigrant groups: Ecuadorians, Moroccans, Pakistani, and Romanians. Importantly, these groups represent a broad spectrum of geographical origins (Latin America, Africa, Asia, and Europe) and have different levels of culture and language similarity advantages toward the two national host groups. For instance, while Pakistanis may encounter radical changes in their social and cultural environment (because of differences in religion, language, and culture, compounded by the unfamiliarity due to geographical distance), Moroccans' main cultural discrepancies might instead be centered around religion. In contrast, Romanians and Ecuadorians share the Christian traditions prevalent in Spain, while Ecuadorians also share the Spanish language and a colonial past, but not the legal status as European citizens that Romanians have. All these factors might influence the acculturation processes of these groups, including their expectations and reactions to the bicultural and bilingual Catalan receiving context.

Acculturation, Multiculturalism, and Adjustment

Immigrants undergo acculturation processes which involve psychological and behavioral changes due to intercultural contact (Gibson, 2001; Sam & Berry, 2010). Decades of research have emphasized the important link between acculturation processes and adjustment (Sam & Berry, 2010). While living in a new country can be a stressful life experience (Berry, 1997, 1998), it can also be an enriching and horizon-widening life event in which one develops new cultural competences and expands one's worldviews and relationships (Yoon, Lee, & Goh, 2008). In our study, we incorporate two dimensions of adjustment: a *psychological* dimension, which refers to well-being and feelings of satisfaction, and a *sociocultural* dimension, which refers to the capability of fitting in and successfully managing day-to-day life in the new context (e.g., acquiring language skills, gaining cultural knowledge, establishing intercultural relations; Searle & Ward, 1990). Although both forms of adjustment have shown to be interrelated, they are conceptually distinct and predicted by different variables (Ward & Kennedy, 1994).

Being exposed to at least two sets of cultural meaning systems, immigrants may become bicultural or multicultural if they also internalize beliefs, values, behaviors, and languages of the receiving culture(s) (Hong, Morris, Chiu, & Benet-Martínez, 2000; LaFromboise, Coleman, & Gerton, 1993; Nguyen & Benet-Martínez, 2007) and develop interpersonal ties with host culture members (Mok, Morris, Benet-Martínez, & Karakitapoglu-Aygün, 2007). Although biculturalism has been linked to positive outcomes (Nguyen & Benet-Martínez, 2013; but see also Baysu, Phalet, & Brown, 2011), not all bicultural individuals are the same, and may vary in how they experience and arrange their cultural orientations and loyalties. A psychological concept that captures individual differences in the degree to which ethnic and host cultural identities are experienced as blended and harmonious versus separated and conflictual is bicultural identity

integration (BII; Benet-Martínez & Haritatos, 2005; Benet-Martínez, Leu, Lee, & Morris, 2002). Biculturals who have high BII consider their cultural identities as compatible and feel part of a combined culture, while biculturals with low BII view their cultural identities as conflictual and distinct from one another (for a review, see Huynh, Nguyen, & Benet-Martínez, 2011). There is now substantial evidence linking high BII with positive psychological and behavioral adjustment outcomes (e.g., Chen, Benet-Martínez, & Bond, 2008; Chen, Benet-Martínez, Wu, Lam, & Bond, 2013; Ferrari, Rosnati, Manzi, & Benet-Martínez, 2015; Miller, Kim, & Benet-Martínez, 2011).

Intercultural Relations and Personal Social Networks

Traditional acculturation research has focused on individuals' culture-related attitudes, behaviors, preferences, and demographics. However, acculturation does not take place solely within the individual. Instead, both immigrants (usually the smaller, less dominant culture group) and also host individuals (usually the bigger, dominant culture group) experience acculturation processes due to intercultural exchange (Schwartz, Vignoles, Brown, & Zagefka, 2014). That is, acculturation should be understood as an interactive process between immigrant and host groups, and its resulting behaviors and values mirror not only what happens *inside* of people's minds but also what takes place *between* individuals (Brown & Zagefka, 2011; Postmes, Akkus, & Stroebe, 2015). Yet, the vast majority of psychological acculturation research focuses exclusively on micro-level individual characteristics, such as immigrants' cultural identifications and preferences, thereby not accounting for the fact that these acculturation processes occur also within the meso-level represented by social communities and habitual relationships. In contrast, immigration research in other social sciences, such as political science, sociology, or economics, typically takes a macro-level perspective (e.g., focusing on immigration policies, public opinion, institutions) while remaining silent about the processes operating at the individual and interpersonal level.

An ideal and highly underused meso-level approach to study real social interaction, and as such not only the individual but also the "others," is the one offered by social network methodology. This relational perspective adds to social and acculturation psychology (e.g., theories on intergroup relations, multiple social identities, or social diversity) by going beyond individual characteristics to also include actual intercultural contact (Postmes et al., 2015; Robins & Kashima, 2008; Smith, 1999). A personal social network maps the contacts (so-called alters) of one focal individual (referred to as ego) and the relationships between these alters (i.e., ties). These relationships may be qualitatively (e.g., in terms of intimacy, emotional intensity, and reciprocal services) and quantitatively (e.g., time spent together) different between individuals. This difference is described with the notion of tie strength (Granovetter, 1973). Networks can be described in terms of their composition (who is in the network) and their structure (how are the network members connected). These two combined reflect a person's past and present social interactions (Crosier, Webster, & Dillon, 2012).

There is an impressive amount of literature linking levels of adjustment to social support networks (e.g., Cohen & Wills, 1985; Davis, Morris, & Kraus, 1998), and yet the literature examining this issue in intercultural and migration contexts, where intergroup conflict is often present, rarely assesses actual social relations. Some of the main findings refer primarily to the ethnocultural composition of social support networks. Having network members from the host society, for example, might be beneficial for immigrants' adjustment for two reasons: (a) Host culture individuals may facilitate access to resources (e.g., Kim, 2001), and (b) they may help to acquire culturally appropriate skills through interaction (e.g., Martínez García, García Ramírez, & Maya Jariego, 2002). Likewise, immigrants benefit from same-ethnicity (i.e., coethnic) network members: (a) Coethnics in general may induce a sense of inclusion and security as they might give personal stability by safeguarding the immigrant's identity and personality in the initial phase of adjustment (e.g., Jasinskaja-Lahti, Liebkind, Jaakkola, & Reuter, 2006), and

(b) coethnics residing in the host country may also provide information and resources relevant in the new environment (e.g., knowledge about appropriate job openings) and, therefore, reduce costs and risks of immigration (e.g., Liu, 2013). Similarly, there is a respectable amount of literature linking adjustment to the networks of sojourners (e.g., Bochner, 1982; Tanaka, Takai, Koyama, Fujihara, & Minami, 1997).

