

Multiple Cultural Identifications, Personality, and Social Networks

Lydia Repke

TESI DOCTORAL UPF / 2017

DIRECTORA DE LA TESI

Dra. Verònica Benet-Martínez

DEPARTAMENT DE CIÈNCIES POLÍTIQUES I SOCIALS



TO MY PARENTS,
for raising me to believe that anything was possible

TO MY PARTNER,
for making everything possible

AND TO MY MULTICULTURAL SON
for making me make everything possible in less time

*“I’m just one person as you can see,
But there is two different sides of me.
The Spanish me and English me,
They fit together perfectly.”*

– Hola from Sesame Street –

Acknowledgements

I was lucky to have had a social network consisting of people and institutions who have influenced me, helped me, and/or supported me (i.e., emotionally, mentally, physically, administratively, or financially) throughout the process of completing this dissertation.

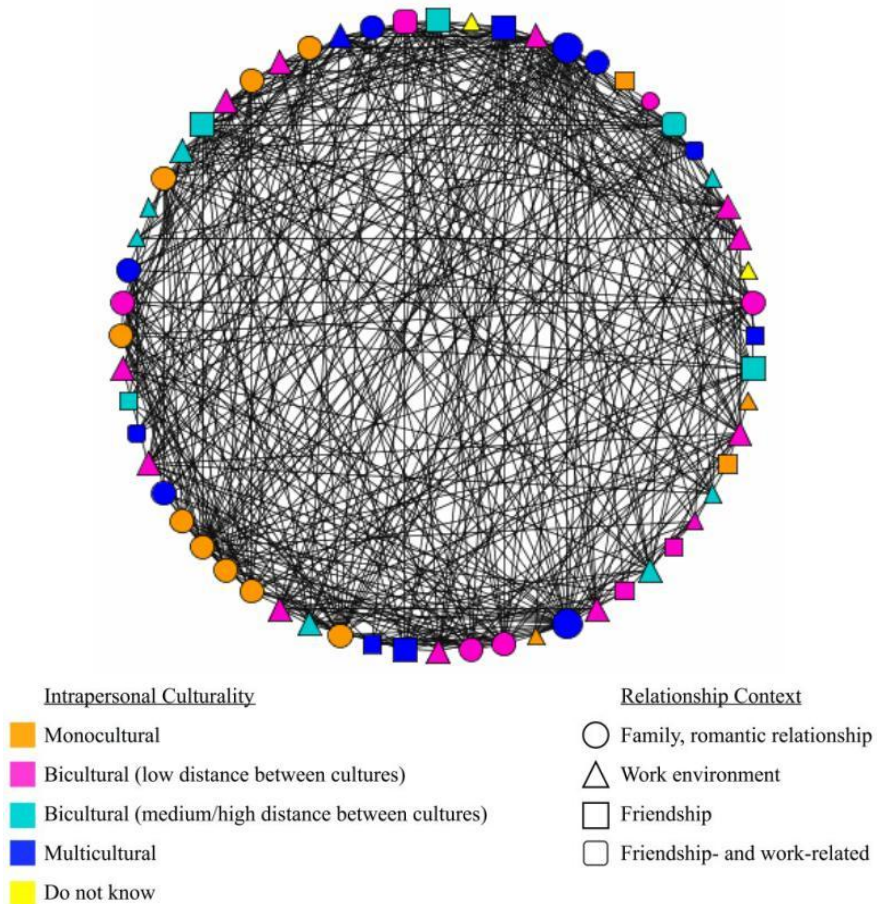


Figure A. Thesis Support Network in Circle Layout

I am grateful for any type of assistance my family (34%), my friends (20%), my colleagues (40%), and those who fall in between these two categories (6%) have given me (see Figure A). They have provided me mostly with mental support (49%) and emotional encouragement (34%), but also with administrative (8%), financial (6%), and physical aid (3%). Working on a challenging project (such as a PhD) is probably never easy, especially when 1,869 km away from home and without an established social support network at destination. This is why I appreciate the tightly-knit network I was embedded in and that gave me so much love, energy, and good ideas. The latter is maybe not too surprising given the fact that multicultural social networks have been found to promote creativity (Chua, 2015) and that about 75% of my support network happens to be at least bicultural (see Figure A) .

I first would like to thank my supervisor Verònica Benet-Martínez who has accompanied me from my master's thesis onwards, who has always believed in my academic potential, and who made this dissertation possible. I am also grateful to Willem Saris who awakened my wish to pursue a PhD. Surely, José Luis Molina and Miranda Lubbers from the Universitat Autònoma de Barcelona played an important part in my social network education by hosting me in their summer schools on personal network analysis. I would not have met them if it had not been for Mario Diani. A special thanks goes to Jürgen Lerner as well who gave me a version of EgoNet2GraphML to use for my research before it was officially released. All these individuals have helped me professionally to get to where I am today. Thank you very much!

At the Research and Expertise Centre for Survey Methodology (RECSM) at the Universitat Pompeu Fabra (UPF), I had the privilege to work in an environment of great colleagues. In particular, I would like to thank Wiebke Weber (who was there for me during sunny and stormy days), André Pirralha and Paolo Moncagatta (who I could disturb in their office when I had problems with correction for measurement error), Imma Triano and Silvia Soriano (who helped me whenever I got stuck with administrative stuff), Albert Julià and Jordi Gumà (who explained to me why education had to be coded differently), Josep Maria Comellas (who I shared an office with for some time and who always had a nice word for everybody), My Lan Do (our only real

English native speaker in the hallway who always helps out when there is a linguistic problem), Alina Vrânceanu (who is the best-dressed woman on campus and gave me some insights into the immigration dynamics of the Romanian population in Spain), Sergio Martini (who delivered me with encouraging words in the final stage of the PhD), Daniel Ciganda (who gave me an introduction to agent-based modeling and one of his books on this topic), Malcolm Fairbrother (who visited RECSM, has the most beautiful last name ever, and who became a supportive friend), Elia Soler (who has been as firm as a rock when I needed her to be and who has discussed my results with me over and over again to make some sense out of them), and, last but not least, Diana Fabiola Zavala-Rojas (who has supported me in so many ways I could write a dissertation-like book about it; instead of writing a new thesis, I prefer we sit down one day and I thank you in person).

Other important people at UPF belong to the Behavioral and Experimental Social Science (BESS) group, the Management Breakfast Seminar, and the UPF Behavioral Workshop. In particular, I am grateful to Thomas Woiczuk (who I had many coffees with talking about our research and what perfect profile pictures look like), Aina Gallego (who had useful suggestions on how to code bicultural identity), Albert Costa (who knows how to get directly to the point), Larbi Aloui (who catered me in my darkest moments of the thesis and who proofread many parts of this dissertation), but also to all the others who attended my presentations and commented on my research.

What would my work be without discussants and reviewers who give constructive comments? My work would still not be in good shape. I would like to express my gratitude to Mathew Creighton, Pau Baizan, Gert Cornelisson, and John R.B. Palmer who all have been my discussants in the thesis seminar of the Department of Political and Social Sciences. Further, I acknowledge Gabriel Horenczyk and Peter Bevington Smith who were both reviewers of the first article of this thesis (Chapter 2), and also the anonymous reviewers of the second article (Chapter 3) who all provided constructive feedback. I am also thankful for the idea of Seth Schwartz on how to present the results of the first article. A special thank you goes here to José Luis Molina and Gabriel Horenczyk who took the time to read the entire thesis and who are the two

external reviewers, and to the third person who will join them in the tribunal of the defense (probably Isidro Maya-Jariego).

An enormous thank you is directed to the Studienstiftung des Deutschen Volkes (Studienstiftung; German National Academic Foundation) who has not only supported me financially and in non-material ways throughout my bachelor's, my master's, and my PhD degree, but who has also supported me truthfully. I always felt cared for and as a part of a big family (names such as Imke Thamm, Matthias Frenz, Frank Habermann, and Matthias Meyer come to mind). In this context, I have to highlight two people: Dirk Baecker and Jan Fuhse who both reviewed my PhD research proposal for the Studienstiftung and paved the way towards obtaining a doctoral scholarship. In addition, I am thankful for the long-needed decision of the Studienstiftung to have trust lecturers outside of Germany. Professor Klaus-Jürgen Nagel has lived up to his position as the first trust lecturer of the Studienstiftung at UPF and I am thankful for having been provided with such an excellence choice.

The Studienstiftung has also given me the gift of four special friendships. The person I have known the longest is Johannes Stürner (who is basically family and who I shared important parts of my life with). The second dear friend is Andrada Tatu (who is also part of the family by now and wrote many nice R loops for me; if I say nice, I mean nice, because for Andrada it is not enough that a loop works, it also has to look good). Chronologically next is Thomas Sturm (who I enjoyed special conversations with and some glasses of Aperol Spritz). The youngest member of my Studienstiftung's gang is Julian Göltz (who is the best partner in crime to look out for shooting stars).

Besides the already mentioned, I would like to thank Nacho Lago for his invaluable administrative assistance in the process of handing in this thesis, Camil Ungureanu for his support in the Academic Commission, and the secretary's office of UPF for all their administrative work.

Some friends are still missing. Filip Agneessens (I can finally spell this name without double-checking, yay), thank you for all the fun visits and the input you gave me on my agent-based model. Next, I appreciated all the time spent in the car with Judith Pampalona

between Barcelona and Andorra where we talked about our PhD projects, supervisors, and romantic ties. Lisa Kraus, I share with you many unforgettable memories. For example, our times in Coma-ruga and in La Mora, your company when I wanted to watch a German soccer match in a bar, all the times we accidentally dressed up like twins, and of course those moments that involved cork. Sebastian Krüger, I thank you for your mental push-ups from the distance whenever I needed them the most. Mohammed El-Bachouti, I will always remember our super interesting, entertaining, and honest conversations here at UPF. Thanks to Arnaud Lasserre, who is the only person who ever read my master's thesis apart from my supervisor and who generally showed interest in my studies. Likewise, I thank Angela Palacin who was always interested in my PhD topic. I promise I will finally get back to you with the results of my studies.

Moreover, I would like to express my deepest gratitude to my German, my Catalan, and my “Chinese” family. The composition (who belongs to my family) and the structure (who is related to whom and in what way) of my family network was never easy to understand for outsiders. I am convinced one needs a bottle of cava or wine to follow the logic. Due to lack of either of them, I will not go into detail, but hope that you trust me in that I know what I am talking about.

I wish to say thank you to my three mothers Claudia, Siggi, and Manoli. I am also grateful for having three fathers: Torsten, Dettekkin, and Josep Maria. The six of you have cared for me, supported me, loved me, and made me grow into the person I am today. My grandparents deserve a very big Dankeschön for everything. I finally succeeded in accomplishing a doctoral degree and I always had Oma Nata and Opa Wilfried somewhere in my mind when working on it. I still hope that they will not win the lottery one day. Because then Opa Wilfried will send me to medical school and I would have to do another—completely unrelated—PhD (uff). I thank Oma Rosa and Opa Horst (he is 90 years old and still goes sailing) for integrating my Catalan family with English conversations and speeches at family reunions. I further acknowledge Opa Olaf and Oma Helga for the cozy get-togethers at their apartment, my aunt Nadja and my uncle Tilo for being there for me, my aunt Maren for making sure my brain does not paste up

from white Spanish bread by sending me a bread baking machine, and my step-sister Kristin for sending packages every now and then. My “Chinese” family, who originally belonged to my Catalan family, became more and more multicultural over the years, peaking in a small anecdote: I was walking with Aina and Alex (back then maybe 6 and 8 years old) along Passeig de Gràcia in Barcelona. We were standing at a red traffic light, when they started counting up to 10 in Chinese. The couple in front of us seemed to be Chinese tourists and turned directly around when they heard the children’s voices. What they saw, however, must have surprised them—a little blonde Catalan girl counting like a Chinese native in one of Spain’s metropolises. I will never forget that completely stunned look on their faces.

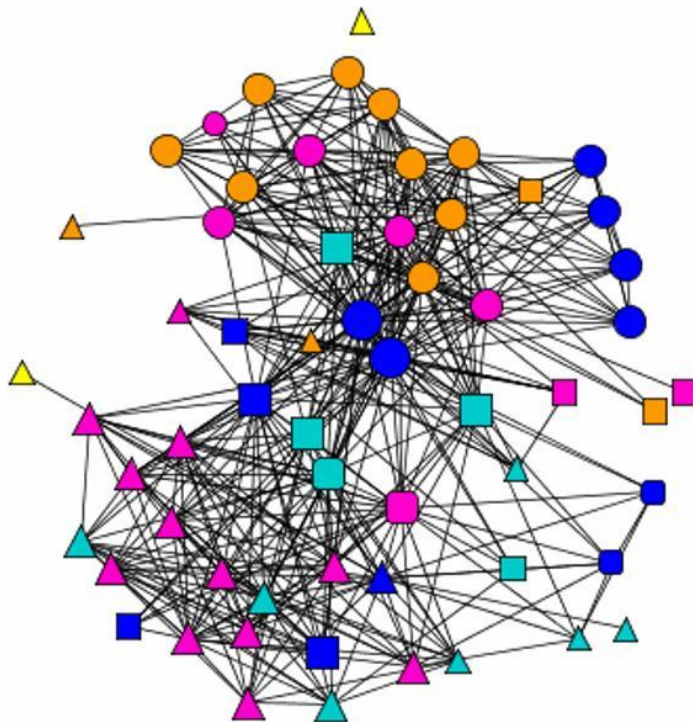


Figure B. Thesis Support Network in KK Layout

Finally, no network analysis of the world can show me what I did not already know: The most important people in my life are Marc (degree centrality = 36) and Eneko (degree centrality = 41; see the blue big circles in the middle of Figure B). Dear Marc, I thank you for your endless support, for keeping up with me throughout the last stressful months, and for always thinking positively. Dear Eneko, I thank you for entering into this world, for giving me a sense of what is really important in life, and for these big hugs and kisses. And, of course, Olaf, our little rabbit. You have enriched our little family. I love you all!

I am almost sure I forgot to mention someone. I apologize in advance for anybody who might feel left out.

Barcelona, September 2017

Abstract

This dissertation explores how multicultural individuals acculturate, and how their personality traits and cultural identifications relate to the content and the structure of their habitual personal social networks. I integrate social-personality psychology and social network approaches to tackle the dynamic interplay of individual-level psychological variables and meso-level social network measures.

First, I study how immigrants and their descendants change their multiple cultural identifications depending on their social interactions with people from different cultures. Second, this thesis examines how social network variables contribute to the understanding of psychological/sociocultural adjustment and bicultural identity integration beyond individuals' reported acculturation preferences. Lastly, I investigate which social-personality factors predict the degree of interculturality present in individuals' social networks.

The overall results attest to the importance of analyzing actual intercultural relations and going beyond interculturalism self-reports. The way people's social environments are shaped is linked to their social-psychological makeup.

Resumen

Esta tesis explora cómo los individuos multiculturales gestionan sus procesos de aculturación, y cómo sus rasgos de personalidad e identificaciones culturales se relacionan con el contenido y la estructura de sus redes sociales habituales. Se integran enfoques de la psicología social de la personalidad con el análisis de redes sociales, abordando así la interacción entre variables psicológicas y características de las redes (mesonivel).

En primer lugar, se explora cómo las múltiples identificaciones culturales de los inmigrantes y sus descendientes varían dependiendo de su interacción con personas de diferentes culturas.

En segundo lugar, se investiga cómo, más allá de las preferencias individuales de aculturación, las redes sociales contribuyen a la comprensión del ajuste psicológico/sociocultural y de los niveles de integración de identidad bicultural. Finalmente, se explora qué factores sociales de personalidad predicen el grado de interculturalidad de las redes.

Los resultados avalan la importancia de ir más allá de la autoevaluación de la interculturalidad, mediante el análisis de las relaciones en su contexto. La composición y organización de los entornos sociales de los individuos muestra estar relacionada con sus características psicosociales.

Resum

Aquesta tesi explora com els individus multiculturals gestionen els seus processos d'aculturació, i com els seus trets de personalitat i identifications culturals es relacionen amb el contingut i l'estructura de les seves xarxes socials habituals. S'integren enfocaments de la psicologia social de la personalitat amb l'anàlisi de xarxes socials, abordant així la interacció entre variables psicològiques i característiques de les xarxes (mesonivell).

En primer lloc, s'explora com les múltiples identifications culturals dels immigrants i dels seus descendents varien depenent de la seva interacció amb persones de diferents cultures. En segon lloc, s'investiga com, més enllà de les preferències individuals d'aculturació, les xarxes socials contribueixen a la comprensió de l'ajust psicològic/sociocultural i dels nivells d'integració d'identitat bicultural. Finalment, s'explora quins factors socials de personalitat prediuen el grau d'interculturalitat de les xarxes.

Els resultats avalen la importància d'anar més enllà de l'autoavaluació de la interculturalitat, mitjançant l'anàlisi de les relacions en el seu context. La composició i organització dels entorns socials dels individus mostra estar relacionada amb les seves característiques psicosocials.