These results are valuable and interesting, but it should be noted that most of these studies rely on self-reports that estimate the network's composition, size, or location only indirectly. Specifically, these acculturation studies assess the network's support function (e.g., perceived availability of emotional, material, and informational assistance, or effectively received support) but not its structure. Thus, in this type of research, the term *network* is used in a metaphorical sense (Bilecen, Gamper, & Lubbers, 2017). In sum, while many studies showcase the importance of support networks in the acculturation process, social network methodology is still lacking in acculturation research. So far, only a handful of sociological studies have applied actual social network methodology in an effort to link the composition and the structure of immigrants' networks to acculturation (e.g., Lubbers, Molina, & McCarty, 2007; Vacca, Solano, Lubbers, Molina, & McCarty, 2018; but see also Mok et al., 2007). Yet, these studies examine neither acculturation nor adjustment in the psychological sense, and equate acculturation with structural cultural assimilation (i.e., giving up one's ethnic culture and ethnic relationships to develop involvements with host culture members). An important contribution of these seminal studies is, however, that they include actual relations and, thus, account for the complexity and interdependency of relationships in acculturative contexts.

The Current Study

The goal of the present study is to examine the link between habitual intercultural relations and psychological and sociocultural adjustment, as well as the link between these relations and BII. Our research makes the following two theoretical contributions to the existing literature: First, we investigate the aforementioned issues in a unique European bicultural and bilingual setting, Catalonia (Spain), thereby challenging assumptions about the cultural uniformity of the receiving context. Second, in line with other social and cultural psychology researchers (e.g., Bochner, 1982; Brown & Zagefka, 2011; Postmes et al., 2015) who emphasize the importance of studying acculturating individuals and their behaviors in their social contexts and of taking an intergroup perspective, we do not only consider the acculturating immigrant but also the immigrant's contacts and the real social interactions among all these individuals.

The social network perspective of our study also contributes methodologically. Acculturation researchers often rely on attitudinal and behavioral self-reports (e.g., "rate your overall frequency of interactions with host [ethnic] culture members"). These assessments are highly dependent on the respondent's self-awareness and are also influenced by several types of biases (e.g., social desirability, concealment of certain social interactions, wishful thinking). In contrast, the study's methodology maps directly onto actual contact between individuals. Although the egocentric network data collection mode is not free from cognitive biases, it constitutes a less obtrusive and more implicit approach that runs a lower risk of being actively manipulated by the respondent (Molina, Maya Jariego, & McCarty, 2014). It thus can reduce some of the attitudinal and memory biases that may affect interculturalism self-reports. In addition, measurement equivalence may constitute a problem in cross-cultural comparisons as one question might measure different constructs across cultures (e.g., "socializing with host culture members" might be interpreted as close or even intimate relationships in one culture, while in another culture, this may also include work interactions; Tsai, Chentsova-Dutton, & Wong, 2002). Social network data can elude this challenge by providing a more objective way of measuring directly with whom an individual interacts.

Some Predictions

This study is rather exploratory with respect to the social network variables that will best predict psychological and sociocultural adjustment and BII beyond traditional acculturation measures. That is, we do not have specific hypotheses for all the variables that we derive from the network, and instead provide some general predictions here.

As aforementioned, *tie strength* captures a qualitative aspect of the relationships, where strong ties generally implicate close relationships (e.g., those with family members and good friends) and weak ties more distant relationships (e.g., those with acquaintances). Based on previous findings from the literature on social support networks (e.g., Kim, 2001; Martínez García et al., 2002), we expect the amount of weak host national ties to have a positive association with both types of adjustment. Furthermore, as BII involves incorporating the new host identity into one's ethnic identity (Mok et al., 2007), we hypothesize a positive relationship between the amount of weak host national ties and BII. To account for the bicultural receiving context in our analysis, we split host nationals into Catalans and Spaniards, but make no prediction about possible differences between these two groups. As coethnics are seen to be beneficial for immigrants' adjustment, especially in the initial phase of immigration (e.g., Jasinskaja-Lahti et al., 2006; Liu, 2013), and mainly consist of family members and friends (Knight, Thompson, & Lever, 2017), we included strong coethnic ties in our analysis. However, as we do not focus on the initial phase of immigration, we also do not have any particular hypothesis about the relationship between strong coethnic ties and our dependent variables (i.e., adjustment, BII).

Furthermore, we are interested in global aspects of the network such as the amount of *cultural diversity* and *density* (i.e., compactness of alter connections). We expect that when the cultural diversity of a network is higher, both host and ethnic cultures are less individually salient (Schachner, Noack, Van de Vijver, & Eckstein, 2016), resulting in a more open environment, in which immigrants may develop a more integrated sense of their cultures (high BII). Obviously, it is also possible that immigrants high on BII seek out more culturally diverse contacts. We speculate that the positive effect of cultural diversity applies to both forms of adjustment as well (Schachner et al., 2016). To the extent that behavioral adjustment might be facilitated by a creative and flexible mind-set, we also base this prediction on the research linking divergent thinking with multicultural social networks and experiences (Chua, 2013; Leung, Maddux, Galinsky, & Chiu, 2008).

With regard to overall network density, one of the most commonly used variables to assess the interconnectedness of a network (Scott, 2017), we do not make any specific predictions. We do, however, examine how well local coethnic and host culture alters are connected to each other, and predict that these cross-group alter ties will be positively associated with adjustment (psychological and sociocultural) and BII. This prediction stems from the literature linking extended group contact (awareness that an in(out)-group member has a close relationship with an out(in)-group member) with more positive intergroup attitudes (Wright, Aron, McLaughlin-Volpe, & Ropp, 1997). Our thinking is that these positive intergroup attitudes might, in turn, foster higher adjustment and BII in acculturative settings. Clearly, it is also possible that individuals who feel part of a combined culture (high BII) foster these forms of extended intercultural contact to develop personal social support systems that reflect their blending of cultures.

Finally, we have two general expectations regarding ethnic and generational differences within our sample. First, we propose that there is a culture and language similarity effect, meaning that immigrants belonging to cultural groups with lower cultural and linguistic distance toward the host society (e.g., Romanians and Ecuadorians vs. Moroccans and Pakistani) will have better integrated networks (i.e., networks that include local coethnic and host culture alters who are interconnected). We make a similar prediction for second-generation immigrants and propose that Spain-born participants, compared with first- and 1.5-generation immigrants (i.e., those that migrated to Spain as adults or children), will have networks with higher numbers of such intercultural alter ties.