Table of Contents

Acknowledgements	v
Abstract	xiii
List of Tables	xviii
List of Figures.....	xix
CHAPTER 1.....	1
1. Introduction.....	3
1.1 Definition of Key Concepts.....	5
1.1.1 Acculturation, Cultural Identification, and BII	5
1.1.2 Psychological and Sociocultural Adjustment	7
1.1.3 Personality	7
1.1.4 Social Networks.....	8
1.2 Bringing all Concepts Together	11
1.2.1 The Theoretical Framework	11
1.2.2 Three Main Hypotheses	15
1.3 The Dissertation and Its Structure.....	17
CHAPTER 2.....	21
Abstract.....	22
2. Conceptualizing the Dynamics between Bicultural Identification and Personal Social Networks.....	24
2.1 Introduction	24
2.2 Theoretical Framework and Predictions	27
2.2.1 Acculturation, Cultural Identification, and BII	27
2.2.2 Personal Social Networks: Relational Domains and Social Contagion	28
2.2.3 The Current Research.....	33
2.3 Study 1	34
2.3.1 Method	34
2.3.2 Results	39
2.3.3 Discussion	42

2.4	Study 2	44
2.4.1	Method	45
2.4.2	Selected Results	49
2.4.3	Discussion	56
2.5	General Discussion	57
 CHAPTER 3.....		63
	Abstract	64
3.	The (Diverse) Company You Keep: Content and Structure of Immigrants' Social Networks as a Window into Intercultural Relations in Catalonia	65
3.1	Introduction	65
3.1.1	Acculturation, Multiculturalism, and Adjustment.....	66
3.1.2	Intercultural Relations and Personal Social Networks	67
3.1.3	The Current Study	69
3.2	Method.....	72
3.2.1	Participants.....	72
3.2.2	Procedure	73
3.2.3	Instruments.....	73
3.2.4	Analytical Strategy: Social Network Indices and Control Variables	75
3.3	Results.....	79
3.3.1	Predicting Adjustment and BII	79
3.3.2	Social Networks: Ethnic and Generational Differences	84
3.4	Discussion and Conclusions.....	87
3.4.1	Limitations and Future Directions.....	89
3.4.2	Conclusion	90
 CHAPTER 4.....		93
	Abstract	94
4.	How Intercultural is Your Social Network? The Role of Personality and Bicultural Identity Integration	95
4.1	Introduction	95
4.1.1	Personality, Identity Structure, and Social Networks	97
4.1.2	A Micro-Meso-Macro Level Framework	100
4.1.3	The Current Study	103
4.2	Method.....	106
4.2.1	Participants.....	106
4.2.2	Procedure	106

4.2.3	Instruments.....	107
4.3	Results.....	112
4.3.1	Intercultural Network Profiles.....	112
4.3.2	Regression Analysis.....	116
4.4	Discussion.....	121
	Author Note.....	126
 CHAPTER 5.....		127
5.	Conclusions.....	129
5.1	Main Findings.....	129
5.1.1	Results Linked to the Main Hypotheses.....	129
5.1.2	Additional Results.....	133
5.2	Future Research.....	137
5.3	Potential Policy Implications.....	139
 Bibliography.....		141
 Appendix A1: Chapter 3.....		157
 Appendix A2: Chapter 4.....		163

List of Tables

<i>Table 1.</i> Ego’s Influence on Network by Relational Domains.....	29
<i>Table 2.</i> Correlation Matrix for Main Variables	38
<i>Table 3.</i> Regression Results for U.S. Identification	40
<i>Table 4.</i> Regression Results for Latino Identification	40
<i>Table 5.</i> Formal Comparison of Effects	46
<i>Table 6.</i> Mean of Identification Outcome for Negative and Positive Effects.....	51
<i>Table 7.</i> Standard Deviations of Means for Negative and Positive Effects.....	52
<i>Table 8.</i> Means for Exemplary Mixed Effects	54
<i>Table 9.</i> Standard Deviations of the Means for Exemplary Mixed Effects	55
<i>Table 10.</i> Regression Results for Psychological Adjustment.....	81
<i>Table 11.</i> Regression Results for Sociocultural Adjustment.....	82
<i>Table 12.</i> Regression Results for BII.....	83
<i>Table 13.</i> Expected Relationships Between Psychological Attributes and Intercultural Network	105
<i>Table 14.</i> Regression Results for Group Size.....	117
<i>Table 15.</i> Regression Results for Intragroup Connectedness	118
<i>Table 16.</i> Regression Results for Intergroup Connectedness	120
<i>Table 17.</i> Uncorrected Correlation Matrix for Regression Variables.....	158
<i>Table 18.</i> Corrected Correlation Matrix for Regression Variables.....	160
<i>Table 19.</i> Ethnic and Generational Mean Differences	162
<i>Table 20.</i> Descriptive Statistics and Correlations of Study Variables.....	163
<i>Table 21.</i> Mean Values of Network Variables for 95 to 100 Percentiles for Personality Traits and BII	166
<i>Table 22.</i> Mean Values of Network Variables for 50 Percentile of Personality Traits and BII	167
<i>Table 23.</i> Mean Values of Network Variables for 0-5 Percentiles of Personality Traits and BII	168
<i>Table 24.</i> Regression Results for Global Network Variables.....	169

List of Figures

<i>Figure 1.</i> Bidimensional Acculturation Model	6
<i>Figure 2.</i> Rectangular versus Square Array Data	10
<i>Figure 3.</i> Bidirectional Relationship between Cultural Identification and Social Networks	13
<i>Figure 4.</i> Feedback Loop between Personality and Social Networks.....	15
<i>Figure 5.</i> Bridging Tie	31
<i>Figure 6.</i> Interaction Term	42
<i>Figure 7.</i> Clustered Groups	77
<i>Figure 8.</i> Visualization of Measures.....	77
<i>Figure 9.</i> Median Networks by Generation and Ethnicity	86
<i>Figure 10.</i> Micro-Meso-Macro Level Framework.....	101
<i>Figure 11.</i> Network Clustering	109
<i>Figure 12.</i> Group-Based Measures	111
<i>Figure 13.</i> Intercultural Network Profiles	113
<i>Figure 14.</i> Show Card.....	157

CHAPTER 1

Introduction

1. Introduction

For many people, moving to another country is a big step – literally and figuratively. They often have to leave loved ones behind at home, and are faced with cultural and linguistic challenges in the country of settlement. This can be a stressful, but also a horizon-widening experience. The way in which immigrants deal with both ethnic and host cultures varies from individual to individual, and may even differ by situational context. Though people may develop a similar sense of belonging to heritage and new culture, some individuals might view both cultures as conflictual, whereas others find them to be compatible.

What kind of challenges immigrants face in the host country, how they perceive those and how they deal with them depends on a variety of things. That may start with their level of education, their ability to speak the host language, and the strength of their accent, but it may also be shaped by their way of being. Open-minded people, for example, may enjoy engaging in this new experience of living in a foreign country, and, hence, may have more positive feelings and attitudes towards meeting people and see their new life as an adventure. In contrast, neurotic individuals tend to be worried and might experience more negative stress trying to cope with their new life situation.

All of the above might affect people's social interactions. That is, *who* they interact with and *how* they do so. The way in which an individual engages with others is not only dependent on this individual's psychological makeup, but also on the behaviors, reactions, and interdependencies of other people. Social interaction is a dynamic interplay of various actors. It is shaped by different behavioral processes. For instance, people may choose who they want to be around with and, thus, select the ones they want to be part of their life or deselect those they do not want to spend time with. In return, these others might also influence and change the behavior of the individual by either rewarding socially welcome behavior and, thereby, reinforcing it, or by punishing socially unwelcome behavior, which eventually might induce social learning and lead to changing that particular behavior. Both processes might

result in the same outcome, namely, similarity of the interacting individuals. In that sense, like does not only attract like, but similar also becomes more similar.

This dissertation is a compilation of three articles exploring the relationship between multiple cultural identifications, personality, and social networks of bicultural individuals (i.e., those who have been exposed to and who have internalized at least two cultural meaning systems). It integrates social-personality psychology and social network approaches. From a psychology point of view, this thesis advances the idea that an intergroup perspective is necessary if we aim at understanding why people behave the way they do in social interactions. From a social network perspective, this thesis contributes to the idea that individual psychological differences influence the formation of networks.

To tackle the dynamic interplay of individual-level social-psychological variables and meso-level social network measures, this thesis first sheds some light on how immigrants and their descendants change their cultural identifications depending on their social interactions with people from different cultures (Chapter 2). Next, I look at how social network variables contribute to the understanding of adjustment (i.e., psychological and sociocultural) and identity management (i.e., Bicultural Identity Integration or BII) beyond individuals' reported acculturation preferences (Chapter 3). I do so by comparing four immigrant groups, each with different cultural and linguistic similarity advantages towards the host society, with respect to how integrated their networks are into society. Lastly, this thesis studies which social-personality factors predict the degree of interculturality present in individuals' social networks (Chapter 4).

The objective of this introduction is to define the important concepts used throughout this dissertation. I further provide a theoretical framework from which I derive the main hypotheses that structure the following chapters. Finally, I point out the main contributions and give an overview of the three articles that compose this thesis.

1.1 Definition of Key Concepts

Many of the terms that are central in this dissertation have been used interchangeably in the literature. This provokes a lot of confusion and the exact distinction between concepts often remains unclear (such as between acculturation and ethnic identity; Liebkind, 2001; Phinney, 1990). In the following subsections, I explain the concepts used throughout this thesis and give some basic background information to ensure that both the reader and the author have the same understanding. For the sake of brevity, an exhaustive literature review of each concept is not provided.

1.1.1 *Acculturation, Cultural Identification, and BII*

When people move to a new country, they often undergo acculturation processes. At the individual level, *acculturation* is defined as the cognitive, affective, and behavioral changes that occur in people who are exposed to more than one culture (Berry, 2003). These processes often involve managing multiple, sometimes even conflictual, cultural value systems and identifications. They may also result in *multiple cultural identifications*, which is the attachment or sense of belonging to more than one cultural group (Nguyen & Benet-Martínez, 2007). In fact, people who have been exposed to and who have internalized at least two sets of cultural meaning systems (e.g., beliefs, values, behaviors, languages) may be described as *bicultural* or *multicultural* individuals (Hong, Morris, Chiu, & Benet-Martínez, 2000; Nguyen & Benet-Martínez, 2007). In this regard, acculturation and identification are inextricably intertwined. Changes that result from acculturation processes can be seen as changes in cultural identification or cultural identity (Schwartz, Montgomery, & Briones, 2006).¹

Traditionally, acculturation was viewed as a unidimensional, one-directional and irreversible process, in which individuals would move towards the new host culture (Trimble, 2003). In this

¹ The authors use the term cultural identity. I prefer to use the term cultural identification instead. In my view, cultural identification suggests that individuals can identify with a culture to varying degrees, whereas cultural identity refers to a significant (i.e., high) degree of identification with a culture.

perspective, immigrants' adaption to the new cultural context of the receiving society meant abandoning their own cultural heritage (e.g., Gans, 1973; Gordon, 1964; Park, 1950; Sandberg, 1973). However, within the last three decades, this view has been challenged and acculturation has been reconceptualized as a bidimensional, two-directional, multi-domain complex process. The unidimensional model is, nowadays, viewed as only one possible form of acculturation and is referred to as assimilation.

In the bidimensional acculturation perspective, immigrants cope with two tasks (Berry, 1990, 2003): maintaining and cultivating their ethnic culture, and participating in the new dominant, host culture. The extent to which these two issues are negotiated highly depends on the immigrant's motivation, but also on how much the individual is constrained by contextual and demographic factors of the receiving society (Schwartz, Unger, Zamboanga, & Szapocznik, 2010). Four distinct acculturation modes emerge from Berry's model (Figure 1): assimilation (relinquishment of ethnic culture, but engagement with host culture), separation (maintaining ethnic cultural value system, but refusal of host culture), integration/biculturalism (maintaining ethnic cultural value system and engagement in host culture), and marginalization (relinquishment of ethnic culture and refusal of host culture). Empirically, the predominantly utilized acculturation mode is integration (e.g., Berry, Phinney, Sam, & Vedder, 2006; Nesdale, 2002; Van Oudenhoven, Ward, & Masgoret, 2006). It is also associated with better, healthier psychological functioning of the immigrant (Rivera, 2010).

Figure 1. Bidimensional Acculturation Model

		Ethnic Culture	
		-	+
Host Culture	-	Marginalization	Separation
	+	Assimilation	Integration

Note. This figure is based on Berry (1997, p. 10).

Though most immigrants identify with both ethnic and host cultures, they may vary in how much they view these two cultures as conflictual or compatible. A conceptualization that captures this idea is the *Bicultural Identity Integration* (BII) model proposed by Benet-Martínez and her colleagues (Benet-Martínez & Haritatos, 2005; Benet-Martínez, Leu, Lee, & Morris, 2002; Chen, Benet-Martínez, & Bond, 2008). Bicultural individuals low in BII experience the two cultures as conflictual and dissociated from one another, whereas biculturals high in BII internalize their two cultural identities as compatible and feel part of a combined (sometimes third) culture.

1.1.2 *Psychological and Sociocultural Adjustment*

Research on culture has used the term adjustment interchangeably with adaptation, acculturation, and accommodation (Searle & Ward, 1990). In this thesis, the *adjustment* of immigrants is conceptualized as outcome of the acculturation process. In fact, adjustment may have two dimensions: a psychological and a sociocultural one. Cultural relocation usually implies life changes that tend to be perceived as more substantial than in other contexts due to unfamiliarity with the new environment (Oberg, 1960). Thus, living in a new country can be very stressful for some individuals (Berry, 1997, 1998). *Psychological adjustment* captures this dimension and refers to wellbeing and feelings of satisfaction in the new cultural context. However, living in a new environment has another side, one that refers to social learning. One may achieve cultural competencies and expand one's world views (Yoon, Lee, & Goh, 2008). *Sociocultural adjustment* taps this dimension of attaining the capabilities necessary to fit in (Searle & Ward, 1990).

1.1.3 *Personality*

Personality is an important psychological construct that explains individual differences in the way people think, feel, and behave. An impressive amount of research has shown that personality predicts a wide range of relevant life outcomes at different levels of analysis. At the individual level, personality is related to happiness, subjective well-being, health, spirituality, and identity. At the interpersonal level, personality is linked to relationship quality with

peers, family members, and romantic partners. At the social-institutional level, personality is associated with occupational choice and performance, political attitudes and values, engagement with the community, and criminal activity (for a review, see Ozer & Benet-Martínez, 2006).

Some interesting research questions in personality psychology are about personality change and stability. The existing empirical evidence so far suggests that people tend to act similarly throughout their life course with some predictable mean-level changes as they grow older (Roberts, Walton, & Viechtbauer, 2006). Their personality expressions, though, may change depending on the situational context or the social role an individual takes (Clifton, 2014; Roberts, 2007).

The Big Five model of personality traits (Costa & McCrae, 1992) is a widely accepted frame for studying personality. It organizes personality attributes along five dimensions: extraversion (e.g., sociability, activity, assertiveness, confidence), agreeableness (e.g., trust, kindness, cooperation), conscientiousness (e.g., self-discipline, order, duty), emotional stability/neuroticism (e.g., anxiety, moodiness, anger), and openness to experience (e.g., creativity, curiosity, intellect) (John, Naumann, & Soto, 2008). About half of each personality trait is assumed to be genetic, while the other half is supposed to be shaped by social learning. In particular, the genetic influence on these domains was estimated at 53% for extraversion, 41% for agreeableness, 44% for conscientiousness, 41% for emotional stability/neuroticism, and 61% for openness (Jang, Livesley, & Vernon, 1996).

1.1.4 Social Networks

In the social sciences, a *social network* describes the patterns of social relations among actors. Depending on the research question, actors may be organizations, people, animals, or other entities. In general terms, a network consists of its actors (i.e., nodes or alters) and their relationships (i.e., edges, ties, or connections). When analyzing social networks, researchers are commonly interested in the network's *composition* (who is in the network) and its *structure* (how are the network members connected to each other). Yet, the

meaning of the social network approach itself is contested among scholars: Is it a theory, a paradigm, or a methodological technique? The answer to this question surely depends on each individual's perspective.

In social network analysis (SNA), there are two different, but interrelated traditions of how to look at networks (Marsden, 2005): the sociocentric network approach and the personal or egocentric network approach. *Sociocentric* network studies focus on complete or whole networks (Hanneman & Riddle, 2005). Those networks are composed of socially defined, bounded groups such as a classroom of students or the executive board of a big company (Marsden, 2005; Wasserman & Faust, 1994; Wellman, 1983). Typically, scholars measure the strength of relations between all the members of the network. With this full network data, they can approximate the actual pattern of relations within the group.

In contrast, *personal* network studies center on the social relations of individuals (Gottlieb, 1981; Killworth, Johnsen, Bernard, & McCarty, 1990; Newman, 2003; Scott, 2000; Wasserman & Faust, 1994; Wellman, 1983). The person of interest is called ego, which is why these types of networks are also referred to as *egocentric* networks. Ego is regarded the focal node. Usually, the respondents of a personal network study do not know each other. The network members (i.e., alters) get elicited from the respondent, who also evaluates the relationships between the actors and may give information on characteristics of these actors (e.g., gender, relationship type). The resulting networks depict the perceived interpersonal environment of the ego since the relationships are described from the point of view of the respondent (McPherson, Smith-Lovin, & Brashears, 2008).

Network data is different from conventional rectangular data array used in the social sciences. In conventional data, one row represents an observation or respondent and a column holds the score of a variable or characteristic of that particular observation or respondent. In contrast, network data consists of a square array of measurements (i.e., a matrix), in which rows and columns are the same set of observations and the cells hold information on the relationship between the actors (Hanneman & Riddle, 2005). Figure 2 exemplifies the differences between these two types of data.

Figure 2. Rectangular versus Square Array Data

Name	Age	Degree	Alters	Who knows whom?			
				Andrada	Diana	Elia	Lisa
Andrada	32	1	Andrada	---	1	0	0
Diana	35	3	Diana	1	---	1	1
Elia	30	2	Elia	0	1	---	1
Lisa	34	2	Lisa	0	1	1	---

Note. The left side of the figure shows a conventional rectangular data array. The right side depicts the social network matrix of four alters. Degree is the number of connections one alter has to other alters in the network.

There are three conceptual differences between sociocentric and egocentric network data. First, in sociocentric network studies, researchers are usually interested in one particular network (although several networks could be possibly compared), while, in egocentric network studies, there is a data matrix for each respondent's network. As it would be very time-consuming and expensive for researchers to generate the network of each respondent themselves, the personal network of each individual is generated directly by the respondent (McCarty, 2002). For a network size of eight people (as in Chapter 2), the respondent has to evaluate 28 alter pairs; for a network size of 25 people (as in Chapter 3 and 4), that is 300 alter pairs. Second, personal network data depict the perceived, but not necessarily the actual network. That is because the accuracy of the elicited network members and of their declared relationships highly depends on the respondent's perspective and cognitive abilities (McCarty, 2002). Third, in a complete network study, the idea is to derive structure to which every member adds equally. Alters differ in their structural position, and an actor who is sparsely connected contributes to a more central position of another node. In a personal network study, the goal is to determine the influence of each alter on ego. The underlying assumption is that network members do not equally shape ego's behavior (e.g., a close friend's opinion might be more influential than the one of a colleague), but they add equally to the structure of the network (McCarty, 2002).

1.2 Bringing all Concepts Together

1.2.1 *The Theoretical Framework*

In the social sciences, the existing disciplines normally seek to explain different phenomena or they aim to understand the same phenomena, but from distinct perspectives or levels of analysis. The smallest unit of analysis is the micro level and refers to the individual (e.g., an immigrant). Next is the meso level, which often deals with communities or organizations (e.g., tribes), followed by the macro level, which covers an overall population (e.g., a state). Social networks, as communities, can be understood as the result of macro-structural forces and micro-individual processes and, hence, are situated at the meso level (Lubbers, Molina, & McCarty, 2007).

This dissertation attempts to combine an individual-level psychological perspective and a meso-level social network approach. Both levels of analysis interact with each other. There are two fundamental processes that underlie this bidirectional relationship: selection and influence. *Selection* is the idea that individuals, based on their characteristics and preferences, choose their network members. In contrast, *influence* concerns the notion that network members also shape or affect the individual's behaviors, attitudes, or opinions (Veenstra, Dijkstra, Steglich, & Van Zalk, 2013). The empirical challenge is that both processes may result in the same outcome, namely, similarity of network members. This phenomenon has been addressed as homophily of connected individuals in the literature. More specifically, race and ethnicity were shown to create the strongest divides followed by age, religion, education, occupation, and gender (McPherson, Smith-Lovin, & Cook, 2001).