Method

For our study, we chose four immigrant groups (Ecuadorians, Moroccans, Pakistani, and Romanians) based on two criteria: (a) *group size* in the province of Barcelona and (b) breadth of *worldwide geographic representativeness* (Africa, Asia, Europe, and Latin America). In addition, the groups represent two big religions (Christianity and Islam) and two linguistic traditions (Romance and Indo-Arabic languages), leading to different culture and language similarity advantages toward the host society, with Ecuadorians and Romanians having the highest advantage followed by Moroccans and then Pakistani.

These groups are distinct in their migration history to Catalonia too. In 1975, international migration flows from countries Spain had postcolonial connections with (e.g., Morocco and some Latin American countries) started to become visible. Characterized by great social, cultural, and linguistic heterogeneity, Moroccans evolved into one of the biggest immigrant populations in Catalonia (Generalitat de Catalunya, 2009a). Special agreements between Spain and Ecuador facilitated Ecuadorian migration to Catalonia; yet, it was not until 2001 that the inflow of Ecuadorians started booming (Generalitat de Catalunya, 2010). Similarly, the Pakistani population in Catalonia did not increase significantly until 2001, although the first Pakistani immigrants already arrived in the 1960s and 1980s (Generalitat de Catalunya, 2011). In contrast to the other migration trajectories, Romanian immigration is rather recent, with the major influx happening between 2002 and 2007 (Generalitat de Catalunya, 2009b).

Participants

We relied on a community sample of 216 immigrants (54 from each of the aforementioned national backgrounds) who lived in the metropolitan area of Barcelona (102 males, 114 females; *M* age = 31, *SD* = 10.4).[1] All participants were adult, foreign-born, or with at least one parent born in Ecuador, Morocco, Pakistan, or Romania; had lived in Catalonia for at least 5 years; and had good working knowledge of one or both host languages (Catalan/Spanish). About two thirds of the participants were first-generation immigrants (*n* = 145), a quarter was 1.5 generation (came to Spain before the age of 15, *n* = 50), and one tenth was classified as second generation (born in Spain with at least one parent born outside of Spain, *n* = 21). On average, foreign-born immigrants had resided in Catalonia for 9.2 years (*SD* = 4.2). In all, 43.5% of the participants had up to secondary education, 27.8% had some university studies, 27.3% had a university degree, and 1.4% had received vocational or artistic training.

Procedure

Participants were recruited through relevant cultural, religious, and immigrant-related organizations in Barcelona. To maximize representativeness and minimize data dependency, participants were carefully selected through means which ensured equal chance of representation of these organizations, and by instructing respondents to not invite relatives, friends, or other acquaintances to participate, thus, explicitly avoiding snowball sampling methods. We collected the data in individual or small group sessions in the assisting organizations' premises or at the university's facilities. Each participant received a voucher of 15€.

Instruments

The study was divided into two parts of 30 min each: (a) the measurement of participants' *personal social networks* and (b) a *paper-and-pencil questionnaire*. In the first part, we used EgoNet, a program developed for collecting, analyzing, and visualizing personal social network data

(McCarty, 2003). The second part included questions about language usage and proficiency, acculturation strategies, biculturalism experiences, cultural self-identifications, psychological well-being, acculturative stress, standard demographics, and migratory experience. All instruments were developed in English and, then, translated into Spanish and Catalan. Respondents were able to choose between the two host languages.

Acculturation-related variables. Psychological adjustment was measured with a composite of four items taken from the Symptom Checklist-90-Revised Scale (SCL-90-R; Derogatis, Rickels, & Rock, 1976) and two items from the Satisfaction With Live Scale (SWLS; Diener, Emmons, Larsen, & Griffin, 1985). While the first four items measure participants' depressive and anxious symptoms (e.g., feeling sad or depressed), the last two items capture life satisfaction (e.g., "my life is overall close to my ideal"). Participants were asked to rate the frequency of all six feelings throughout the last 4 months on a 5-point scale ranging from 0 (*not at all*) to 4 (*extremely*; α = .85).

Sociocultural adjustment was operationalized as low acculturative stress and assessed with the Riverside Acculturation Stress Inventory (RASI; Miller et al., 2011), a brief and comprehensive measure of sociocultural challenges resulting from one's acculturation experience. The RASI includes 15 items representing culture-related challenges in five distinct life domains: language skills (e.g., feeling misunderstood because of one's accent), work (e.g., having to work harder than host culture individuals because of one's cultural background), intercultural relations (e.g., having disagreements with others for liking host or ethnic customs), discrimination (e.g., feeling mistreated due to ethnic background), and cultural/ethnic makeup of the community (e.g., living in an environment that is not multicultural enough; Miller et al., 2011). Participants rated each statement on a 5-point scale ranging from 0 (*never*) to 4 (*always*; α = .87), thereby giving frequency statements about the culture-related challenges they face.

BII was measured with 10 selected items from the Bicultural Identity Integration Scale (BIIS-2; Huynh, Benet-Martínez, & Nguyen, 2016) to assess the degree to which participants perceived their ethnic and Catalan cultural orientations and identities as blended and compatible versus compartmentalized and clashing (Benet-Martínez et al., 2002). High scores on BII denote ease in balancing Catalan and ethnic cultures and endorsing a Catalan-ethnic combined cultural identity. Low scores on BII denote feeling conflicted between the Catalan and ethnic way of doing things, and keeping the cultures separate (Huynh et al., 2016). All 10 items were rated on a 5-point Likert-type scale ranging from 0 (*strongly disagree*) to 4 (*strongly agree*; α = .81).

Cultural identifications. Participants rated the strength of their cultural identification with the ethnic, Catalan, and Spanish cultures on a 7-point scale ranging from 0 (*null*) to 6 (*very strong*). Catalan and Spanish identifications correlated moderately (r = .34; $p < .001$), while the two of them had near-zero correlations with ethnic identification (r = −.07 and r = −.04, respectively).

Social network variables. The ego network data were collected in three steps: First, respondents named 25 people (i.e., alters) of any culture or ethnicity who they knew (by sight or by name) and with whom they had had some contact in the past 2 years, either face-to-face, by phone, mail or email, and whom they could still contact if they had to. To help respondents think of diverse life domains and access different "storage rooms" in their memory, we provided a card showing distinct relationship spheres (i.e., family, friendship, love, neighborhood, education/work, and religion). Second, participants (i.e., egos) provided information about each alter's ethnicity/culture, place of birth, place of residence, type of relationship, and language used between ego and alter. In the last step, egos indicated for each possible pair of alters whether they knew each other. From this data, we constructed a collection of variables measuring network composition and structure (see next section).