Several network studies found a correlation between personal networks and cultural self-identification. Two lines of research have formed: Some scholars argue that certain network properties influence an individual's identification (e.g., Aguilar, 2005; McFarland & Pals, 2005; Walker & Lynn, 2013). Their studies investigate identification to imagined communities with regard to the actual belonging to a personal network (influence effect). In contrast, there are studies that look at how creating new relations depends on one's identification (selection effect) (e.g., Baerveldt,

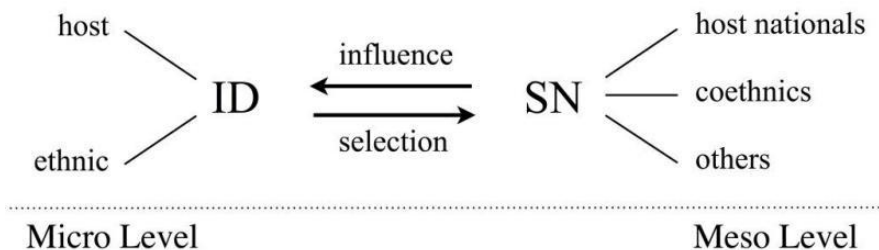
Zijlstra, de Wolf, Van Rossem, & Van Duijn, 2007; McPherson et al., 2001). Yet, most of these studies are correlational in nature and, thus, cannot be truly classified as investigating either of the two causal directions. Nevertheless, authors have interpreted their results in favor of one of the two processes.

It is most likely that influence and selection processes take place simultaneously, but they may depend on different factors. Upon arrival, immigrants usually identify stronger with their ethnic culture than with the host culture. Especially in the initial phase, immigrants' tend to rely more on family members and close friends (Knight, Thompson, & Lever, 2017). Coethnic network members in the country of origin may facilitate migration by giving social support, but also by safeguarding the immigrant's identity, while coethnics in the country of settlement may be able to provide short-term accommodation and assist in finding a first job (Lebon, 1983; Massey et al., 1993; Schultz, 2001; Smith, 1999). Networks are dynamic and keep evolving over time, in that host nationals and other immigrants get incorporated at later stages of the migration experience (Knight et al., 2017). These local contacts may be particularly helpful as they have better access to the job market and can help the immigrant adjust to the norms and values of the host society (Knight et al., 2017; Martínez García, García Ramírez, & Maya Jariego, 2002). While immigrants may initially have an interest in holding contact to coethnics to create a sense of home, they might outgrow this need due to their development in human capital and look for new people as time passes (Ryan, 2011).

One may speculate that, in the very beginning of the migration period, it is the ethnic cultural identification that determines the composition of the social network. Individuals with high ethnic identification are probably more likely to engage with coethnics, whereas people with low ethnic identification might try to exactly avoid that. The availability of network members that fulfill the immigrants' needs is influenced by the constraints the social and cultural context puts on their choices. The probability for intergroup contact, for example, depends on the ethnic composition of the population, the immigration policies the state has, the public opinion that might have grown historically, and the objective and perceived cultural fit between the immigrant and the host community (Berry, 1997; Blau, 1993; Liebkind, 2001; Phinney,

Horenczyk, & Vedder, 2001). Furthermore, one might conjecture that it is the host contacts in the network (e.g., neighbors, colleagues) that drive immigrants' identification with the host culture. In fact, there is some evidence from experimental research that identification with a cultural group can shift depending on the cultural frames that become salient due to specific contextual cues (Hong, Benet-Martínez, Chiu, & Morris, 2003; Hong et al., 2000; Verkuyten & Pouliasi, 2006; Verkuyten & Yildiz, 2007). This finding suggests that cultural identification is quite dynamic and that the social network (e.g., its composition) is possibly such a contextual cue. Figure 3 illustrates the bidirectional relationship between cultural identification at the micro level and the social network at the meso level.

Figure 3. Bidirectional Relationship between Cultural Identification and Social Networks



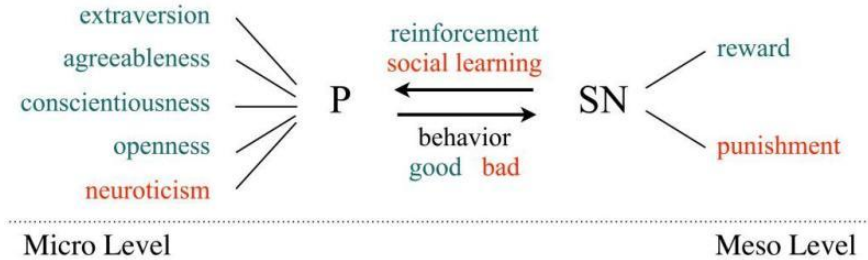
Note. ID = cultural identification; SN = social network.

Another important individual-level factor that possibly influences network formation is personality. The dynamic that exists between interacting individuals is likely to be shaped by their way of being. Some scholarly work has shown that the development of existing relationships is indeed affected by personality traits (Asendorpf & Wilpers, 1998; Branje, van Lieshout, & van Aken, 2004). In friendship networks, for example, older adolescents high on extraversion tend to choose more friends than adolescents low on this dimension, whereas individuals high on agreeableness tend to

be selected more often as friends (Selfhout et al., 2010). Besides, similarity in personality traits seems to play a role in the friend selection process, especially with respect to levels of extraversion, agreeableness, and openness. Likewise, preschool children's temperament traits shape the way they form play relationships with peers, but friends' traits also influence the subsequent development of the children's own traits (Neal, Durbin, Gornik, & Lo, 2017).

Research on how personality traits and social relationships are interrelated often looks at very specific relationship domains (e.g., friends). The interrelation between the two, however, is likely to not be limited to close contacts, but to take place in a broader spectrum of relationship types. A more general view on this topic offers the idea of a feedback loop between the individuals in contact. When somebody behaves constantly in a socially undesirable way (e.g., breaking social norms), at some point, this person might receive negative feedback from other individuals. Although people vary in how receptive they are to negative feedback, they may eventually correct these behaviors (Ross, Anderson, & Campbell, 2010). In case of behavior supported by others, individuals might receive positive feedback that encourages similar behaviors (Crosier, Webster, & Dillon, 2012). It is the punishment of socially unwelcome behaviors and the reinforcement of socially welcome behaviors that may lead to a change in personality. Extraversion, agreeableness, conscientiousness, and openness are personality traits that are often rewarded, whereas neuroticism as a socially undesirable trait is often punished (Robinson, Moeller, & Fetterman, 2010). Alternatively, social learning as a reaction to punishment may not necessarily lead to changing that particular behavior, but to being more selective in choosing network members. Figure 4 summarizes this feedback loop.

Figure 4. Feedback Loop between Personality and Social Networks



Note. P = personality; SN = social network. Neuroticism is the other pole of emotional stability.

1.2.2 Three Main Hypotheses

Resulting from this framework, there are three main hypotheses that I seek to address in this thesis. The first one is about how immigrants change their identifications depending on their social interactions with people from different cultures (complex contagion hypothesis). The second one captures the idea of cultural similarity versus cultural distance between immigrants and the host society in the way their networks are integrated into society (culture and language similarity hypothesis). Finally, the third hypothesis concerns the social-personality factors that possibly predict the degree of interculturality present in social networks (individual differences hypothesis).

Cultural identifications - complex contagion hypothesis. In network theory, a basic idea is that behaviors are spread through social contact (Centola & Macy, 2007; Rogers, 1995). There are two competing hypothesis on how behaviors get diffused depending on network structure. In the first one, the spread of behaviors is conceptualized as a simple social contagion. That is one single contact with a certain behavior is enough for the individual to adopt that behavior. This is analogous to the idea that receiving information (e.g., the score of a soccer match) once or getting in contact with a highly contagious disease is enough to be informed

or infected, respectively. The network structure that enables this type of information flow or spread of behaviors is characterized by weak ties and structural holes, which is why this hypothesis is also referred to as the strength of weak ties (Granovetter, 1973).

In contrast, the second hypothesis attests that “costly, risky, or controversial” behaviors require “independent affirmation or reinforcement from multiple sources” (Centola & Macy, 2007, p. 703). The simple contagion becomes complex because multiple contact with a variety of sources is needed before credibility is assigned to the received information and a change in behavior may be initiated (Centola, 2010; Centola & Macy, 2007). Clustered networks with more redundant ties (i.e., strong ties) provide the structure that is needed for social reinforcement and adoption of new behaviors.

Under the assumption that behavioral changes would be reflected in a change in cultural identification, I hypothesize that immigrants and their descendants need repeated contact with culture-specific, attitude-relevant information (e.g., communication styles, recreational activities, pace of life) from individuals representing different social roles to change their cultural identifications. In the context of acculturation, I predict that it is the interconnection of same ethnicity alters (e.g., only coethnics or only host nationals) belonging to different relationship domains (e.g., friendship versus work) that is associated with the strength of immigrants’ multiple cultural identifications.

Acculturation process – culture and language similarity hypothesis. Different immigrant groups may vary in their level of cultural and linguistic similarity towards the national host group. For instance, Pakistani immigrants in Spain may experience radical changes in their social and cultural environment resulting from differences in religion, language, culture, and unfamiliarity with the host society due to geographical distance. Ecuadorians, however, share with Spanish hosts their Christian traditions, the Spanish language, and a colonial past. Compared to Pakistani, Ecuadorians should be culturally and linguistically more similar to the Spanish receiving society. These differences may translate into advantages and possibly shape the acculturation process of immigrants. In addition, this process may be influenced by the expectations of the immigrant

towards the host community, but also by the expectations of the receiving society towards different immigrant groups.

I speculate that the culture and language similarity advantages different immigrant groups have is reflected in the way immigrants form and structure their networks. On the one hand, I expect that immigrants with a high cultural and linguistic similarity advantage (i.e., low cultural and linguistic distance) have networks that include host and coethnic individuals who are also interconnected. On the other hand, I conjecture that individuals with a low similarity advantage (i.e., high cultural and linguistic distance) have networks with comparatively more coethnics that are less interconnected with host national network members.

Personality and BII – individual differences hypothesis. In the acculturation context, there are at least two important sources of individual differences. One is personality and another one is identity management. I assume that individuals who transition to a new setting or place are driven to shape their networks more actively. This would enhance the effect that individuals' psychological attributes may have on networks (Kalish & Robins, 2006). The overall hypothesis is that psychological predispositions (i.e., the Big Five) and identity management (i.e., BII) are linked to distinct ways in how immigrants build their intercultural networks. Several sub-hypotheses can be formulated. I give two examples: First, extraversion will be associated with better connected network members. Second, BII will be reflected in how well coethnic and host national groups are connected to each other.

1.3 The Dissertation and Its Structure

The remainder of this dissertation is composed of three articles and a conclusions chapter. Each of the articles explores different aspects of the relationship between multiple cultural identifications, personality, and social networks of acculturating individuals. They contribute to the multiple identities literature, theory on biculturalism and intergroup relations, personality research as well as to the literature on egocentric social networks. This thesis

extends prior social-cultural and personality psychology research by exploring acculturation and interculturality from an intergroup perspective and studying real social interactions instead of only relying on commonly used interculturalism self-reports. In particular, this dissertation includes actual intercultural contact in that not only individual characteristics are examined, but also the immigrants' contacts and the interactions between those. In addition, this work adds to the egocentric social network literature by improving and widening the scope of used psychological concepts that are key to acculturation. Some of these concepts have been used in conceptually problematic ways. For example, some sociological studies linking acculturation to network composition and structure equate acculturation with cultural assimilation.

In the next chapter (Chapter 2), my coauthor Verónica Benet-Martínez and I widen the understanding of the acculturation processes affecting immigrants and their descendants. Specifically, this chapter ascertains the dynamic interplay between the way these individuals manage their multiple (and sometimes conflictual) cultural value systems and identifications, and possible changes in their social networks. In two separate studies, we examine how ethnic and host cultural identifications and their management are linked to composition and structure of bicultural individuals' personal social networks. In Study 1, we rely on a generationally and culturally diverse community sample of 123 Latinos residing in the US. Participants named four close friends and four colleagues from their social networks, and indicated their ethnicities. Based on the complex contagion hypothesis, we conjecture that the interconnection of same ethnicity alters across different relationship domains (i.e., friendships and colleagues) will predict cultural identifications. Although we find an association between these structural aspects of the network and cultural identifications, the signs are different than expected. In Study 2, we build on these findings and use an agent-based model (ABM) data simulation approach to explore the dynamic ways in which network content and structure of an immigrant might matter over time in predicting three possible identity patterns: coexisting cultural identifications, conflicting cultural identifications, and a mixture of the two. This process-oriented, rather than outcome-oriented, approach allows us not only to model the effects of social cues and social contexts (i.e.,

social network composition) on cultural identifications, but also to grasp the effects of structural aspects of the social context.

Chapter 3 challenges the commonly made assumption in acculturation research that the receiving context is culturally homogenous. The chapter explores how intercultural relations relate to levels of adjustment (i.e., psychological and sociocultural) and to BII in a European bicultural and bilingual context. In particular, we examine the personal social networks of four distinct immigrant groups (i.e., Ecuadorians, Moroccans, Pakistani, and Romanians; $N = 216$) living in Catalonia, Spain. Drawing on the culture and language similarity hypothesis, we contrast the four groups with respect to how culturally integrated their social networks are. Participants nominated 25 individuals from their habitual social networks and provided demographic (e.g., ethnicity), contextual (e.g., relationship type), and structural information about these alters. Using this data, we explore tie strength variables (i.e., weak Catalan ties, weak Spanish ties, strong coethnic ties), global network variables (i.e., cultural diversity, density), and group-based network variables (i.e., amount of coethnics in the host country, interconnectedness of coethnics in the host country and host nationals). Even after controlling for individual-level demographic and key acculturation variables (e.g., Catalan, Spanish and ethnic cultural identification), the content and structure of immigrants' social networks has unique associations with psychological and sociocultural adjustment and with BII. Overall, results show that meso-level interculturalism (i.e., having culturally diverse networks with interethnic ties) is an important ingredient in immigrants' overall adaptation.

In Chapter 4, we study the effects of individual social-personality differences on compositional and structural, cultural components of intercultural social networks. We rely on a subsample of respondents ($N = 122$) who participated in the study reported in Chapter 3. After clustering their network members into four groups based on their ethnicity and place of residence (i.e., coethnic transnationals, coethnic locals, Catalans/Spaniards, Others), we compare network profiles for individuals with different personality traits (i.e., Big Five) and different degrees of BII. Controlling for basic demographics, results indicate that both personality (mainly agreeableness, extraversion, and openness) and BII are linked to the

content and the structure of the social networks, particularly with regard to the number of Catalan/Spanish people in the network, the compactness of this group, and the amount of ties between coethnics and Catalan/Spaniards. These findings further our understanding of the social-personality factors involved in intercultural contact. They also highlight the interplay between individual micro-level and social meso-level factors in the formation of intercultural social spaces

Finally, in Chapter 5, I review and discuss the major findings of this dissertation. Furthermore, I acknowledge its limitations and propose some ideas for future research.

CHAPTER 2

Conceptualizing the Dynamics between Bicultural Identification and Personal Social Networks

Repke, L. & Benet-Martínez, V. (2017). Conceptualizing the dynamics between bicultural identification and personal social networks. *Frontiers in Psychology*, 8 (469), 1–19.
doi: 10.3389/fpsyg.2017.00469

Abstract

An adequate understanding of the acculturation processes affecting immigrants and their descendants involves ascertaining the dynamic interplay between the way these individuals manage their multiple (and sometimes conflictual) cultural value systems and identifications and possible changes in their social networks. To fill this gap, the present research examines how key acculturation variables (e.g., strength of ethnic/host cultural identifications, bicultural identity integration or BII) relate to the composition and structure of bicultural individuals' personal social networks.

In Study 1, we relied on a generationally- and culturally-diverse community sample of 123 Latinos residing in the US. Participants nominated eight individuals (i.e., alters) from their habitual social networks and across two relational domains: friendships and colleagues. Results indicated that the interconnection of same ethnicity alters across different relationship domains is linked to cultural identifications, while the amount of coethnic and host individuals in the network is not. In particular, higher interconnection between Latino friends and colleagues was linked to lower levels of U.S. identification. Conversely, the interconnection of non-Latino friends and colleagues was associated with lower levels of Latino identification. This pattern of results suggests that the relational context for each type of cultural identification works in a subtractive and inverse manner. Further, time spent in the US was linked to both Latino and U.S. cultural identifications, but this relationship was moderated by the level of BII. Specifically, the association between time in the US and strength of both cultural identities was stronger for individuals reporting low levels of BII.

Taking the findings from Study 1 as departure point, Study 2 used an agent-based model (ABM) data simulation approach to explore the dynamic ways in which the content and the structure of an immigrant's social network might matter over time in predicting three possible identity patterns: coexisting cultural identifications, conflicting cultural identifications, and a mixture of the two. These simulations allowed us to detect network constellations, which lead

to identification or disidentification with both cultures. We showed that distinct patterns of social relations do not lead to identity outcomes in a deterministic fashion, but that often many different outcomes are probable.

2. Conceptualizing the Dynamics between Bicultural Identification and Personal Social Networks²

2.1 Introduction

Gordon W. Allport's (1954) theory on intergroup contact states that, under certain conditions, contact between members of minority and majority groups will not only reduce prejudice and conflict, but will also improve interethnic attitudes (Binder et al., 2009; Pettigrew & Tropp, 2000). Nowadays, various scholars agree that one prerequisite for immigrants' successful and peaceful integration into their host society is that they develop social networks which include host culture contacts in central positions, as these contacts provide access to critically-important social and informational resources (Damstra & Tillie, 2016; Smith, 2013). These host nationals may improve the immigrant's acculturation potential by helping with the acquisition of culturally appropriate skills and by providing exposure to new norms and value systems (Ward & Kennedy, 1993; Kim, 2001; Smith, 2005; Jasinskaja-Lahti, Liebkind, Jaakkola, & Reuter, 2006; Smith, 2013). However, contact with coethnic individuals (living in the country of origin and in the country of destination) is beneficial as well. Coethnic friends and relatives living back home may give social support, safeguard the immigrant's ethnic identity and skills, and even encourage adjustment to the new society (Lebon, 1983; Smith, 1999; Schultz, 2001). Similarly, coethnics in the country of destination may give important information and access to resources related to adapting to the host society (e.g., where and how to find a job), reducing the immigrant's costs and risks in the country of settlement (Liu, 2013). Having said this, a social network comprised of too many coethnic individuals might be a burden to the immigrant's acculturation potential, as the immigrant may feel pressured to hold on to habits or customs from the country of origin and may also lose an opportunity to learn and practice the host culture behaviors and norms (Luo & Wiseman, 2000). Ultimately, these processes may depend on the available social network

² Published as:

Repke, L. & Benet-Martínez, V. (2017). Conceptualizing the dynamics between bicultural identification and personal social networks. *Frontiers in Psychology*, 8 (469), 1–19. doi: 10.3389/fpsyg.2017.00469

opportunities, how much ethnic and host cultures objectively differ from each other (i.e., how much new cultural learning is called for), and whether the individual internalizes the differences as reflecting cultural conflict and incompatibility (Benet-Martínez & Haritatos, 2005; Searle & Ward, 1990).