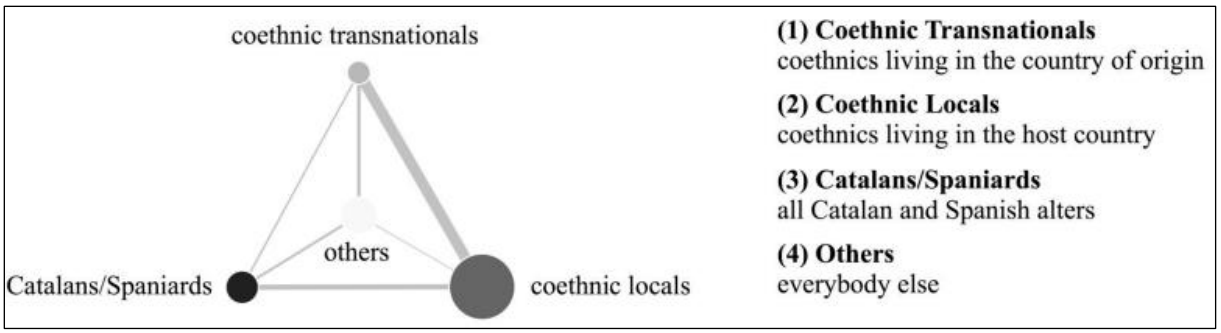

Figure 1. The four clustered groups.
Source. Adapted from Brandes, Lerner, Lubbers, McCarty, and Molina (2008, p. 49).

Analytical Strategy: Social Network Indices and Control Variables

Tie strength variables. Strong and weak ties. We used relationship type as a proxy for tie strength between ego and alter. Family members, romantic partner, and friends were coded as strong ties. Colleagues, neighbors, acquaintances, and others were grouped together as weak ties. Taking ethnicity and all 25 alters into consideration, we constructed the following three variables: (a) percentage of weak Catalan ties, (b) percentage of weak (non-Catalan) Spanish ties, and (c) percentage of strong coethnic ties.[2]

Global network variables. Diversity. Based on a commonly used fractionalization measure (e.g., Fearon, 2003), we defined cultural diversity as the probability that two randomly selected alters are from different cultural groups:

$$\text{Diversity} = 1 - \sum_{i=1}^{N} \pi_i^2 = \sum_{i=1}^{N} \pi_i\,(1 - \pi_i), \tag{1}$$

where *N* is the number of cultural groups and π_i the proportion of people belonging to group *i*. We accounted for four cultural groups (coethnics, Catalans, non-Catalan Spaniards, others).

Density measures the compactness of alter relations as the ratio of the number of existing ties and the number of all possible ties (Wasserman & Faust, 1994):

$$\text{Density} = \frac{n}{\frac{N(N-1)}{2}}, \tag{2}$$

where n represents the existing ties, N the number of alters, and (N(N−1)) / 2 the amount of possible ties. Here, this is the number of alter ties divided by 300, ranging from 0 (*completely disconnected network*) to 1 (*completely connected network*).

Group-based network variables. In line with the clustered graph method of Brandes and his colleagues (Brandes, Lerner, Lubbers, McCarty, & Molina, 2008; Brandes et al., 2010), we used the information on alters' ethnicity and place of residence to classify the 25 alters into four groups of social contacts: (a) coethnic transnationals (CT; coethnic alters living in the participant's country of origin), (b) coethnic locals (CL; same-ethnicity alters living in Catalonia or in the rest of Spain), (c) Catalans/Spaniards (C/S; Catalan and Spanish alters), and (d) Others (see Figure 1). Their approach standardizes and allows to visually summarize collections of personal social networks. Based on the four groups, we calculated the following three types of measures (see Figure 2).

Group size captures the composition of the network. It is number of alters in each of the aforementioned four groups (i.e., CT, CL, C/S, Others) divided by the total amount of alters (i.e., 25)

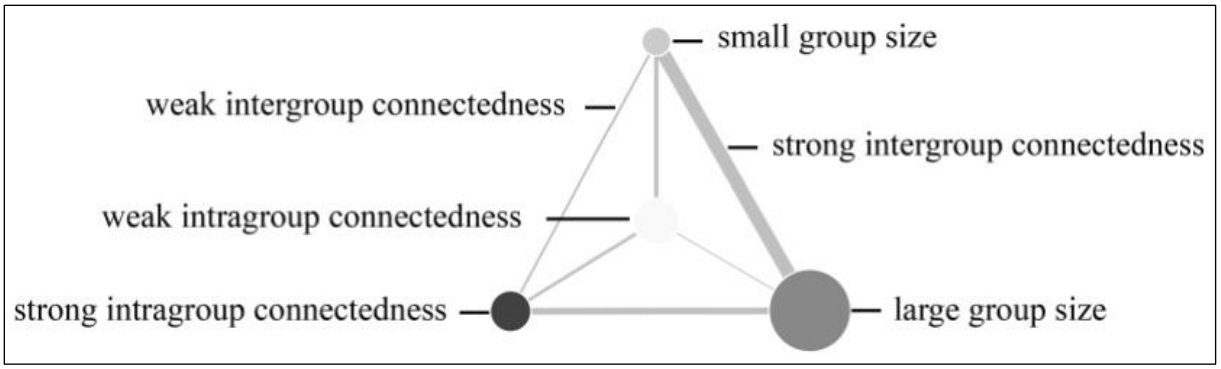

Figure 2. The visualization of group size, intragroup and intergroup connectedness.
Source. Adapted from Brandes, Lerner, Lubbers, McCarty, and Molina (2008, p. 50).

in the network. The theoretical range of this index is 0 to 1. In our sample, the biggest group on average is CL (*M* = 0.38, *SD* = 0.19), followed by C/S (*M* = 0.28, *SD* = 0.19), Others (*M* = 0.17, *SD* = 0.13), and CT (*M* = 0.16, *SD* = 0.18). We visualized each group as a circle whose area size is proportional to its group size. The bigger the circle, the more people are part of that group.

Intragroup connectedness. We computed how strongly, on average, the alters within each of the four groups (i.e., CT, CL, C/S, and Others) are connected to each other, adjusted for their group size. Specifically, intragroup connectedness is defined as the number of ties among individuals of the same group divided by the number of these individuals. The weight of how strongly individuals within Group A are intraconnected is

$$\omega(A, A) = \frac{e(A, A)}{|A|}, \tag{3}$$

where *e*(A, A) is the number of existing ties within Group A and $|A|$ is the number of individuals in Group A. This measure is distinct from within-group density in the way group size is taken into account. We prefer group connectedness to group density because the later is too high for smaller groups compared with larger groups of similar compactness, as argued in Brandes et al. (2008). In our figures, intragroup connectedness is visualized by the intensity of the circle color, which is proportional to the weight of the corresponding intragroup ties. The darker a circle, the stronger the alters within that group are connected to each other.