Even though patterns such as low levels of identification with the host society and scarce friendships with host individuals are widely recognized in the literature, their interrelation is still open to question. Leszczensky (2013), for example, finds only a spurious relationship between degree of national identification and share of host national friends. Given the importance of social networks for integration and acculturation, it is surprising that hardly any study has examined how key acculturation variables (e.g., ethnic and host cultural identifications, bicultural identity integration) relate to the composition (who is in the network) and structure (how are the network members connected) of immigrants' personal social networks. Up to now, only a few sociological studies have attempted to do so, but did not include psychological measures (e.g., Lubbers, Molina, & McCarty, 2007; Vacca, Solano, Lubbers, Molina, & McCarty, 2016; but see also Mok, Morris, Benet-Martinez, & Karakitapoglu-Aygün, 2007). In particular, the relational perspective offered by the social network approach is suited perfectly for the acculturation and immigration context, as it captures intercultural contact in a way that goes beyond the commonly used self-reports. Most psychological research, including acculturation studies, focuses almost exclusively on individual-level characteristics (e.g., self-reported values and behaviors) in an effort to mirror what happens *inside* of people's minds. But human behavior is also shaped by what happens *between* people's minds. In this paper, we study how individuals' cultural identities are influenced by their relational contacts, and the interactions that these contacts have *between* each other (Brown & Zagefka, 2011; Postmes, Akkus, & Stroebe, 2015).

We hypothesize that, in order for immigrants and their descendants to develop and strengthen their cultural identifications, repeated contact with culture-specific, attitude-relevant information (such as communication styles, cultural activities, gender roles, etc.) from individuals representing different roles is needed. The rationale behind this is the idea of complex contagions, which attests that certain social behaviors may only be changed after having had multiple contact with a variety of sources (e.g., as this adds credibility to the information received) (Centola, 2010;

Centola & Macy, 2007). Behavioral changes then would be reflected in a change in cultural identification. More particularly, we argue that it is the interconnection of same ethnicity contacts belonging to different relationship domains (i.e., friendship vs. work) that predicts the strength of individuals' multiple cultural identifications.

In two separate studies, we explored possible relationships between key acculturation variables and personal social networks of immigrants and their descendants. In Study 1, we derived predictions for ethnic and host culture identifications from the idea of complex social contagion, and tested them using survey and network data collected from a community sample of 123 Latino-American biculturals residing in the US. In Study 2, using an agent-based model (ABM), we simulated data on the basis of the findings from Study 1 and explored whether and how the content and the structure of a bicultural individual's social network matters over time in negotiating coexisting cultural identifications, conflicting cultural identifications, and a mixture of the two (e.g., being conflicting with regards to one life domain, but coexisting in another one).

We believe that our contribution to the study of multiple identities management in the acculturation context is twofold. From a scientific point of view, we will shed light on the unexplored possible interdependence between the micro level represented by individuals' self-reported acculturation processes (e.g., strength of cultural identifications and degree of conflict the individual feels between different cultural orientations) and the meso level represented by these individuals' habitual personal social networks. The fact that, in Study 2, we adopt a process-oriented rather than an outcome-oriented approach allows us to understand better how changes in the network may influence the identity negotiation process of immigrants and their descendants. From a societal point of view, our studies are informative in that they could be used to assist policy-makers involved with the integration of immigrants and other cultural minorities. In particular, the models examined in Study 2 could be used to identify social environments (i.e., specific network constellations) that are beneficial for fostering harmonious multicultural identities, and those that could lead to the development of risky patterns of cultural disidentification or radicalization. The paper is structured in the following way: First, we present our theoretical framework and our predictions. Then, we describe our two studies and their results. Finally, we summarize our main findings and offer some suggestions for future research in the discussion.

2.2 Theoretical Framework and Predictions

2.2.1 *Acculturation, Cultural Identification, and BII*

When moving to a new country, immigrants and their descendants often experience radical changes in their social and cultural contexts. The resulting acculturation processes may be described as psychological and behavioral changes that occur due to intercultural contact (Gibson, 2001; Sam & Berry, 2010). These processes oftentimes involve managing multiple, and sometimes conflictual, cultural value systems and identifications, and they also lead to changes in individuals' social networks. These changes may include the creation of new relationships, the dissolution of old ones, or simply the diminishment or the consolidation of existing connections.

Generally, cultural identification can be understood as the sense of belonging to a cultural group (Nguyen & Benet-Martínez, 2007). In particular, long-term immigrants and their descendants may feel attached to not only one, but several cultures. As people who have been exposed to and who have internalized at least two sets of cultural meaning systems (e.g., beliefs, values, behaviors, languages), these individuals may be described as bicultural or multicultural (Hong, Morris, Chiu, & Benet-Martínez, 2000; Nguyen & Benet-Martínez, 2007). Multicultural individuals have the capacity to acquire and use several cultural frames, even when these may be conflictual. Experimental research has shown that, depending on the available contextual cues, different cultural frames become salient, and that identification with a cultural group can shift accordingly (Hong et al., 2003, 2000; Verkuyten & Pouliasi, 2006; Verkuyten & Yildiz, 2007). This suggests that cultural identification is rather dynamic, and as such, neither primordial nor predefined, and thus it can undergo change (Lubbers et al., 2007).

Although it has been shown that acculturating individuals prefer the integration mode (i.e., being involved with both the ethnic and host cultures) (Benet-Martínez et al., 2002), these individuals may vary in how much they integrate their different cultural orientations and identities into a coherent sense of self (Huynh, Nguyen, & Benet-Martínez, 2011). Some biculturals may internalize cultural differences as reflecting conflict and incompatibility, while others may view their cultural orientations as compatible and even blendable. The construct of *Bicultural Identity Integration* (BII) captures these differences and has become a central

focus of empirical research on biculturalism (Benet-Martínez & Haritatos, 2005; Benet-Martínez et al., 2002). People high on BII view their two cultural identities as compatible and feel part of a combined (sometimes third) culture, whereas individuals low on BII consider their cultural identities as conflictual and dissociated from one another. The validity of BII as a psychologically meaningful construct has been well-established over the past decade, with research pointing to a wide variety of benefits associated with higher levels of integration (for reviews see Benet-Martínez, in press; Huynh et al., 2011).

2.2.2 Personal Social Networks: Relational Domains and Social Contagion

According to the social network analysis framework, social networks consist of nodes and ties. Nodes are actors (e.g., individuals, groups, organizations), and their ties are connections (i.e., social relations) between them. While sociocentric network studies typically focus on complete networks, personal social network studies take the perspective of one particular actor. This focal node is the respondent in the study and is referred to as ego, which is why these studies are also called egocentric network studies. The members of ego's network are called alters.

In Study 1, we were particularly interested in two relational domains that personal social networks commonly entail and that cross-cultural research often highlights (Pouliasi & Verkuyten, 2007): (1) close friends (excluding family members) and (2) classmates, co-workers or colleagues (who are not friends).³ Even though the interpretation of the term friend is culture and language specific (Fischer, 1982; Scheuch, 1968), people have more or less an understanding of what a friend is. Generally speaking, individuals tend to choose their friends freely from the social contexts available to them. They are not born into a circle of friends, like they are born into a family whose members are to a wide extent given. As such, people have some influence on the composition of their friendship network. Further, individuals might influence the structure of their friendship network by introducing friends from different areas of life to each other or by keeping them intentionally separate. Nevertheless, ego's close friends tend to be engaged in each others' social lives, whereas

³ From now on, we will refer to the second group in shorthand as 'colleagues' to avoid repetition.

ego's acquaintances are likely to not be involved with one another (Granovetter, 1983).

Colleagues, on the other hand, are often more given than selected freely. In some cases, people might have some influence on who becomes a colleague, but, normally, they cannot choose them as they wish. For instance, who becomes a colleague depends on who applies for a job, whether a particular candidate matches the job description, gets selected to fill in the position and, then, also accepts the offer. However, individuals may indirectly determine who their colleagues are by specifically deciding to work in an environment that is ethnic homogenous versus heterogeneous, or mainly coethnic versus non-coethnic. Yet, they are more restricted in choosing their colleagues than in selecting their friends. Further, people's influence on how their colleagues are connected among each other might be quite limited as well, as the structure is often given by the company's internal organization. In contrast, connections between friends and colleagues are usually not imposed by some third party and do not occur as naturally as maybe among friends, which leaves more freedom for ego to actively initiate relationships between alters of different relational domains (see Table 1).

Table 1. Ego's Influence on Network by Relational Domains

<i>Alter relationship type</i>	Ego's Influence on Network		
	<i>Within</i>		<i>Between</i>
	<i>Composition</i>	<i>Structure</i>	<i>Interconnection</i>
Friends	high	medium	very high
Colleagues	low	low	

Previous research has shown that friendships between immigrants and natives are positively linked to identification with host culture (e.g., Leszczensky, 2013; Phinney, Berry, Vedder, & Liebkind, 2006), and that friendships among coethnics are positively associated with higher levels of ethnic identification (e.g., Ono, 2006; Phinney, Romero, Nava, & Huang, 2001). Yet, these studies did not actually measure social networks, but rather relied on self-reported number of friendships or

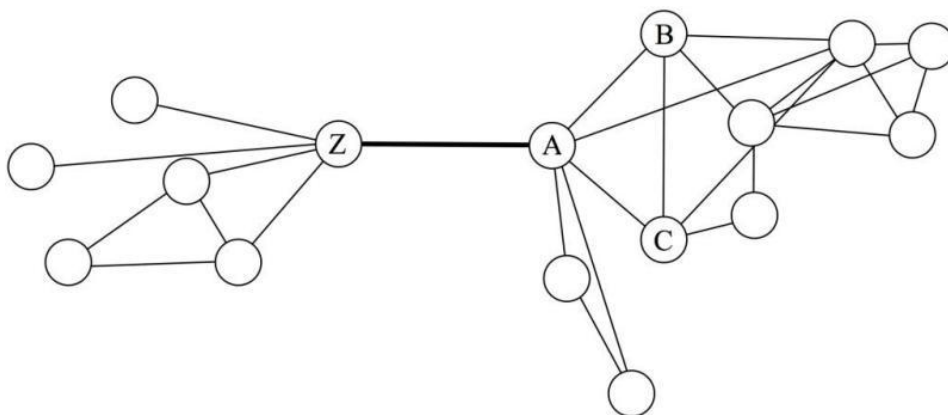
frequency of contact (for exceptional examples see Lubbers et al., 2007; Mok et al., 2007). Social desirability and other types of biases might influence these responses. People may lie consciously about their social interactions with others, or may be influenced by memory biases and wishful thinking. In contrast, social network data does not rely on people's self-assessment of their social lives, and instead maps onto actual contact between people. In this way, the network data collection mode is a more implicit and less obtrusive approach, and yields less danger of being actively manipulated by the respondent (Molina, Maya-Jariego, & McCarty, 2014). Ergo, in the context of studying acculturation, the network approach more adequately grasps real-life situations of intercultural contact, while also measuring directly and more objectively with whom an individual interacts. Relying on real network data, we argue that the interconnection between friends and colleagues of the same ethnicity is a stronger predictor for cultural identification than the mere amount of alters belonging to a particular ethnic group. Our assumption is that receiving attitude-relevant information from individuals representing different roles (i.e., friend, colleague) strengthens the effect of attitude formation in the context of migration.

There are different theories about how behaviors spread via social contact in social networks. The most famous one is Mark Granovetter's (1973) seminal theory on the strength of weak ties (SWT). He defines the strength of a tie as a "combination of the amount of time, the emotional intensity, the intimacy [...], and reciprocal services" (p. 1361). Usually, the concept of tie strength is measured by how well ego knows the network members or how close ego is to the alters (Marsden & Campbell, 1984). Duration of relationship, frequency of contact, and relationship categories are often used as proxies although, empirically, they are not necessarily correlated with tie strength. For example, family members do not need to have strong ties among each other, although in many cases immediate family members probably do.

The first premise of Granovetter's theory states that the stronger the tie between two people A and B, the more likely it is that their social worlds overlap. So if A and B have a strong tie, and A and C have a strong tie, then, the likelihood for B and C to have at least a weak tie is increased (so-called transitivity). More concretely, one can expect that if A and B are good friends, and A and C are good friends, at some point in time, A will present B and C to each other (e.g., at a birthday party) and they might become also friends.

The second premise of his theory introduces the logic of bridging ties. This type of tie connects a person A to a person Z, who is not linked to A's other contacts (Figure 5). This person Z may provide A with information that is different from what is already communicated in A's other groups. This is because Z's social world does not overlap with the social worlds of A's other contacts, and, hence, is likely to be a distinct social environment with access to different information. In this sense, a bridging tie is seen as a "potential source of novel information" (Borgatti & Halgin, 2011, p. 1171). In an egocentric or personal social network that is reflected by having more separate groups (also referred to as structural holes; see Burt, 1992) that would lead ego to possibly get more non-redundant, novel information at any given time (e.g., on the availability of a job offer).

Figure 5. Bridging Tie



In conclusion, classical network theory argues that less connected networks with many weak ties diffuse novel information, such as behavioral norms and values, faster and more effectively than networks with highly clustered ties. In this view, spread of behavior is understood as a simple contagion via social contact in the network. For example, simple contact with information relating to a score on a volleyball match or the time of a concert might be enough to inform an individual. In this regard, contact with one source is sufficient to change the behavior of one person. Hence, an immigrant's personal social network with many weak

ties would facilitate the efficient and fast spreading of culture-related behaviors and norms.

However, this may not always be the case and may depend on what it is that is being diffused. Especially for “costly, risky, or controversial” behaviors “independent affirmation or reinforcement from multiple sources” might be required (Centola & Macy, 2007, p. 703). The contagion then is not simple anymore but complex, because the individual needs to have contact to at least two different sources before credibility is assigned to the received information and a change in behavior is initiated. Especially in the acculturation context, we argue that contact with a single host culture individual is not enough for an immigrant to change host cultural identification. Instead, the immigrant may need repeated contact to several host nationals before a change in cultural identification may be activated. Similarly, a single contact to only one coethnic individual may not be enough to trigger such a change either, but repeated contacted to different coethnic individuals might be. Receiving the same information through repeated contact with different people is more likely in highly clustered networks. Thus, an immigrant’s personal social network with many redundant (i.e., strong) ties fulfills the structural conditions to provide the social affirmation and reinforcement mechanisms that are necessary for adapting a change in cultural identification.

The underlying network dynamic of social contagion is influence, which refers to the fact that individuals change their attitudes and behaviors in reaction to their network members. The complementing network dynamic is selection. It describes the process in which people choose their network members and is usually based on the principle of similarity. Both processes may lead to the same result, namely homophily of network members, and are usually interwoven (Veenstra et al., 2013). In this paper, we do not try to empirically cut this Gordian knot as the data reported in Study 1 is cross-sectional and Study 2 follows directly from its results, although we acknowledge the complexity and endogeneity that the relationship of cultural identification and social networks contains. We rather focus on one possible network dynamic (i.e., influence in form of complex contagions) for the purpose of theory-building.

Drawing on the literature of complex contagions, we argue that, similarly to adopting costly and risky behaviors, cultural identifications are not altered easily though they are dynamic in nature. They may change slowly over time instead of changing dramatically because of one simple

contact with a certain culture. Thus, we hypothesize that when immigrants and their descendants develop and negotiate their cultural identifications, they may adopt changes in their identifications as a result of receiving repeatedly culture-relevant information from multiple network members. While, on the one hand, these different network members need to be interconnected to make social affirmation and reinforcement more likely, on the other hand, these network members need to be from different relational domains to enhance the credibility of the information. For this reason, we expect that the interconnection of same ethnicity alters from different relationship domains provides immigrants and their descendants with repeated information from different sources that may alter their cultural identifications in the long-run. Therefore, our main hypothesis is that the interconnection of same ethnicity alters across relational domains is a stronger predictor for cultural identification than the mere amount of alters belonging to a particular ethnic group.

2.2.3 The Current Research

In the present work, we explored potential relationships between key acculturation variables (i.e., time in the US, ethnic and host cultural identifications, BII), and the content and the structure of personal social networks of immigrants. To do so, we conducted two studies. Using a cross-sectional, correlational design, Study 1 examines survey and personal social network data from 123 Latinos living in the US. The egocentric network data included eight alters: four friends and four colleagues (e.g., classmates, co-workers), thus tapping into two key relational domains to test the following three hypotheses:

- H1: The interconnection between friends and colleagues of the same ethnicity is a better predictor for cultural identification than the size of the corresponding ethnic group.
- H2: U.S. identification is positively associated with the interconnection of European-American friends and European-American colleagues.
- H3: Latino identification is positively associated with the interconnection of Latino friends and Latino colleagues.

The second study builds on the findings of Study 1. Utilizing an agent-based model (ABM) data simulation approach, we explore the dynamic

ways in which network composition and structure may matter over time in predicting intrapersonal identification change.

2.3 Study 1

In Study 1, Latino immigrants and their descendants living in the US were asked to complete a questionnaire about their cultural identifications, their bicultural experiences and their personal social networks.

2.3.1 Method

Participants

We relied on a community sample consisting of 123 Latino-American biculturals (41 males, 81 females, 1 transgender), aged 16-65 years ($M = 28.5$, $SD = 9.4$; 70.6% with college education or higher), who voluntarily participated in this study. All participants were first- to fifth-generation immigrants living in the US, out of which: 28.5% were first generation, 8.1% 1.5 generation (migration to the US before the age of 16), 25.2% second generation (born in the US, parents born outside), 14.6% 2.5 generation (born in the US, one parent born in the US, the other parent born outside), 15.5% third generation (parents born in the US), 0.8% 3.5 generation (one pair of grandparents born outside of the US), 3.3% fourth generation (grandparents born in the US), and 4.1% were fifth generation (great-grandparents born in the US). Participants born abroad came mainly from Mexico (53.3 %) or El Salvador (20.0 %) and had spent on average 11.3 years ($SD = 8.0$) in the US. Other countries of origin include Brazil ($n = 1$), Chile ($n = 1$), Costa Rica ($n = 2$), Cuba ($n = 1$), Ecuador ($n = 1$), Guatemala ($n = 1$), Nicaragua ($n = 2$), and Spain ($n = 1$). The parents of the participants who were born in the US came mainly from the US (mothers: 50%; fathers: 47.4%) or Mexico (mothers: 26.9%; fathers: 25.6%). The other mothers were born in Colombia ($n = 3$), Cuba ($n = 1$), El Salvador ($n = 6$), Guatemala ($n = 2$), Nicaragua ($n = 1$), Peru ($n = 1$), or Puerto Rico ($n = 3$), and the rest of fathers was born in Colombia ($n = 1$), Cuba ($n = 1$), Czechoslovakia ($n = 1$), El Salvador ($n = 6$), Guatemala ($n = 2$), Italy ($n = 1$), Korea ($n = 1$), or Puerto Rico ($n = 3$).