Intergroup connectedness indicates how strongly, on average, alters between two groups are connected to each other, weighted in accordance to their group sizes. In total, there are six intergroup connectedness variables: CT–CL, CT–C/S, CT–Others, CL–C/S, CL–Others, and C/S–Others. More formally, the weight of how strongly two Groups A and B are interconnected is

$$\omega(A, B) = \frac{e(A, B)}{\sqrt{|A| \cdot |B|}}, \tag{4}$$

where *e(A, B)* is the number of existing ties between the Groups A and B and $\sqrt{|A| \cdot |B|}$ is the geometric mean of the two group sizes (for a formal description, see Brandes et al., 2010). Note that this definition of connectedness applies to intragroup connectedness as well, but with B= A, in which case Equation 4 reduces to the definition previously given. In our figures, the lines connecting the circles (i.e., the groups) visualize their intergroup connectedness. The line width is proportional to the weight of the corresponding intergroup ties. The thicker the line, the stronger two groups are interconnected.

Table 1. Regression Results for Psychological Adjustment.

Predictors	Psychological adjustment				
	1	2	3	4	5
1. Controls					
Gender	.03	.02	.02	.05	.03
Age	.05	.04	.04	.03	.04
Income	.35***	.33***	.29***	.30***	.31***
Education	−.02	−.08	−.06	−.10	−.10
Years in Spain	−.02	.02	−.05	.02	−.02
2. Cultural identifications					
Catalan		.21**	.16*	.16*	.17*
Spanish		−.03	−.03	−.05	−.03
Ethnic		.18**	.19**	.25***	.20**
3. Tie strength					
Weak Catalan ties			.15*		
Weak Spanish ties			.04		
Strong coethnic ties			−.05		
4. Global network variables					
Diversity				.20**	
Density				.16†	
5. Group-based network variables					
Group size of CL					−.26***
Connectedness of CL–C/S					.06
R^2	.12	.18	.20	.22	.23

Note. N = 216. Standardized beta coefficients. Results are corrected for measurement error. CL = coethnic locals; C/S = Catalans/Spaniards.
†p < .10. *p < .05. **p < .01. ***p < .001.

Our analytical strategy focused on assessing the capacity of the social network variables to predict adjustment and BII beyond individual-level traditional acculturation variables. Because some of the computed network variables are interdependent and thus intercorrelated (e.g., r = −.70 for diversity and strong coethnic ties; r = .53 for density and the amount of intercultural ties), we cannot test them all in the same regression model to predict adjustment and BII. Instead, we group them by type: tie strength variables, global network variables, and group-based network variables. Finally, the following demographics were included as control variables: sex, age, income, education, and years in Spain.

Results

Predicting Adjustment and BII

We ran three sets of nested linear regressions to examine the joint effects of individual-level and meso-level variables in predicting psychological adjustment, sociocultural adjustment, and BII.[3] The first step of each regression set included the control variables. Identifications with ethnic, Catalan, and Spanish host cultures were added in the second step.[4] Due to multicollinearity issues, regression Steps 3 to 5 incorporated different types of network variables separately (Cohen, Cohen, West, & Aiken, 2003).

Psychological adjustment. As Table 1 shows, both ethnic and Catalan identification predict psychological adjustment, indicating that one does not have to sacrifice one's home culture or

Table 2. Regression Results for Sociocultural Adjustment.

	Sociocultural adjustment				
Predictors	1	2	3	4	5
1. Controls					
Gender	−.05	−.06	−.06	−.05	−.04
Age	−.04	−.05	−.04	−.08	−.02
Income	.37***	.34***	.30***	.30***	.31***
Education	−.09	−.12†	−.13*	−.10	−.17*
Years in Spain	.07	.08	−.02	.05	−.01
2. Cultural identifications					
Catalan		.15*	.07	.08	.03
Spanish		−.03	−.03	−.05	−.00
Ethnic		−.10	−.08	−.04	−.04
3. Tie strength					
Weak Catalan ties			.18**		
Weak Spanish ties			.01		
Strong coethnic ties			−.26***		
4. Global network variables					
Diversity				.34***	
Density				.12*	
5. Group-based network variables					
Group size of CL					−.22**
Connectedness of CL–C/S					.17**
R^2	.16	.19	.27	.27	.25

Note. N = 216. Standardized beta coefficients. Results are corrected for measurement error. CL = coethnic locals; C/S = Catalans/Spaniards.
†p < .10. *p < .05. **p < .01. ***p < .001.

orientation to the new culture to experience well-being, and hence substantiating the link between biculturalism and well-being (Nguyen & Benet-Martínez, 2013). Beyond these acculturation variables, the results show that the content and the structure of immigrants' social networks predict their psychological adjustment. Weak Catalan ties, but not weak Spanish ties, are positively linked to well-being. Cultural diversity, as we predicted, is also positively linked to psychological adjustment, and so is network density, even if only marginally. Perhaps density of ties reflects an organized stable support system, which gives the individual a sense of belonging, thus predicting psychological adjustment positively. Finally, results indicate that the larger the relative amount of local coethnic alters in the network, the lesser the levels of psychological well-being, while the interconnection of CL and C/S has no predictive value.

Sociocultural adjustment. As can be seen from Table 2, and unlike psychological adjustment, there is a negative link between education and sociocultural adjustment. It is possible that immigrants with more formal education have more difficulties finding a job appropriate for their educational level, are more aware of cultural differences and differential treatment, have higher expectations for their incorporation into the host society, and are also more self-critical, all feelings that might translate into acculturative stress. Notice also that sociocultural adjustment is not predicted by cultural identifications (exception: Catalan identification in Step 2). Again, weak Catalan ties appear to be beneficial for sociocultural adjustment, while weak Spanish ties do not. Strong coethnic ties negatively predict sociocultural adjustment. Furthermore, cultural diversity predicts sociocultural adjustment too. Density predicts sociocultural adjustment positively, but because this variable is not informative with respect to the cultural attributes of the individuals who are

Table 3. Regression Results for BII.

Predictors	BII				
	1	2	3	4	5
1. Controls					
Gender	−.01	−.02	−.01	−.02	.01
Age	.07	.03	.05	.02	.05
Income	.15*	.08	.06	.06	.10
Education	.22**	.13†	.10	.16*	.08
Years in Spain	.08	.12†	.05	.08	.05
2. Cultural identifications					
Catalan		.37***	.31***	.33***	.29***
Spanish		.05	.05	.05	.11
Ethnic		.04	.05	.05	.05
3. Tie strength					
Weak Catalan ties			.16**		
Weak Spanish ties			−.11†		
Strong coethnic ties			−.10		
4. Global network variables					
Diversity				.25***	
Density				.01*	
5. Group-based network variables					
Group size of CL					−.06
Connectedness of CL–C/S					.14*
R^2	.12	.26	.31	.31	.28

Note. N = 216. Standardized beta coefficients. Results are corrected for measurement error. BII = bicultural identity integration; CL = coethnic locals; C/S = Catalans/Spaniards.
†p < .10. *p < .05. **p < .01. ***p < .001.

connected to each other, this finding is harder to interpret. However, as shown in Step 5, it seems that the effect of density might be driven by the interconnection between local coethnic and host culture alters, highlighting the beneficial role of network interculturality for behavioral adjustment and its effect beyond degree of network diversity.