Procedure

Participants for Study 1 were recruited at a public “Cinco de Mayo” street festival taking place in downtown San Francisco in 1997. Individuals present at the festival area were either politely approached by the experimenter and her assistant (all of whom were both Latino and Spanish-English bilinguals) or voluntarily came to a booth where a table sign saying “Are you bicultural? Contribute to science and our better understanding of the Latino experience” was displayed. All subjects completed the paper-and-pencil survey privately and anonymously and gave written informed consent. The survey requested basic demographic information and included the measures described below. No questions about immigration legal status were asked in the survey.

The study was carried out following ethical guidelines and in accordance to UC Berkeley’s Committee for the Protection of Human Subjects (Part VI, B, 3, a, i), which approved the study. The study was completely anonymous, did not include questions of sensitive nature, did not involve deception, and did not pose any anticipated risks to the participants.

Instruments

Participants completed a questionnaire that was made available in both Spanish and English, designed to measure the following variables:

Acculturation-related measures

Cultural identifications. Ethnic and host cultural identifications were measured with two separate items that read “I feel North-American (U.S.)” (U.S. identification) and “I feel Latino/Hispanic” (Latino identification). The response scale ranged from 1 (*strongly disagree*) to 6 (*strongly agree*). The average levels of identification were 3.9 ($SD = 1.7$) for U.S. identification and 5.3 ($SD = 1.0$) for Latino identification. The correlation between the two identification scales was $r = -.31$ suggesting that, at least for this sample, identification as an American and as a Latino was experienced as moderately oppositional.

Bicultural Identity Integration. BII was measured with four force-choice items each tapping high versus low BII (e.g., “I combine both cultures” versus “I keep both cultures separate”, “I don’t feel caught between the two cultures” versus “I feel caught between two cultures”). For each answer option that corresponded to high BII we gave one point, zero if

otherwise. The final total score ranged from 0 to 4 (ordinal alpha = .68).⁴ Given the shortness of this scale (four non-redundant items tapping different facets of identity integration), this alpha is satisfactory. Overall, participants reported a BII mean level of 2.6 ($SD = 1.2$).

Time in the US. This variable reflects the approximate total amount of years the respondent had lived in the US at the time of the survey. Among second generation participants this variable might very closely reflect the respondent's age minus the time spent outside the US.

Network-related measures

Participants were first asked to list their four closest friends in California, with whom they had interacted with as personal friends throughout the last year and who were not family members. Second, they named four classmates, co-workers or colleagues in California with whom they had interacted with the most during the last year and who were different from their friends. Participants wrote the initials of the nominated individuals (i.e., alters) in eight circles and were then given the instruction to draw lines among all the individuals who had a relationship (described as having frequent interactions or being friends themselves). As a last step, respondents coded the ethnicity of each alter using the following categories: Latino/Hispanic, Asian, African-American, European/Anglo-American and other (please specify). From this data, we constructed two variables measuring the networks' composition (who is in the network) and two variables measuring its structure (how are the network members connected).

Group size of Latinos. Group size of Latinos, as a compositional measure, is the absolute count of Latino alters in the network. With a network size of eight alters, the variable may take values between 0 and 8. Overall, participants listed 4.1 ($SD = 2.3$) Latino alters.

Group size of European-Americans. Likewise, group size of European-Americans refers to the absolute count of alters classified as

⁴ Zumbo, Gadermann and Zeisser (2007) recommend using ordinal coefficient alpha when estimating the reliability based on Likert response items (i.e., binary and ordinal response scales). Ordinal alpha and Cronbach's alpha are conceptually the same with the difference that ordinal alpha is derived from a polychoric correlation matrix and not from Pearson's covariance matrix. We followed the instructions of Gadermann, Guhn and Zumbo (2012) for calculating ordinal alpha in the statistical software package R (R Development Core Team, 2011).

European/Anglo-American and may range from 0 to 8. Overall, participants listed 2.2 ($SD = 1.9$) European-American alters.

Interconnection of Latino friends and colleagues. This structural variable is an indicator for how well Latino friends and Latino colleagues are on average connected to each other weighted in accordance to their group size (variable referred to as inter-class tie weight in Brandes, Lerner, Lubbers, McCarty, & Molina, 2008). It is a normalized measure that is based on the idea of the average number of neighbors between two groups. Overall, the weight of how well Latino friends F and Latino colleagues C are connected to each other was .4 ($SD = .6$; $MAX = 3.2$). The weight is calculated as:

$$\omega(F, C) = \frac{e(F,C)}{\sqrt{|F| \cdot |C|}}, \quad (2.1)$$

Interconnection of non-Latino friends and colleagues. In a like manner, this variable expresses how well non-Latino friends and non-Latino colleagues are connected to each other. Overall, participants' two groups had an interconnection weight of .4 ($SD = .7$; $MAX = 3.5$).

Correlations for all measures are provided in Table 2.

Table 2. Correlation Matrix for Main Variables

	1	2	3	4	5	6	7	8
<i>Identification</i>								
1 Latino	–							
2 U.S.	-.31***	–						
<i>Acculturation-Related</i>								
3 Time in the US	-.24**	.37***	–					
4 BII	-.14	.25**	.18†	–				
<i>Group Size</i>								
5 Latinos	.21*	-.19*	-.37***	-.17†	–			
6 European-Americans	-.16†	.17†	.29***	.03	-.77***	–		
<i>Interconnection</i>								
7 Latino F/C	.17†	-.27**	-.25**	-.09	.52***	-.33***	–	
8 Non-Latino F/C	-.21*	.09	.08	-.00	-.44***	.23**	-.13	–

Note. 1 Latino identification; 2 U.S. identification; 3 time in the US; 4 BII; 5 group size of Latinos; 6 group size of European-Americans; 7 interconnection of Latino friends and colleagues; 8 interconnection of non-Latino friends and colleagues.

† $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$.

2.3.2 *Results*

Our main hypothesis was that the interconnection of same ethnicity alters across relational domains would be positively linked to cultural identification. To test this, we ran two separate hierarchical multiple regressions, one set using U.S. identification as a dependent variable and another set using Latino identification as a dependent variable. We calculated three models for each regression. The first model included the acculturation-related variables time in the US and BII as predictors, and their interaction to test for a possible moderation effect of BII. We replaced the five missing cases in the variable time in the US with the overall sample mean to not lose valuable network data. BII had nine missing cases, but as it was operationalized as a composite score, we did not replace them. The reason for this is that for composite scores a big variety of replacement strategies exist, and the choice of one runs the risk of being biased in favor of the researcher's interest. However, this decision led to the reduction of our sample size to 114. In the second model, we added the predictor variables group size of European-Americans for predicting U.S. identification and group size of Latinos when predicting Latino identification. For reasons of multicollinearity, we included only one group size variable at a time. In the final model, both interconnection variables were added.

Table 3. Regression Results for U.S. Identification

<i>Predictor</i>	U.S. Identification					
	1		2		3	
1. Acculturation-Related						
Time in the US	.33	***	.29	**	.26	**
BII	.19	*	.19	*	.18	*
Time x BII	-.23	*	-.24	**	-.22	*
2. Group Size						
European-Americans			.12		.07	
3. Interconnection						
Latino F/C					-.18	*
Non-Latino F/C					.02	
R ²	.24		.25		.28	
AIC	417.81		417.91		417.46	

Note. $N = 114$. Reported model coefficients are standardized betas. F/C stands for the interconnection of friends and colleagues.

* $p < .05$. ** $p < .01$. *** $p < .001$.

Table 4. Regression Results for Latino Identification

<i>Predictor</i>	Latino Identification					
	1		2		3	
1. Acculturation-Related						
Time in the US	-.24	*	-.18	†	-.19	†
BII	-.10		-.08		-.09	
Time x BII	.19	*	.18	*	.17	†
2. Group Size						
Latinos			.17	†	.05	
3. Interconnection						
Latino F/C					.06	
Non-Latino F/C					-.18	†
R ²	.12		.14		.17	
AIC	321.35		320.28		320.58	

Note. $N = 114$. Reported model coefficients are standardized betas. F/C stands for the interconnection of friends and colleagues.

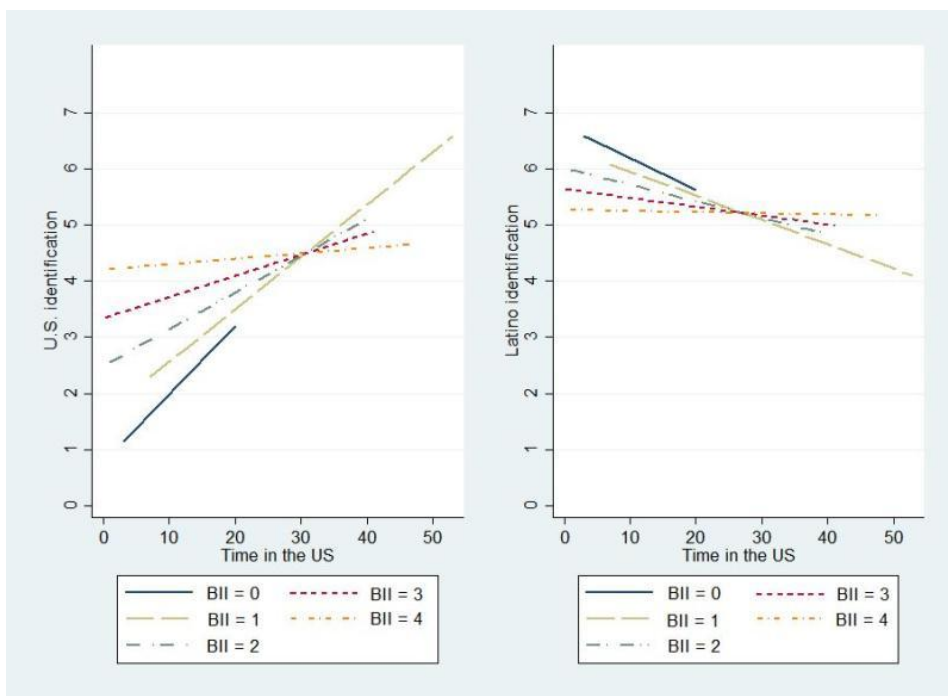
† $p < .10$. * $p < .05$.

The results for U.S. identification are shown in Table 3. Because of our small sample size, which makes the detection of significant effects difficult, and the fact that social network variables generally tend to show great variation (Brandes et al., 2008), we treat p values below .10 as significant (for similar procedure see Mok et al., 2007). Throughout all the models the acculturation-related variables were significant, indicating a strong positive association between U.S. identification with both time in the US and BII. Interestingly, this relationship was stronger for individuals scoring low on BII and lower for individuals scoring high on BII (see left side of Figure 6). In line with our expectations, we did not find any effect for group size, but an effect for one of the interconnection variables (H1). However, Hypothesis 2 (a positive link between the interconnection of non-Latino alters across relational domains and U.S. identification) was not supported. Instead, to our surprise, we found a negative link between U.S. identification and the interconnection of Latino friends and colleagues ($beta = -.18$; $p = .043$). Change in R^2 between the models was not significant, but followed the trend of Hypothesis 1 that network structure is a better predictor than pure network content (from Model 1 to Model 2: $\Delta R^2 = .01$; $p = .178$; from Model 2 to Model 3: $\Delta R^2 = .03$; $p = .124$; from Model 1 to Model 3: $\Delta R^2 = .04$; $p = .112$). According to Akaike's Information Criterion (AIC; DeLeeuw, 1992), in which lower values indicate a better fit, Model 3 (AIC = 417.455) fitted the data best (Model 1: AIC = 417.814; Model 2: AIC = 417.909).

Table 4 reports the regression results for Latino identification. Similar to the findings above, time in the U.S. and the interaction term were significant predictors, but at lower levels. The negative association between Latino identification and time in the U.S. was stronger for low BIIs (see right side of Figure 6). Again, one of the interconnection variables had a greater effect on identification than group size of Latinos when all network variables were included in the model (H1). We found a weak negative link between Latino identification and the interconnection of non-Latino friends and non-Latino colleagues ($beta = -.18$; $p = .068$) opposed to the hypothesized positive effect of the interconnection variable of Latino alters across relational domains (H3). In general, our models explained more variation in identification with the host culture than with the ethnic culture. Change in R^2 was only marginally significant from Model 1 to Model 2 ($\Delta R^2 = .02$; $p = .087$) and from Model 1 to

Model 3 ($\Delta R^2 = .05$; $p = .094$), but not from Model 2 to Model 3 ($\Delta R^2 = .03$; $p = .176$). Model 2 seemed to fit the data best (AIC = 320.277).

Figure 6. Interaction Term



2.3.3 Discussion

Though the results of Study 1 were not very strong, they show that situating and investigating bicultural individuals in their social contexts may be a fruitful approach for understanding the dynamic process of cultural identification. The results suggest that structural aspects of the social context predict patterns of cultural identification better than pure compositional aspects. Specifically, the interconnection between Latino friends and colleagues was linked to lower levels of U.S. identification, while the interconnection of non-Latino friends and colleagues was associated (although more weakly) with lower levels of Latino identification. This culturally-inverse pattern of results seems to indicate

that, at least for this sample, the social context facilitated cultural identification with the group of interaction by suppressing or lowering the identification with the other culture. Overall, the results suggest a sense of tension or opposition between identifying as an American and as a Latino, leading to the conclusion that those two cultural identifications may be subtractive or oppositional. In particular, external contextual pressures, such as the 1994 California Proposition 187 which prohibited illegal immigrants from using certain public services (e.g., non-emergency health care, public education), might have signaled to the Latino-American biculturals of our study that they cannot be both. Moreover, some Latino groups in the US are highly stigmatized, which may also add to this competing pattern found for both individuals' self-reported cultural identifications and the structure of the social networks that support these identities.

One reason for why our models explained host cultural identification better than ethnic identification might be that Latino identification is less malleable and strongly influenced by variables such as family and child socialization. Bicultural individuals might develop a strong sense of ethnic identity already in the family context and then later add a sense of belonging to the larger host culture. This feeling of belonging to the host society is probably more influenced by what happens and by what immigrants and their descendants do outside the family context, thus encompassing a wider scope of experiences.

Time in the US was associated to both cultural identifications, in that time spent in the US was linked to higher levels of U.S. identification and lower levels of Latino identification. This indicates that as the amount of exposure to and engagement with U.S. culture increases with time, Latino and U.S. cultural identifications become subtractive (for subtractive pattern see de la Sablonnière et al., 2016). Certainly, this pattern seems to be at odds with a bidimensional, two-directional, multidomain definition of acculturation (see Flannery, Reise, & Yu, 2001; Ryder, Alden, & Paulhus, 2000; Schwartz, Unger, Zamboanga, & Szapocznik, 2010). However, an interesting feature of these results is that the subtractive pattern is especially strong among Latinos scoring low on BII, supporting the notion that BII taps into perceptions of cultural incompatibility and conflict.

As the signs in Study 1 for the hypothesized associations between cultural identifications and the interconnection variables (H2 and H3) were different than expected, in the next study we used simulations and an agent-based modeling approach to explore in a dynamic way some of the (static) patterns examined in Study 1. The design of the second study allows us to predict different patterns of intrapersonal change in cultural identification over time based on the composition and structure of this individual's personal network. This more dynamic approach allows us not only to model the effects of social cues and social contexts (i.e., social network composition) on cultural identifications (Hong et al., 2000; Verkuyten & Pouliasi, 2006), but also to model the effects of structural aspects of the social context.

2.4 Study 2

Study 2 served two main purposes: (1) to illustrate some of the static results reported in Study 1 in a dynamic way, by modeling intrapersonal change, thus tapping into the dynamic nature of cultural identification; and (2) to explore other possible multiple identities negotiation and management mechanisms. We designed an agent-based model (ABM) and simulated data to demonstrate how an immigrant's identification with host and ethnic cultures may change depending on the composition and structure of this individual's personal network. This model may be useful in understanding complex identification outcomes evoked by simple mechanisms based on the principle of influence within networks. It further demonstrates why it might be difficult to detect consistent and strong network effects with regression analysis utilizing cross-sectional data. Moreover, this model may provide a promising starting point for informing the study of how multiple cultural identities and inter-group relations dynamically interact, and how these processes might lead to the emergence of particular identity structures such as hyphenated identities or identification with a third culture, and perhaps even the development of extreme patterns of cultural identification resulting from the disidentification with either of the other two or even both cultures. Our model allows us to explore the negotiation processes of coexisting identities, conflicting identities, and a mixture of the two. Because most psychologists are unfamiliar with ABM techniques, in the next section, we will briefly describe our model following the standard ODD protocol

(Overview, Design concepts and Details) that ensures an easy understanding of the model (Grimm et al., 2006, 2010).

2.4.1 Method

Entities, State Variables, and Scales

When developing our ABM in the NetLogo software (Wilensky, 1999), we tried to stay as close as possible to the operationalization of the variables used in the questionnaire of Study 1. As a consequence, we will describe the model specifically for the context of Latino-American biculturals, though it could be applied to any two cultures. The model consists of two types of entities: one ego and eight alters. Ego is characterized by *identification* with Latino (ethnic) culture and by identification with U.S. (host) culture, each possibly ranging from 1 to 6. Alters are characterized by their state variables *ethnicity* (either Latino or European-American) and *degree centrality* (here the amount of ties with same ethnicity alters, ranging from 0 to 7).⁵ The ties among the eight alters are undirected (meaning the alters have symmetric, reciprocal relationships that is, e.g., alters view each other as friends) and distributed randomly, ranging from 0 (alters completely disconnected) to 28 (alters completely connected). Throughout the simulation ego has 50 social interactions, always with one alter at a time. Each social interaction happens at a different point in time and may lead to a change in cultural identification. In that sense, time proceeds in discrete steps, and the length of each time step is not specified further. Composition and structure of the network are held constant through time.

Process Overview and Scheduling

Our model includes only one process: change of ego's cultural identifications. Ego's change in identification with Latino and U.S. cultures is traced throughout 50 time steps. At each time step, ego interacts randomly with one of the eight alters and changes level of identification with either one of the cultures, both, or none depending on the implemented rule. In total, we modeled three different mechanisms or rules: positive effect, negative effect and mixed effects (see Table 5 for a summary).

⁵ In an ABM, a state variable usually describes an attribute or a property of an agent (e.g., age, sex, size, ethnicity).