BII. Table 3 reveals that identification with Catalan culture is highly predictive of BII. This finding contributes to the notion that, at least for immigrants, the integration of cultural identities involves bringing the host identity into one's ethnic identity, which for many first-generation immigrants is their primary identity (Mok et al., 2007). Similar to the previous analyses, the amount of weak Catalan ties is positively linked to BII, while weak Spanish ties are weakly negatively related to BII. Note that cultural diversity is a strong predictor of BII, supporting our prediction that a culturally diverse network facilitates the bridging and integration of immigrants' ethnic and host cultural identities. The positive association with the amount of ties between local coethnic and Catalan/Spanish alters reflects this too.

Social Networks: Ethnic and Generational Differences

The size of our subsamples did not allow testing for possible ethnicity or generation effects on the relationships found in the regression analysis. We chose the previously described

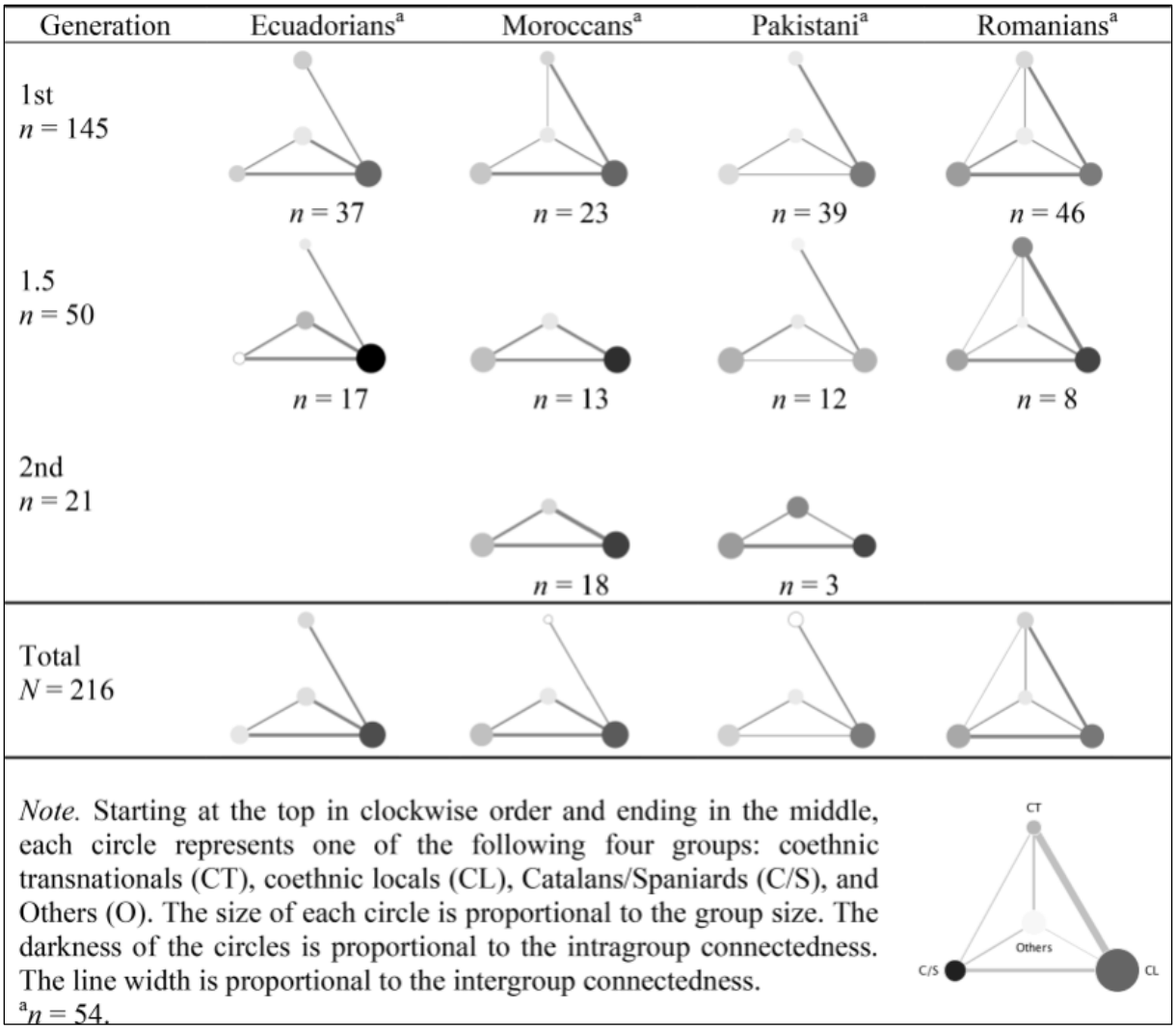

Figure 3. Median networks by generation and ethnicity.

clustered graph approach by Brandes and his colleagues (Brandes et al., 2008; Brandes et al., 2010) to visually summarize and compare the networks across ethnicity and generation. We built our analysis on the following four groups: CT, CL, C/S, and Others. In these visualizations, individual relationships between alters are replaced by a group-level statistic of interaction. Because quantitative social network data are often affected by strong outliers, we chose a descriptive statistic that is not as easily influenced by extreme cases and, thus, represents a relative stable measure for the average (Brandes ets al., 2008). As the median is less sensitive to outliers than the mean, we visualized the median network composition and structure of first-, 1.5- and second-generation immigrants by ethnic group (i.e., Ecuadorians, Moroccans, Pakistani, Romanians) based on the variables group size, intragroup, and intergroup connectedness.

There are four noteworthy trends in Figure 3.[5] First, across all four ethnicities and generation groups, CL are the most important alter group in terms of size and intragroup connectedness (exception: 1.5 generation Pakistani for whom C/S are comparably important). Second, against our expectation that ethnic groups with higher cultural and linguistic similarity toward the host society would have better integrated networks (local coethnic and host alter groups that are more interconnected and balanced in size), Ecuadorians show the greatest imbalance between the presence of C/S and CL. Although, compared with Romanians, both groups are similarly interconnected, the intraconnectedness of C/S is comparatively low.

Third, when contrasting generations, Ecuadorian and Romanian median networks change counterintuitively from first to 1.5 generation: C/S lose their significance (decrease in size and intraconnectedness). In contrast, Moroccan and Pakistani median networks change as expected across generations: C/S become more visible, whereas CL reduce in size. Fourth, only in Romanian networks all alter groups are somewhat connected to each other. Especially striking is the connection between CT and C/S already in the first generation. This connection might be explained by the fact that for foreign Romanians, it is easier (e.g., due to smaller geographical distance, lower traveling costs, no need for visa), relative to other ethnic groups, to come to Spain for a visit and meet ego's local host culture contacts. In addition, this pattern could result from the fact that some of these Romanian transnationals might have returned to their home country after having been immigrants in Spain themselves.

Discussion and Conclusion

In this study, we examined the social networks of immigrants residing in a European bicultural and bilingual context (Catalonia) and how these networks' content and structure relate to levels of adjustment (both psychological and sociocultural) and BII. Our aim was to go beyond commonly used acculturation self-reports to explore the role of actual intercultural relations at the individual and network level. We did so by choosing the relational perspective of social network analysis to analyze an immigrant-community sample of Ecuadorians, Moroccans, Pakistani, and Romanians residing in Barcelona. These four subgroups represent four continents, two religions, and distinct cultural and linguistic backgrounds, leading to different degrees of culture and language similarity advantages toward the Catalan-Spanish host culture.

Results from the study showed that the content and the structure of immigrants' social networks to be strongly and meaningfully linked to our outcomes of interest, even after controlling for some key individual-level demographic and psychological acculturation variables. Specifically, the network's cultural diversity positively predicted psychological and sociocultural adjustment and BII, pointing to the importance of compositional network interculturality and supporting the literature linking diversity with emotional and cognitive-behavioral benefits (Chua, 2013; Leung et al., 2008; Schachner et al., 2016). The interconnectedness of local coethnic and host culture contacts was also predictive of sociocultural adjustment and BII, stressing the benefit of structural network interculturality and extended intergroup contact (Wright et al., 1997).

Supporting the idea that host culture individuals facilitate access to resources and may assist immigrants, through social interaction, in acquiring culturally appropriate skills (Kim, 2001; Martínez García et al., 2002) and incorporating a Catalan identity into their ethnic identity (Mok et al., 2007), "weak" Catalan ties (i.e., acquaintances, colleagues, neighbors), but not weak Spanish ties, positively predicted adjustment and BII. The null results for weak Spanish ties could be explained by the fact that some of these local Spaniards might themselves be (domestic) immigrants in Catalonia, dealing with similar acculturative challenges (i.e., getting familiar with a new language and cultural context), and thus are less able to provide instrumental and psychological resources to our participants. Furthermore, the study results showed that bicultural identity structures are reflected in the composition and the structure of social networks, providing validity to the idea that "within-person" interculturality (i.e., BII) is not a purely subjective experience, and instead, it may result from, and also lead to, interculturalism at the meso-level of personal and local communities. All in all, the social network information included in our study was not redundant with self-reported acculturation variables and

improved our predictions. Thus, acculturating individuals' behaviors and preferences mirror not only what happens *inside* of people's minds but also what takes place *between* individuals (Postmes et al., 2015).

Finally, in contradiction to a "culture and language similarity" hypothesis, Moroccans and Pakistani had social networks that were culturally well integrated (i.e., included a balance of local coethnics and host culture alters who were interconnected). Ecuadorians, however, had the smallest, least intraconnected group of host national contacts. In contrast, Romanians' network groups were generally well interconnected. Furthermore, the size of local host culture contacts increased for 1.5- and second-generation Moroccans and Pakistani, but not for Ecuadorians and Romanians. In summary, the network profiles of the four cultural groups do not support the common public belief that Muslim immigrants are less integrated into European societies than immigrants with Christian backgrounds. Of course, these group differences have to be taken cautiously, as the study does not include random and representative subsamples. Although in our recruitment methods we hoped for all the cultural, religious, and immigrant-related organizations in Barcelona to have equal chances in participating in this study, hidden differences across these organizations may have systematically affected the composition of our samples. Nevertheless, one could speculate about three potential mechanisms to explain the above group differences in network content and structure: (a) The higher the similarity advantage, the higher the expectations of the host society toward the particular immigrant group may be (i.e., perhaps local Catalans expect Ecuadorians to adapt to the culture and learn Catalan faster), which, in return, might be perceived as acculturative pressure and lead to the formation of a reactive identity; (b) immigrant groups with low similarity advantage (e.g., Pakistani) might be aware of the cultural distance's cost, and thus seek actively for contact with and support from host individuals to manage their daily life, which might result in more integrated social networks; and (c) as language is a key carrier of cultural meaning and also induces cultural frame switching (CFS; Hong et al., 2000), immigrants who learn the new language associated with the host dominant culture (e.g., Catalan), without the choice of also communicating in their ethnic language (e.g., Pakistani and Moroccan vs. Ecuadorians who can use Spanish), may internalize the culture faster and have less problems engaging in interpersonal CFS.

Limitations and Future Directions

An important limitation of our explorative study is the correlational nature of the data, which allows us to make only associative but not causal statements. Future research could, in a longitudinal manner, investigate how network members and their relationships influence immigrants' acculturation processes, and how immigrants select network members based on their acculturation experiences (e.g., Jugert, Leszczensky, & Pink, 2017). A mixed-method design could also be an option for disentangling the bidirectional relationship of networks and acculturation (e.g., Domínguez & Maya Jariego, 2008). A second limitation is our use of relationship type as a proxy for tie strength instead of measuring closeness or importance of social ties. Finally, our study does not allow for strong generalizations as its sample is not random. However, note that it is difficult to obtain random samples from hidden populations (Heckathorn, 1997).