Table 5. Formal Comparison of Effects

	Effect		
	<i>Positive</i>	<i>Negative</i>	<i>Mixed</i>
Description	Interaction with alter <i>increases</i> cultural identification with the <i>same</i> culture (= culture of alter)	Interaction with alter <i>decreases</i> cultural identification with the <i>other</i> culture (\neq culture of alter)	Interaction with alter <i>increases</i> cultural identification with the <i>same</i> culture (= culture of alter) <u>and</u> <i>decreases</i> cultural identification with the <i>other</i> culture (\neq culture of alter)
Formalized description	Interaction with alter <i>a</i> increases identification with culture <i>A</i>	Interaction with alter <i>a</i> decreases identification with culture <i>B</i>	Interaction with alter <i>a</i> increases identification with culture <i>A</i> <u>and</u> decreases identification with culture <i>B</i>
	Interaction with alter <i>b</i> increases identification with culture <i>B</i>	Interaction with alter <i>b</i> decreases identification with culture <i>A</i>	Interaction with alter <i>b</i> increases identification with culture <i>B</i> <u>and</u> decreases identification with <i>A</i>
Equation	$ID_A + 0.1 + d_a \cdot 0.1$	$ID_B - (0.1 + d_a \cdot 0.1)$	$ID_A + \alpha(0.1 + d_a \cdot 0.1)$ $ID_B - (1 - \alpha)(0.1 + d_a \cdot 0.1)$
	$ID_B + 0.1 + d_b \cdot 0.1$	$ID_A - (0.1 + d_b \cdot 0.1)$	$ID_B + \alpha(0.1 + d_b \cdot 0.1)$ $ID_A - (1 - \alpha)(0.1 + d_b \cdot 0.1)$

Note. ID_A refers to ego's initial identification with culture *A* and ID_B to the initial identification with culture *B*. *D* is the degree centrality of the alter ego is interacting with and refers to the number of ties this alter has with other same ethnicity alters. α determines how strong positive and negative effects are.

First, the *positive effect* describes a mechanism similar to the one we had originally hypothesized in Study 1, namely, that a social interaction with an alter of a particular culture will increase identification with that same culture. Similarly, if ego interacts with an alter of another culture, identification with this new culture increases. As a result, social interaction will always lead to an increase in identification with the culture of the alter ego is interacting with. In this sense, both cultural identifications coexist and are independent from each other. More concretely, whenever ego interacts with a Latino alter a, ego's Latino identification increases by $0.1 + d_a \cdot 0.1$, where d_a (degree centrality) is the number of ties that alter a has with other Latino alters. Likewise, whenever ego interacts with a European-American alter b, ego's U.S. identification increases by $0.1 + d_b \cdot 0.1$, where d_b (degree centrality) is the number of ties that alter b has with other European-American alters. Basically, at each social interaction one of the cultural identifications is increased by at least 0.1. We chose 0.1 as it is a basic mathematical unit of change between 0 and 1. The increase in identification is greater than 0.1 when the alter of an interaction has at least one tie to another alter of the same ethnicity. As we wanted to model cultural identification change over time, and, thereby, avoid reaching complete identification too fast (= 6, identification is measured from 1 to 6), we multiplied the degree centrality with 0.1 as a basic unit of change. We used degree centrality to model the idea that the relationships among alters or their social interactions matter for the identification of ego. The more same ethnicity ties an alter has, the greater is the influence on ego's identification. We thus do not only examine the effects of the social context on cultural identification, but also its structural aspects.

Second, the *negative effect* is based on the actual finding from Study 1 showing that cultural identification with a particular culture decreases when an individual interacts with somebody of another culture. Ergo, social interaction always decreases identification with the culture ego is not interacting with. In that way, engagements with each culture coexist but are not independent from each other. As a consequence, interaction with one culture always leads to a reduction (i.e., suppression or lowering) of identification with the other culture. Precisely, this means that whenever ego interacts with a Latino alter a, ego's U.S. identification decreases by $0.1 + d_a \cdot 0.1$. Similarly, whenever ego interacts with a European-American alter b, ego's Latino identification decreases by $0.1 + d_b \cdot 0.1$. Again, a social interaction has more impact on the change

of cultural identification when the alter of the interaction is better connected to other same ethnicity alters.

Third, the *mixed effects* version of the model is a combination of the former two mechanisms. At each social interaction, positive and negative effects take place simultaneously. In practical terms, this could be when both cultures are seen as coexisting with regards to one life domain (e.g., work values), but as conflicting with regards to a second one (e.g., gender roles). Another addition to the former two versions of the model is the variable α , which regulates the influence of the two effects. This variable ranges from 0 (negative effect is present, but positive effect is absent) to 1 (positive effect is present, but negative effect is absent). Only when α is equal to .5 both effects have the same influence on identification. For all other values, either the negative or the positive effect is stronger. Thus, whenever ego interacts with a Latino alter a, ego's Latino identification increases by $\alpha(0.1 + d_a \cdot 0.1)$ and ego's U.S. identification decreases by $(1 - \alpha)(0.1 + d_a \cdot 0.1)$. Likewise, whenever ego interacts with a European-American alter b, ego's U.S. identification increases by $\alpha(0.1 + d_b \cdot 0.1)$ and ego's Latino identification decreases by $(1 - \alpha)(0.1 + d_b \cdot 0.1)$. In all three versions of the model, ego may change both identities up to a maximum value of 6 and down to a minimum value of 1.

Initialization and Simulations

Before simulations began, ethnicity was assigned randomly to the eight alters. So was the distribution of their ties. At the start of each simulation, ego was set up to have moderate identification of 3.5 with Latino and US-American cultures (midpoint of the scales). Each simulation ended after 50 time steps and provided two outcomes: one value for ego's Latino identification and one value for ego's U.S. identification (later referred to as outcome identification). We simulated data by systematically varying the ratio between Latino and European-American alters (i.e., 0:8, 1:7, ..., 8:0), and the amount of alter ties in steps of four (i.e., 0, 4, ..., 28), resulting in 72 different combinations each for the positive and for the negative effect. Then, we tried the same combinations with the mixed effects model for α values ranging from 0 to 1 in steps of 0.1. Hence, we had 792 combinations for the third model. As running a model with certain initial values once may show only one possible development and result in only one outcome out of many (Bijak, Hilton, Silverman, & Cao,

2013), we ran the simulation of each combination of starting values 50 times. Taking all three models together, we ended up with 46,800 values each for Latino identification and for U.S. identification ($9_{ethnicity\ ratio} \cdot 8_{alter\ ties} \cdot (1_{positive} + 1_{negative} + 11_{\alpha}) \cdot 50_{repetitions}$).

2.4.2 Selected Results

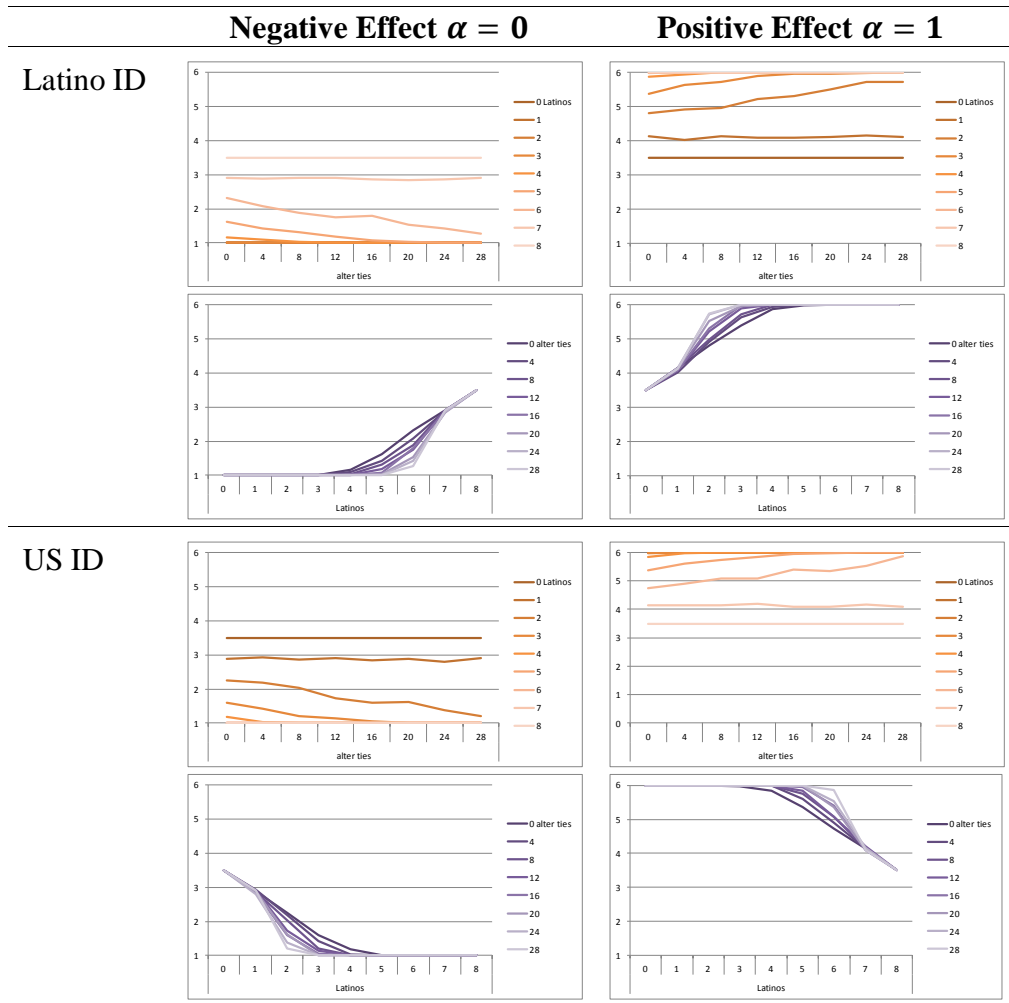
We computed means and their standard deviations for both outcome identifications and for each combination of starting values considering all 50 repetitions. Tables 6 and 8 summarize the means of each of the two outcome identifications for positive, negative and mixed effects respectively, and Tables 7 and 9 their standard deviations. In the orange graphs, each of the nine orange lines represents a distinct composition of the network (ranging from dark orange with no Latinos and eight European-Americans to light orange with eight Latinos and no European-Americans). The x-axis gives information on the structure of the network (i.e., amount of alter ties), and the y-axis holds the mean of the outcome identification or its standard deviation. In the purple graphs, each of the eight purple lines represents a different network structure (i.e., amount of alter ties; the darker the line, the less alter ties), while the x-axis captures the composition of the network (i.e., amount of Latino alters). Again, the y-axis shows the mean or the standard deviation of the outcome identification given a specific network constellation (i.e., network composition and structure).

To give some examples, in the mean plot of the negative effect model of Latino identification (upper left graph in Table 6 *Table 6*), the lightest orange line is parallel to the x-axis at 3.5 of the y-axis. This reads as no matter how many alter ties exist, a network composed of eight Latinos always leads to an average outcome identification of 3.5 after 50 runs of the model with 50 time steps. In the purple graph below, all lines have a positive trend. So the more Latinos there are, no matter how many alter ties exist, the higher is the average Latino outcome identification after 50 simulation runs. In addition, alter ties seem to matter the most when there are five or six Latinos. In the standard deviation plot of the negative effect model for Latino identification (upper left graph in Table 7), the orange line for six Latino alters approaches a v-shape form and can be read as, no matter how many alter ties exist, a network composed of six Latino alters compared to other network compositions has the widest spread of possible outcomes considering 50 simulation runs. Likewise, the purple

graph below shows that no matter how many alter ties exist, the standard deviation of the mean is the highest for six Latino alters. In general, the higher the standard deviation of the mean is, the greater is also the spectrum of possible outcomes after 50 simulation runs or, differently said, the lower is the consistency of simulation outcomes. Next, we present a selection of our results by mechanism or effect.

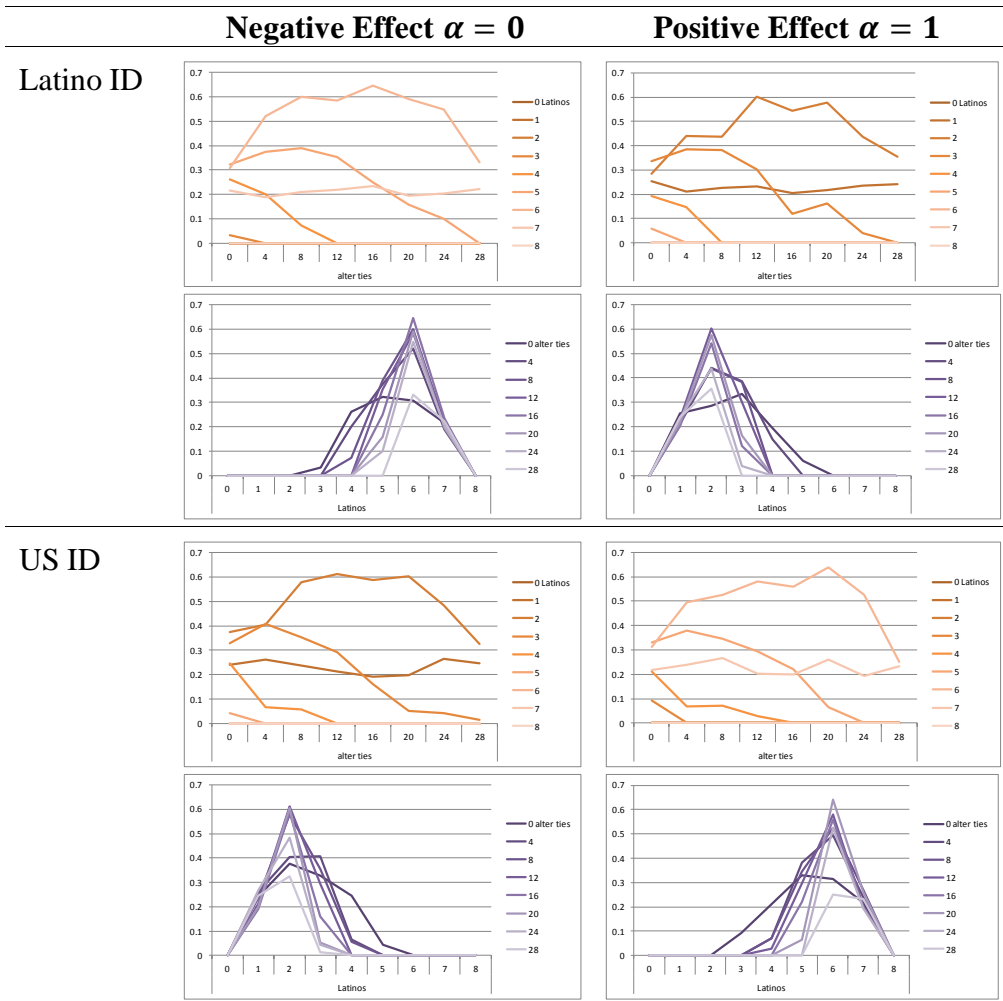
First, the *positive effect* model (identical to the mixed effect model of $\alpha = 1$) always led to complete Latino identification (= 6) when there were at least six Latino alters. Likewise, complete U.S. identification (= 6) was reached when there were at least six European-American alters (identical to a maximum of two Latino alters) (Table 6). Second, complete identification with both cultures was also reached, for instance, when there were three to five Latino alters in a completely connected network (= 28 alter ties). Third, having no alters from one ethnicity resulted in the corresponding identification to be stable at 3.5. Fourth, when the ratio between the two ethnic groups was 4:4, the maximum of both identifications was reached or almost reached (smallest identification value 5.816), no matter how many alter ties existed. Fifth, the more alters were connected to each other, the less alters of one ethnicity were needed to result in maximum identification with that ethnicity. Sixth, when having only one alter from one ethnicity, ties hardly mattered for the result of the corresponding outcome identification (value approximately between 4.1 and 4.2; standard deviation relatively stable across ties, Table 7). This is because there are no other same ethnicity alters that this alter could have ties with. So the influence of this alter is stable even when the total amount of alter ties in the network increases. In contrast, ties between alters mattered the most when there were two alters of one ethnicity. Then, identification with that particular culture increased with the increase in amount of alter ties. That is because with two alters of the same ethnicity there can be only up to one tie between them, which results in a degree centrality of one for both alters. The more overall alter ties there are, the higher the probability that there is a tie between these two alters. Seventh, the standard deviation of the mean was the greatest for two alters of that ethnicity, no matter how many ties existed, with reaching the maximum when there was a medium amount of alter ties, and reaching a lower value when there were either no, few, or many ties. However, the standard deviation varied the most for three alters of that ethnicity.

Table 6. Mean of Identification Outcome for Negative and Positive Effects



Note. Measurement points are shown as lines for visual simplicity. Some of the lines may be difficult to see as they overlap.

Table 7. Standard Deviations of Means for Negative and Positive Effects



Note. Measurement points are shown as lines for visual simplicity. Some of the lines may be difficult to see as they overlap.

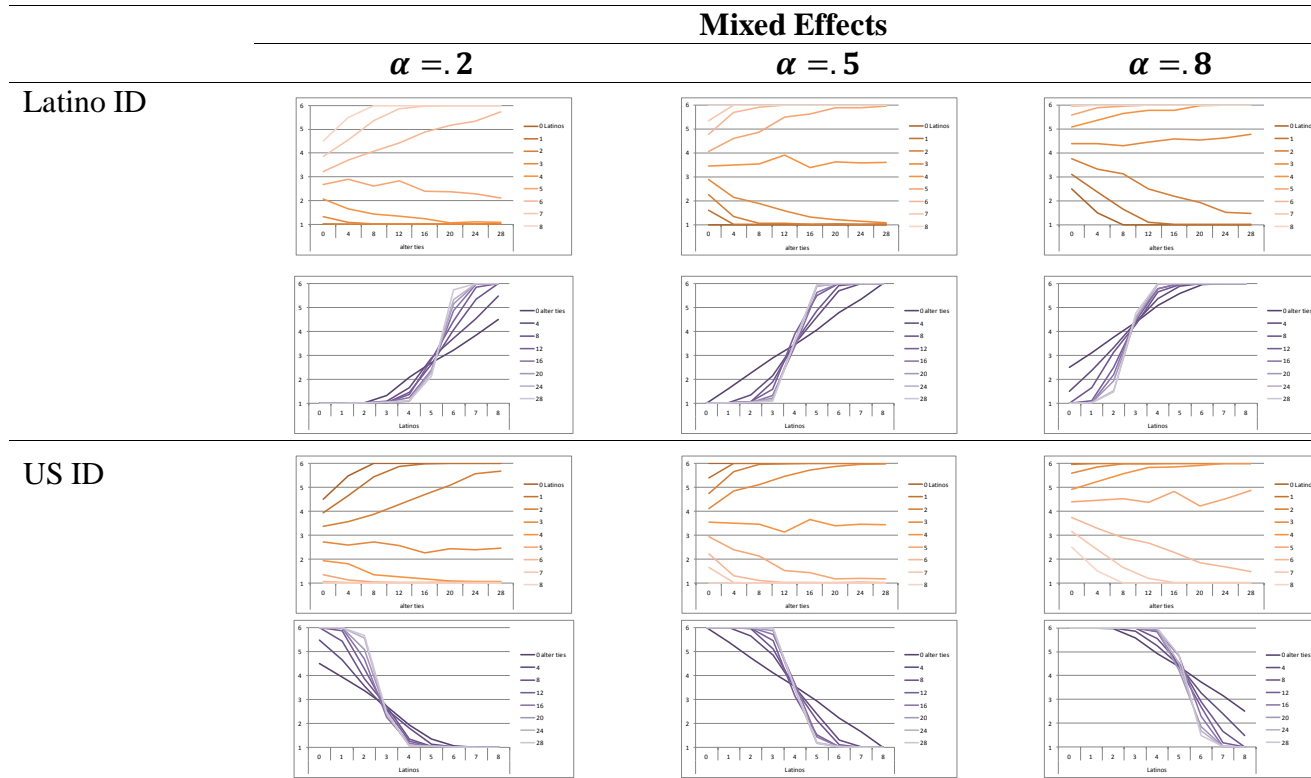
The *negative effect* model yielded a pattern of results similar to the ones above but mirrored. First, complete disidentification (= 1) with one culture was reached when at least six alters belonged to the other culture no matter how many ties existed (Table 6). Second, complete disidentification with both cultures was also reached, for instance, when

there were between three and five Latino alters in a completely connected network. Third, the identification outcome with one culture was stable at 3.5 across number of alter ties when all alters belonged to that culture. Fourth, when the ratio of the two ethnic groups was 4:4, both identifications reached or almost reached their minimum, no matter how many alter ties were present. Fifth, the more connected to each other alters were, the less alters of one ethnicity were needed to result in minimum identification with the other ethnicity. Sixth, ties mattered the least for the change in identification with one culture when the network was composed of seven alters of that culture (e.g., Latino identification somewhat stable around 2.9 when seven Latinos were present, no matter how many ties). The amount of alter ties mattered the most for the change in cultural identification when there were six alters from the same culture (analogously to having two alters of the same culture in the positive effect). Seventh, the standard deviation of the mean across ties was the greatest for six alters of the traced culture, but varied the most across ties when five of these alters were present (Table 7).

Selected results for the *mixed effects* model are shown in Table 8 and Table 9. When α is 1, results are the same as in the positive effect model, and when α is 0, results are the same as in the negative effect model. When α is smaller than .5, the positive effect is smaller than the negative effect. When α is greater than .5, the positive effect is bigger than the negative effect. Only when α is equal to .5, both effects are equally important in the model. The results of two alphas that complement each other to 1 are mirrored. For example, results for α equal to .4 mirror the results of α equal to .6.

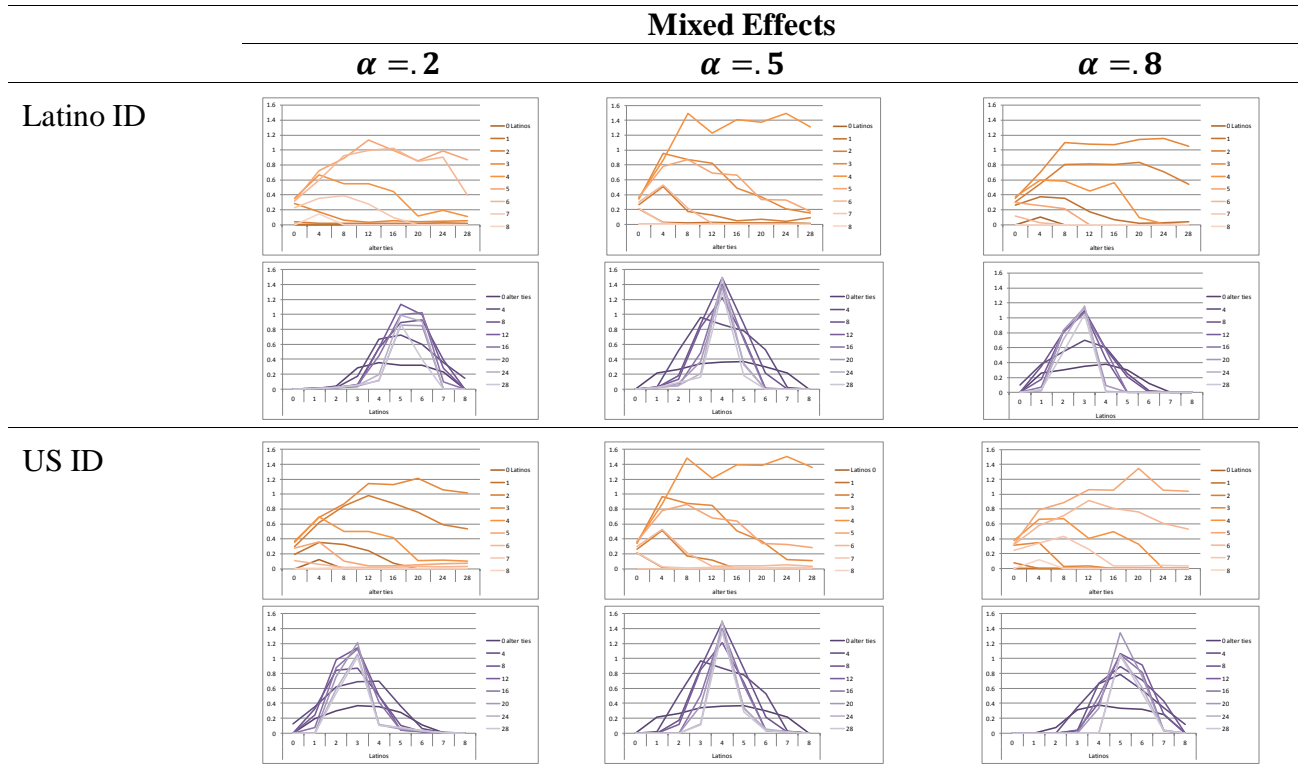
In the special case where both effects were the same, ties did not or almost not matter for the outcome identification when there were no Latinos, four Latinos or eight Latinos (Latino identification was then 1, oscillating around 3.5 or 6, respectively; inverse for U.S. identification; Table 8). In contrast, ties had the most effect on the increase in cultural identification when there were five alters of that culture, and the most effect on the decrease in cultural identification when three alters of that culture were present. Further, the standard deviation of the mean was highest when alters from both cultures were equally present in the network, no matter how many ties existed (Table 9). Generally, the standard deviation of the mean decreased the more ties alters had.

Table 8. Means for Exemplary Mixed Effects



Note. Measurement points are shown as lines for visual simplicity. Some of the lines may be difficult to see as they overlap.

Table 9. Standard Deviations of the Means for Exemplary Mixed Effects



Note. Measurement points are shown as lines for visual simplicity. Some of the lines may be difficult to see as they overlap.

For α equal to .2 (negative effect stronger than positive effect), having had five alters or less from one ethnicity, decreased the corresponding outcome identification in relation to the initial identification, while six alters or more led to an increase. Next, ties mattered the most in the case of six alters (Table 8), and the standard deviation of the mean was highest for five and six alters (Table 9). The results for α equal to .8 (positive effect stronger than negative effect) are the mirrored results of α equal to .2. For an α of .8, having had two alters or less from one ethnicity, decreased the corresponding outcome identification in relation to the initial identification of 3.5, while three alters or more led to an increase. Also, ties mattered the most in the case of two alters (Table 8), and the standard deviation of the mean was highest for two and three alters (Table 9).

2.4.3 Discussion

To further explore the processes examined in Study 1, in this second study, we modeled the dynamics between social networks and cultural identity, and tested models involving coexisting cultural identities, conflicting cultural identities, and a mixture of the two based on the principle of influence in networks. Keeping the number of social interactions constant, we varied the ratio between Latino and European-American alters and the amount of their ties. The influence of the alters on cultural identification was stronger the more same ethnicity alters were connected to each other. We thus did not only model the cultural context of interaction (i.e., interaction with Latino or with European-American alter), but also its structural aspects (i.e., amount of same ethnicity ties that alter of interaction has), by giving importance to the social interactions among alters.

We showed that social network structure and content matter, but not in a homogenous, straightforward way, which might explain why these effects are difficult to detect in regression analyses involving cross-sectional data. Some network constellations may lead to very different results (expressed in a high standard deviation of the mean) depending on which alter ego interacts with; yet, some of these constellations may follow a similar trend. Other, but much fewer, constellations might even be stable in their outcomes. In certain cases, just one additional actor from one culture can make a big difference depending on the number of ties in the identity negotiation process.

This simulation enables us to identify network constellations that lead to complete disidentification with one or both cultures over time. Individuals who do not identify with their ethnic culture nor with their host culture may be of particular interest, as they might develop a sense of belonging to a third culture. While this new culture might be a more inclusive one (e.g., a global culture, a blended culture representing a unique combination of heritage and majority culture), it could also be a more extreme one (e.g., identification with a political or religious radical group). Hence, ABM could, among other things, contribute to the understanding of how acculturating individuals attain radical, extremist identifications (Hogg & Adelman, 2013; Verkuyten & Yildiz, 2007). Additionally, these simulations allow us to detect network constellations in which ego ends up with complete identification with both cultures. Which identity negotiation mechanism takes place may depend on various determinants such as the social, cultural, and political context, psychological characteristics of the individual (e.g., character traits such as dispositional openness and affiliative needs, level of BII) and the perceived or objective similarity of the two cultures.

2.5 General Discussion

In the present research, we examined how key acculturation variables (i.e., ethnic and host cultural identifications, BII) relate to the composition and structure of Latino-American biculturals' personal social networks. Drawing on the idea of complex social contagion from network theory and applying it to the negotiation process of multiple identities, we argue that immigrants and their descendants may adopt changes in their cultural identifications as a result of receiving repeatedly culture-relevant information from multiple network members representing different social roles. Relying on a community sample of Latino-Americans, in Study 1, we showed that the interconnection of same ethnicity alters across different relationship domains (i.e., friends and colleagues) predicts cultural identification, while the group size of these ethnicities does not. For these participants, the interconnection of Latino friends and colleagues is negatively associated with U.S.-American identification, and the interconnection of European-American friends and colleagues is negatively linked to Latino identification. This unexpected pattern

suggests that, at least for our Latino-American sample, both cultural identifications are embedded in subtractive or even conflicting social network structures. Further, for this sample, time in the US is positively related to U.S.-American culture, but negatively to Latino culture, although this effect (indicative of a subtractive or a zero-sum pattern) is stronger for Latino-Americans who perceive tension between the two cultures (i.e., biculturals low on BII). This interactive pattern lends support to the idea that biculturals who experience low BII (e.g., “I feel caught between two cultures”) might manage this feeling by disidentifying from one of the cultures over time.

While Study 1 was cross-sectional and could only show static interpersonal differences in cultural identification, Study 2 examined intrapersonal changes dynamically. In the latter study, we modeled the dynamics between social networks and cultural identification with both ethnic and host cultures over time, and tested models involving coexisting cultural identities, conflicting cultural identities and a mixture of the two based on the principle of influence. In doing so, we included the cultural context of interaction (i.e., interaction with Latino or with European-American alter) and its structural aspects (i.e., amount of same ethnicity ties that alter of interaction has). We showed that network structure and content matter, but not necessarily in a consistent or homogenous way. Still, we were able to identify network constellations that lead to complete identification or complete disidentification with one or both cultures over time. While certain network constellations may be beneficial for developing harmonious multicultural identities, others may lead to risky patterns of cultural disidentification and radicalization.

We would like to draw attention to some limitations of the current research. First, the data of Study 1 is cross-sectional, which does not allow for any causal inferences. Although we argued that the immigrant’s network influences ethnic and host cultural identifications, the reverse (selection) is also possible and likely. Individuals may choose certain people to be part of their network and determine how to connect them depending on their cultural identifications (Veenstra et al., 2013). In the future, longitudinal studies could explore in what way immigrants’ cultural identifications determine who becomes a network member and how these network members get connected (selection), and in what way the composition and the structure of the network influence immigrants’ identifications with ethnic and host cultures over time (influence). Also, longitudinal data would provide a sequence of at least two observations,

which then could be used for designing a stochastic ABM to disentangle the intertwined relationship between selection and influence.

A second possible limitation is the way we measured the network in Study 1. We elicited the network by making respondents draw their networks. As soon as the network structure gets a little bit complicated, this task becomes tricky and people might be more likely to forget relationships between their network members. This is an issue that can be solved easily in future studies by using software especially developed for collecting egocentric network data, such as the program EgoNet, that automatically and separately asks the participants about each possible alter pair, thus facilitating an accurate reporting of all possible connections between alters.⁶

A third limitation concerns the environment of the data collection of Study 1. As the data were collected at a Cinco de Mayo street festival, our Latino community sample is likely to have been biased in favor of immigrants with a strong Latino identification. However, notice that we do not use this data to make empirical claims about Latino multiculturalism and Latino bicultural identity; we rather use the findings from Study 1 to develop a theoretical model in Study 2 that predicts intrapersonal change in cultural identification based on different identity negotiation mechanisms. Future studies could try to balance the cultural setting to also include individuals with lower ethnic identification.

Fourth, sample size, low significance of effects, and the quality and reliability of the scales used in Study 1 may be an issue. The modest size of our sample makes detecting reliable significant effects more difficult. Especially the network variables in Study 1, for which we claim effects on cultural identification for, are of low significance. Nonetheless, we argue that the effects of network composition and structure exist, but are rather hard to show in regression analysis as the process of influence is dynamic and not straightforward, as we illustrate in Study 2.⁷

⁶ EgoNet is a free software developed by Chris McCarty and Martin Smith which can be downloaded at <https://sourceforge.net/projects/egonet/>.

⁷ In addition, when constructing response scales for items in the questionnaire, response options directly tapping into different strengths of identification levels should be preferred to agree/disagree scales (as in the case of cultural identification) (Saris, Revilla, Krosnick, & Shaeffer, 2010).

Fifth, some of our implicit culture-related assumptions might be debatable. For instance, due to logistical and time constraints, we were only able to gather information on the ethnicity of all alters, but not on their cultural identifications. It could be interesting to also include alters' actual cultural identifications as these may be different from their ethnicity. However, egos reported their perceived ethnicity of alters, which might be different from the real ethnicity and closer to observable aspects of the actual cultural identification.

A sixth limitation refers to the model assumptions in Study 2. In real life, not all social interactions are random. While some interactions may be, others may depend on the past. A new model could include the effect of the past on future interactions, for example, by (a) making an interaction with an alter of the same ethnicity as in the previous interaction more likely, or by (b) allowing the interaction to have more influence on identity change if the past interaction was with an alter of the same ethnicity as the alter of the new interaction. Further, actors are not constant over time. They may appear and disappear from a network as ties, too, may evolve and dissolve. Nevertheless, the structure of a network seems to be rather stable even when there is a high turnover in alters, because the way people structure their networks is also affected by their personality (Kalish & Robins, 2006). In addition, even when there is an exchange of actors, certain compositional measures (e.g., percentage of women) remain relatively stable (Lubbers et al., 2010). Finally, future ABMs based on our model should report the average degree centrality of alters by ethnicity and the number of homophilous ties.

Despite all these limitations, our research has also some key strengths. First, Study 1 relied on a community sample rather than a convenience sample (e.g., university students), as is often the case in cultural and social-psychological research. Second, the network approach grasps a real-life situation of intercultural contact in contrast to commonly used self-reports, which are highly dependent on the respondent's self-awareness and are influenced by a variety of biases (e.g., social desirability, wishful thinking, lying about interactions); thereby, the social network approach is a less obtrusive and more implicit data collection mode that yields less danger of being actively manipulated by the respondent. In that sense, we combined individuals' *thoughts* on acculturation (self-reported cultural identifications) and their acculturative *behavior* (network). Third, the transference of the theoretical idea of complex social contagion to the negotiation process of multiple cultural

identifications is novel. Fourth, in Study 2 we show that individuals' cultural identifications are not only influenced by their contacts, but also by the interactions that these contacts have between each other. Using an ABM approach, we were able to show that a distinct pattern of social relations (i.e., network composition and structure) does not lead to one deterministic identity outcome. Instead, in most of the cases, many different outcomes are probable, although they might follow a similar trend. Only in rare cases the exact outcome can be foreseen. The fact, that network composition and structure may affect multiple cultural identifications in many different ways, and not necessarily in a homogenous manner, might explain why it is difficult to detect network effects in regression analyses involving cross-sectional data. Fifth, experimental research has shown that, in laboratory settings, depending on the available social cues, different cultural frames become salient, and that cultural identification can shift accordingly. Our research does not only contextualize the effects of these social cues in a real-life environment, but also includes structural aspects of it.

Apart from the suggestions already mentioned, future studies could explore other immigrant populations and receiving contexts (e.g., Asian-Americans in the US, Turkish immigrants in Germany), as well as other types of biculturals (e.g., refugees, indigenous or colonized individuals). Moreover, the boundaries of the network could be defined more openly and include additional relationship domains, such as religious, political, and community enclaves. A mixed-methods research design including network visualizations may allow the respondent to change from being observed to being the observer, and, thus, permit the addition of interpretative information on the network's content, structure and changes over time (Molina et al., 2014).

To conclude, this research contributes to the multiple identities literature, and theory on biculturalism and cultural identity negotiation more specifically, as well as the literature on egocentric social networks, by exploring the links between key acculturation variables (i.e., ethnic and host cultural identifications, BII) and the composition and structure of Latinos' personal social networks in an U.S.-American context. First, our results indicate that the social networks of Latino-American biculturals are related to these individuals' levels of cultural identifications, and that this link is not necessarily based on the composition of the network (e.g., number of Latinos or Americans in the network), as some previous research has shown, but rather on its structure (the interconnection of

same ethnicity individuals across different relational domains). Second, this research illuminates the link between degree of exposure to the dominant U.S. culture and ethnic and host cultural identifications by showing that the temporal pattern of a stronger U.S. identification and a weaker Latino identification with the pass of time is particularly prominent among Latinos who perceive their cultural identities as incompatible (i.e., those lower in BII). This finding furthers our understanding of BII and solidifies its validity as a construct to understand how individuals perceive and negotiate multiple cultural involvements over time. Overall, the findings from our two social network studies speak to issues relevant to the integration of immigrants and other cultural minorities, and might be informative in developing intercultural policies and programs that foster both, cohesive social communities and harmonious multicultural identities. In an increasingly multicultural world, this involves the successful inclusion of individuals of different cultural backgrounds into individuals' social networks, and the active prevention of risky patterns of identity disidentification or radicalization (Lyons-Padilla, Gelfand, Mirahmadi, Farooq, & van Egmond, 2015; Simon, Reichert, & Grabow, 2013).

Conflict of Interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Author Contributions

VBM contributed to the design of the first study and collected the data. LR contributed to the design of the second study. She performed the data analysis and interpretation of both studies under the supervision of VBM. LR drafted the manuscript, and VBM provided critical revisions.

Funding

The work undertaken by LR was supported by the German National Scholarship Foundation.

Acknowledgements

This manuscript benefited greatly from the input provided by Gert Cornelissen, Seth Schwartz, and Thomas Woiczuk.