Despite these limitations, we would like to emphasize some strong points of our research. First, we relied on a carefully selected community sample of four culturally and linguistically distinct groups, rather than on a convenience sample. Second, the network data we collected are extremely rich and grasp, for each respondent, a real life environment of 25 people from different life domains and cultural backgrounds. Using these data, we were able to combine

immigrants' *thoughts* on acculturation (self-reported cultural identifications) with their acculturative *behavior* (network). Furthermore, our study contributes to the existing literature in at least three ways: First, by choosing a unique European bicultural and bilingual immigration context, we challenge assumptions about culturally uniform receiving contexts in acculturation research (Bornstein, 2017). We hope this study stimulates further acculturation social network research in other culturally complex bilingual and bicultural Spanish (e.g., Basque Country) and linguistically and culturally diverse European contexts (e.g., Switzerland, Belgium). Second, we explore acculturation from an intergroup perspective and study real social interaction instead of solely relying on interculturalism self-reports (Brown & Zagefka, 2011). This particularly adds to current theories and frameworks in psychology (e.g., intergroup relations and multiple identities) by including actual intercultural contact (i.e., of the acculturating immigrant, the immigrant's contacts, and the interactions between all of them) and not just focusing on individual characteristics. Third, we apply the well-suited and highly underused methodology of social network analysis (Bilecen et al., 2017), which reduces a variety of methodological issues, such as self-awareness and social desirability biases, and problems with measurement in equivalence. Finally, our study can open avenues for future acculturation research examining other social-personality psychological correlates of social network composition and structure. For instance, a full understanding of the adjustment effects (gains and costs) of network diversity calls for research on the personality processes driving and resulting from network formation. In a longitudinal study of sojourners, Zimmermann and Neyer (2013) found that international experiences led to increases in openness and agreeableness and decreases in neuroticism (even after controlling for self-selection mechanisms). These personality changes were largely driven by the formation of new social networks in the receiving country, supporting the finding that cultural diversity in social networks is linked to social and cognitive gains (Chua, 2015).

Conclusion

Most modern and democratic multicultural societies hope for their immigrant population (and their descendants) to be well adjusted socioculturally and psychologically, and for them to develop a sense of belonging to the host culture that adds to (vs. detracts from) their ethnic culture competencies and loyalties (Berry & Sam, 2014). Our research suggests that this may be partly achieved through policies and institutions (urban plans, policy decisions, socioenvironmental interventions) that foster the development and maintenance of personal social networks that include both culturally diverse contacts *and* interactions between host culture and ethnic contacts. It has been argued that intercultural policies—such as those currently being adopted in some European cities, including Barcelona (Wood, 2010), and of which some are positively contrasting against naïve multiculturalism (Meer & Modood, 2012)—create the necessary conditions for intercultural relations to develop within and between ethnic, cultural, and linguistic boundaries. We believe that these intercultural policies might assist immigrants and their descendants in building culturally diverse and interconnected personal social networks, and ultimately also contribute to their better psychological and behavioral adaptation. These positive outcomes might, in turn, contribute to the social capital of local, national, and transnational contexts.

In closing, intercultural relations, because of their potential to bring people closer together (spatially, socially, and psychologically), are a critically important feature of healthy—that is, socially cohesive and prosperous—diverse societies. Harnessing and facilitating these experiences through social policies promoting cultural diversity and habitual intercultural relations should thus be a societal imperative.

Appendix

Correlation Matrix for Variables in Regression.

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Adjustment																			
1	Psych	.82																	
2	Socio	**.43**	.84																
Bicultural identity																			
3	BII	**.30**	**.43**	.75															
Demographics																			
4	Sex	−.02	−.09	−.06	1														
5	Age	.02	−.07	.12	−.11	.99													
6	Inc	**.27**	**.31**	.18	−.12	−.04	.79												
7	Edu	.07	.01	**.24**	−.09	**.30**	.22	.88											
8	Yr Sp	.08	*.14*	.12	−.10	.08	**.26**	.12	.62										
Cultural identifications																			
9	Cat	.18	*.14*	**.35**	−.01	.11	*.16*	**.24**	.00	.82									
10	Sp	.06	.05	.19	−.07	.13	.08	.11	.07	**.34**	.82								
11	Eth	.12	−.11	−.01	.02	−.02	−.04	.00	−.06	−.07	−.04	.77							
Tie strength																			
12	W Cat	.18	**.23**	**.26**	−.13	.13	*.15*	**.24**	*.17*	.19	.03	−.06	1						
13	W Sp	.07	.09	−.06	.05	.01	.20	−.01	.01	.02	.21	−.12	−.02	1					
14	S Eth	*−.14*	**−.34**	**−.25**	.06	.05	**−.26**	−.20	−.22	**−.32**	−.10	.20	−.21	−.06	1				
Global network variables																			
15	Div	.21	**.35**	**.34**	−.08	.03	**.25**	**.24**	**.26**	**.26**	*.14*	−.09	**.44**	**.27**	**−.70**	1			
16	Dens	.13	.06	−.06	.06	.04	.05	*−.16*	.04	−.03	−.03	.03	−.11	−.05	*.16*	**−.26**	1		
Group-based network variables																			
17	CL	−.21	**−.23**	*−.15*	.13	−.12	−.13	−.21	.00	**−.22**	*−.14*	**.24**	**−.36**	−.08	**.47**	**−.44**	*.16*	1	
18	CL-C/S	.13	**.23**	.19	.01	.08	.18	−.09	**.23**	*.16*	.11	−.04	.06	.11	**−.28**	**.32**	**.53**	.05	1

Note. N = 216. *Adjustment*: 1 psychological; 2 sociocultural. *Bicultural identity*: 3 bicultural identity integration. *Demographics*: 4 sex; 5 age; 6 income; 7 education; 8 years in Spain. *Cultural identifications*: 9 Catalan; 10 Spanish; 11 ethnic. *Tie Strength*: 12 weak Catalan ties; 13 weak Spanish ties; 14 strong coethnic ties. *Global network variables*: 15 diversity; 16 density. *Group-based network variables*: 17 group size of coethnic locals; 18 intergroup connectedness of coethnic locals and Catalans/Spaniards. *Italic* correlations represent $p < .05$. Underlined correlations represent $p < .01$. Bold correlations represent $p < .001$. Correlations corrected for measurement error are highlighted in gray. Numbers in the diagonal indicate the quality of the item (ranging from 0 to 1). Correlations between the cultural identification variables are corrected for common method variance error.

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Notes

1. We excluded 16 out of original 232 participants on the basis of factors that could harm data reliability (e.g., very poor language skills, extreme social exclusion).
2. We computed the amount of strong and weak ties within each alter ethnic group (i.e., amount of weak Catalan ties vs. strong Catalan ties, amount of weak Spanish ties vs. strong Spanish ties, and amount of weak ethnic ties vs. strong ethnic ties). To avoid multicollinearity issues in the analyses, we chose to use only one out of the two possible tie strength variables within each ethnic group, specifically the one with the highest variance.
3. We corrected our data for measurement error resulting from imperfect quality of survey items and common method variance. We estimated the quality of our survey items with the freely available web program Survey Quality Predictor 2.1 (Saris & Oberski, 2014). For the quality of demographic variables (e.g., age, income), we relied on the estimates of Alwin (2007). The corrected correlation matrix of the main regression variables is given in the appendix.
4. We checked for interactions between the cultural identification variables, but did not find any significant effects.
5. We checked statistically for mean differences and found similar results.

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