Repke, L., & Benet-Martínez, V. The (diverse) company you keep: Content and structure of immigrants' social networks as a window into intercultural relations in Catalonia. *Journal of Cross-Cultural Psychology*. Vol. 49, issue 6, p. 924-944. <http://journals.sagepub.com/doi/full/10.1177/0022022117733475>

CHAPTER 4

How Intercultural is Your Social Network? The Role of Personality and Bicultural Identity Integration

Abstract

What are the social-personality factors that predict the degree of interculturality present in an individual's social network? In answering this question, the current research goes beyond examining the content of social networks (e.g., how culturally diverse the members of the network are) to also examine structural aspects of the network (e.g., amount of inter-cultural and intra-cultural ties in the network). A culturally diverse community sample of immigrants residing in Barcelona ($N = 122$) nominated 25 individuals (i.e., alters) from their habitual social networks and provided demographic (e.g., ethnicity), contextual (e.g., place of residence), and structural (i.e., who knew whom) information for each of these alters. In addition, participants completed self-reported measures of personality (Big Five) and Bicultural Identity Integration (BII). Alters in the network were classified into four groups: coethnic transnationals, coethnic locals, Catalans/Spaniards, and Others. Various compositional and structural indices were computed, such as group size (number of alters belonging to each of the four aforementioned groups), intragroup connectedness (i.e., amount of ties within each group), and intergroup connectedness (i.e., amount of ties across groups). Analyses controlling for basic demographics revealed that both personality (mainly agreeableness, extraversion, and openness) and BII predict the content and structure of the social networks, particularly with regard to the number of Catalan/Spanish people in the network, the compactness of this group, and the amount of ties between coethnics and Catalans/Spaniards. These results further our understanding of the social-personality factors involved in intercultural contact, and also highlight the interplay between individual and meso-level factors in the formation of intercultural social spaces.

4. How Intercultural is Your Social Network? The Role of Personality and Bicultural Identity Integration

4.1 Introduction

Although people may have very different reasons for moving to a new country, for some the beauty in relocating lies in the given opportunity to start over. This often includes meeting new people, but it also involves the intensification and diminishment of already existing relationships. Changes in the social networks of immigrants and in the management of their multiple cultural value systems and identifications are often a logical consequence of getting into contact with people from different cultures in the new host country. On the one hand, these changes are constrained by contextual factors (e.g., ethnic composition of population, intercultural contact opportunities, immigrant policies; Blau, 1993; Liebkind, 2001; Phinney, Horenczyk, & Vedder, 2001; Ramos, Cassidy, Reicher, & Haslam, 2014), but, on the other hand, they may also be influenced by people's psychological predispositions such as their personality traits (Kalish & Robins, 2006). For instance, extraverted individuals are sociable, talkative and active in getting to know new people. They usually prefer large groups over small ones, and, thus, tend to build big and diverse networks (S. Cohen & Hoberman, 1983). In the particular case of immigrants, personality traits and the way immigrants manage their different cultural orientations may be reflected in how much they mix their social contacts across different cultures (e.g., coethnics versus host nationals) or in how much they keep them separate.

Generally speaking, a person's social network consists of social contacts (i.e., nodes or alters) and the social relationships these actors have (i.e., edges, ties or connections). Networks that are constructed from the perspective of one particular individual (i.e., focal node or ego) are referred to as egocentric or personal social networks. A migrant's network can be composed of different alter groups. Possible groups include coethnics in the country of origin (coethnic transnational network), coethnics in the country of

destination (coethnic local network) or host nationals (local host network). Within each group people may know each other, but also the groups as such may be interconnected to varying degrees.

Upon arrival, immigrants tend to rely mainly on their coethnic network members (Knight et al., 2017): coethnic transnationals may facilitate migration by giving social support, functioning as safeguards for their identity, and encouraging adjustment, whereas coethnic locals may provide short-term accommodation and help in finding a job (Lebon, 1983; Massey et al., 1993; Schultz, 2001; Smith, 1999). The networks of immigrants are dynamic and evolve over time, in that host nationals and immigrants of other ethnicities usually get incorporated later on. These local, non-coethnic members of the host society may give access to new opportunities within the local job market and help adjust to the norms and value systems of the country of settlement (Knight et al., 2017; Martínez García et al., 2002).

A fundamental assumption in social network theory is that structure matters, meaning that the way human relationships and interactions are structured plays an important role in predicting a variety of outcomes (e.g., work performance, family roles, disease transmission, information flow, creativity) (Borgatti & Halgin, 2011; Borgatti, Mehra, Brass, & Labianca, 2009; Robins & Kashima, 2008). This systemic perspective accounts for relational interdependencies, but rarely includes possible effects that individual characteristics (e.g., personality) might have on these social structures (Mehra, Kilduff, & Brass, Daniel, 2001). In contrast, social psychologists usually focus on the individual level and assume that individuals are independent, separate entities. Doing so ignores the fact that people are embedded in social relations and, thus, runs the risk of forgetting about the dynamic that occurs between interacting individuals (Postmes et al., 2015; Robins, 2009; Robins & Kashima, 2008). Though integrating relational and individual perspectives may be a fruitful approach for understanding human action, only a few empirical network studies have included psychological variables and tried to relate individual differences to network structure and vice versa (see Burt, Jannotta, & Mahoney, 1998; Clifton, 2014; Kalish & Robins, 2006; Klein, Lim, Saltz, & Mayer, 2004; Mehra et al., 2001; Mok et al., 2007; Neal et al., 2017; Repke & Benet-Martínez, 2017).

To our knowledge, there is no empirical study that analyzes the role of social-personality factors in social networks in the migration context. We address this gap by exploring which of these factors are reflected in the interculturality present in the social networks of acculturating individuals. The goal of this study is to dissect these networks into their compositional and structural, cultural components, and determine which of these components can be predicted by personality and identity structure. We did so by, first, clustering the network members of each participant into four groups with respect to the alters' ethnic background and place of residence. We, then, determined group size (i.e., amount of people that belong to one group), intragroup connectedness (i.e., how well members of the *same* group are connected to each other), and intergroup connectedness (i.e., how well members of *different* groups are connected) for the four groups. Second, based on these clusters, we created network profiles for different empirical realizations of each of our psychological variables, and compared them across and within variables. Third, we used regression analysis to explore which social-personality variables predict what aspect of the network. Controlling for basic demographics, we find that both personality and Bicultural Identity Integration (BII) are significantly and meaningfully related to network content and network structure, especially with regard to the amount of host nationals in the network as well as the intra- and intergroup connectedness of this group.

4.1.1 Personality, Identity Structure, and Social Networks

Social networks may shape people's behaviors, but individuals' behaviors might as well affect the content and the structure of social networks. While there are many factors that play into this bidirectional relationship, personality may be one of them. This is consistent with the idea that personality matters in a large number of contexts. In fact, an enormous amount of research has shown that personality predicts a variety of life outcomes at the individual level (e.g., happiness, health, spirituality, identity), the interpersonal level (e.g., quality of relationships with peers and family), and the social institutional level (e.g., occupational choice, community involvement, criminal activity, political ideology) (for a review see Ozer & Benet-Martínez, 2006). Some of the underlying personality constructs are viewed to be relatively enduring over time (i.e., trait

characteristics), others seem to vary by context (i.e., state characteristics) (Allport, 1962). Personality attributes, in particular, appear to be rather stable with predictable mean-level changes throughout the lifespan (Roberts et al., 2006). The widely accepted Big Five model of personality traits organizes these attributes along five dimensions: extraversion (e.g., sociability, activity, assertiveness, confidence), agreeableness (e.g., trust, kindness, cooperation), conscientiousness (e.g., self-discipline, order, duty), emotional stability/neuroticism (e.g., anxiety, moodiness, anger), and openness to experience (e.g., creativity, curiosity, intellect) (Costa & McCrae, 1992; John, Naumann, & Soto, 2008).

Empirically, only a few scholars have included personality measures in their network approach. For example, Mehra and his colleagues (2001) examined how different personality types form distinct networks within organizations, and how personality and network structure jointly predict work performance. In particular, they looked at workers' self-monitoring orientation and their structural position within the company: high self-monitors became more central within the firm over time, thereby tending to span social divides, while low self-monitors took structural positions in which they were tied to relatively homogenous social worlds. Klein and her colleagues (2004) studied the influence of individuals' personality, demographic characteristics, and values on obtaining central positions within team networks. Highly educated individuals who were low in neuroticism became more central in advice and friendship networks over time, but less central in adversarial networks.

Relying on a sample of first-year psychology students, Kalish and Robins (2006) found that psychological predispositions explained network formation. They introduced a new triad census method for egocentric networks that examines network closure and structural holes using the concept of tie strength. Their results suggest that extraverted people, those who are less individualistic, and those with high group orientation build dense networks (i.e., network members are well connected to each other). Neurotic and individualistic people as well as those who think they have control over their life tend to keep their strong tie network members apart. In contrast, people who think they have no influence on the events in their life seem to have a tendency for closed networks consisting

of weak ties. In two studies utilizing college samples, Clifton (2014) looked at how people express their personality in different interpersonal situations and found that people's personality expressions vary across relationships depending on the position of the social relationship within the network. Participants of the two studies consistently described themselves as more extraverted and neurotic, and less conscientious when interacting with people who hold more central positions within their social networks. Neal and her colleagues (2017) observed preschool children for one year. In their longitudinal classroom study, they found that children's temperament traits shaped the way they formed play relationships and that their friends' traits influenced the subsequent development of the children's own traits. Utilizing an intergroup but not network perspective, Vezzali and his colleagues (2017) showed in their longitudinal study with Italian and immigrant high-school students that there was a positive bidirectional relationship between levels of agreeableness and openness to experience and the quality of contact between majority and minority groups.

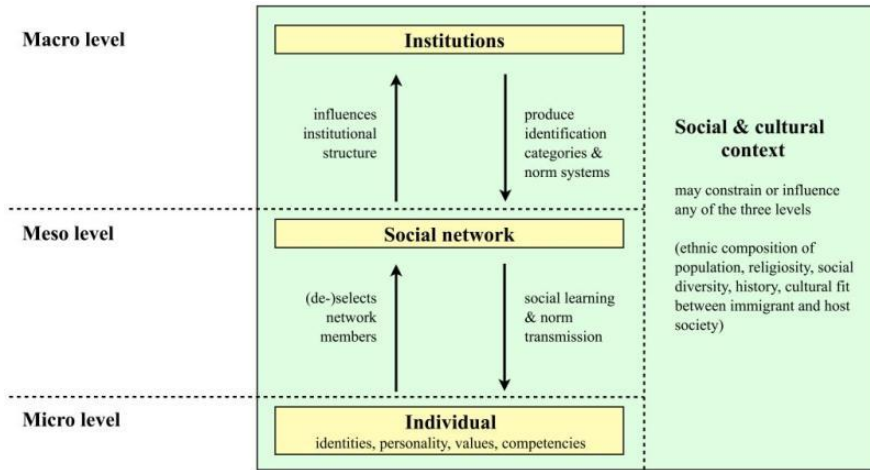
In addition, there is some empirical evidence for personality predicting the identification of immigrants. More specifically, conscientiousness and lower levels of neuroticism are associated with ethnic cultural identification, whereas openness and extraversion are both linked to host cultural identification (Benet-Martínez & Haritatos, 2005; Ryder et al., 2000). However, immigrants do not exclusively vary in how much they identify with ethnic and host cultures, but also in how they experience and organize their cultural orientations. After having internalized the beliefs, values, behaviors and language(s) of the receiving culture(s), immigrants may view their cultural identities as compatible and feel part of a combined (sometimes third) culture or internalize the encountered cultural differences as reflecting conflict and incompatibility (Benet-Martínez & Haritatos, 2005; Benet-Martínez et al., 2002). Bicultural Identity Integration (BII) is a psychological concept that captures this notion of cultural blendedness versus compartmentalization and cultural harmony versus conflict, and has become a central focus of research on biculturalism (Benet-Martínez & Haritatos, 2005; Benet-Martínez et al., 2002).

The way bicultural immigrants manage their two cultural orientations might be reflected in the way they handle their intercultural relations, and, thus, might map on the structure of their network. In fact, Mok and her colleagues (2007) argued that accepting the host culture as a part of oneself is reflected in the presence of host culture individuals in the immigrant's network. Relying on a first-generation Chinese immigrant sample in the US, they showed that BII was linked to the amounts of host national friends as well as to their connectedness. In a similar spirit, Repke and Benet-Martínez (2017) demonstrated for a Latino-American bicultural sample that the interconnection of same ethnicity alters across friendship and work domains is related to both ethnic and host cultural identifications. Although time in the host country positively predicted host identification and negatively predicted ethnic identification, this temporal pattern was stronger for biculturals low in BII.

4.1.2 A Micro-Meso-Macro Level Framework

Different scientific disciplines offer distinct lenses on how to view our world. They either intend to explain the same social phenomena but from alternative perspectives, or they aim at understanding different kinds of social phenomena. Within the literature of identification, for instance, macro-social level theories from history and sociology regard the formation of national identities as resulting from historical and institutional forces. Sociology and social psychology offer micro-social level theories on possible processes of how individuals develop identification with social groups. However, identification is not only a product of macro-structural forces (e.g., institutions, history, economy) and micro-individual processes (e.g., interpersonal differences), but also of the social relationships that people have between each other, that is the social networks they are embedded in (Lubbers et al., 2007). Analytically, these networks are situated at the meso level. They influence and are influenced by both the micro and the macro level (see Figure 10).

Figure 10. Micro-Meso-Macro Level Framework



At the *macro level*, there is the state with its institutions and ideology. It is a highly organized system that has the power – materially and symbolically – to define and impose certain categories and classifications of identification, and to produce norm systems (Brubaker & Cooper, 2000). Namely, the state may create race-conscious laws or immigrant-friendly policies and allow for dual citizenship.

The classifications and norm systems produced at the macro level may structure possible social interactions at the *meso level* (de Federico de la Rúa, 2007). It is through these interactions that given norms and labels are negotiated in everyday life situations within the relational context of social networks (Lubbers et al., 2007). In this sense, social networks carry out downward- imposed categories, but they are also able to influence them and the institutional structure via bottom-up processes (e.g., elections, demonstrations).

The interactions of people within the relational network context may lead to social learning and transmission of norms at the *micro level*. An individual’s behavior, attitude or opinion may be influenced by the experiences made, but also by the social relationships others have with each other. Personality may be

influenced as well, although probably to a lesser extent. For example, an originally relatively closed-minded individual might move to another country for economic reasons. In the country of destination, this immigrant gets into contact with culturally dissimilar people and, as a consequence, undergoes acculturation processes that include psychological and behavioral changes (e.g., in language usage and other cultural practices). Due to repeated contact with culturally diverse people, the immigrant might become more open-minded over time.

It is not only the immigrant, but also the host individuals who experience acculturation processes resulting from intercultural exchange (Schwartz et al., 2014). Thus, acculturation itself may be understood as an interactive process between immigrant and host groups. The resulting behaviors and values mirror what happens *inside* of people's minds, but also what happens *between* individuals (Brown & Zagefka, 2011; Postmes et al., 2015). On the one hand, the network members and their position within the personal social network might alter the individual's psychological characteristics (influence effect). On the other hand, the individual might select, deselect or even reject certain people to be part of the network (selection effect). Demographic characteristics, such as age or education, might influence the selection of network members. The interaction dynamics that an individual has with others may create, at least partially, the position an individual has in the network. It is likely that social-personality factors influence this process by making people more prone to structure their networks in a certain way (Krause, James, & Croft, 2010). For instance, an open-minded person, who has wide interests, is imaginative and perceptive of new things, may satisfy the craving for novelty by building culturally more diverse networks. Empirically, both, influence and selection effects, might result in the same phenomenon: similarity or homogeneity of network members (Veenstra et al., 2013). Oftentimes, a network is homogenous along demographic, behavioral, or intrapersonal characteristics (McPherson et al., 2001).

The just described logical loop between the micro, meso, and macro level is constrained by the social and cultural context, which may shape the way in which individuals interact with each other. Especially in the context of migration, the size and composition of

the population in the country of settlement are crucial determinants in enabling intercultural contact. That is, the probability of having intercultural relations depends on the actual contact opportunities and the ethnic heterogeneity of the population (Blau, 1993). Furthermore, state policies and public opinion regarding immigration may have grown historically and constrain single and collective behavior(s) (Liebkind, 2001; Phinney, Horenczyk, et al., 2001). Also, objective and perceived cultural fit between immigrant and host society (e.g., language, religion, world views) may have an effect on all three analytical levels (Berry, 1997). We do not try to be exhaustive with the presented framework, but rather give an illustration of how complex the interplay between different levels of analysis is.

4.1.3 The Current Study

In the current study, we tried to integrate social-personality psychology and social network approaches by exploring the effect of individual psychological differences on network content and structure. In particular, we examined the effect of personality (i.e., the Big Five) and identity management (i.e., BII) of a community immigrant sample in Barcelona, Spain, on the way these immigrants build their intercultural networks. We assumed that individuals who transition to a new place are driven to shape their networks more actively, which would magnify the link between individuals' psychological attributes and their networks, and, hence, underline the effect of individual psychological differences on network structure (Kalish & Robins, 2006).

Participants were asked to list 25 members of their personal social network, answer questions about these people (e.g., ethnicity, place of residence) and evaluate whether each possible pair of network members knew each other. We clustered these people into four groups: coethnic transnationals (CT; coethnics in the country of origin), coethnic locals (CL; coethnics in the country of destination), host nationals (C/S; Catalans/Spaniards), and Others.

Conceptually, extraversion is linked to a person's social activity level (John & Srivastava, 1999). As extraverted people seek social contact, they may also create more contact opportunities for member of different groups to meet. Consequently, we expect that

extraversion would be positively related to intergroup connectedness (H1). Further, we hypothesize a positive relationship between agreeableness and the number of C/S (H2), between openness to experience and the number of C/S (H3a), and between openness to experience and the number of Others (H3b). These predictions are in line with former research showing that higher levels of agreeableness and openness to experience are associated with positive intergroup contact between individuals belonging to a cultural majority group and individuals belonging to a cultural minority group (Vezzali et al., 2017). As this is an exploratory study and literature on the relationship between personality and social networks is still scarce, we do not make any specific predictions concerning conscientiousness and emotional stability. Moreover, inspired by the findings of Mok and her colleagues (2007), we conjecture higher levels of BII to be reflected in having higher amounts of C/S (H4a) and higher intragroup connectedness of C/S (H4b). Finally, based on the results of Chapter 3, we anticipate a positive link between BII and the intergroup connectedness of coethnics and host nationals (H4c). We control for basic demographics (i.e., gender, age, education, income, years in Spain) since they could be possible confounders. Table 13 summarizes the hypotheses of the study.

Table 13. Expected Relationships Between Psychological Attributes and Intercultural Network

Extraversion

H1: Extraversion will be positively associated with the intergroup connectedness of the four groups.

Agreeableness

H2: Agreeableness will be positively associated with the group size of Catalans/ Spaniards.

Openness to Experience

H3a: Openness will be positively associated with the group size of Catalans/ Spaniards.

H3b: Openness will be positively associated with the group size of Others.

Bicultural Identity Integration

H4a: BII will be positively associated with the number of Catalans/ Spaniards.

H4b: BII will be positively associated with the intragroup connectedness of Catalans/ Spaniards.

H4c: BII will be positively associated with the intergroup connectedness of coethnics and Catalans/ Spaniards.

4.2 Method

4.2.1 Participants

We relied on a community sample consisting of 122 bicultural individuals. The participants were of Ecuadorian ($n = 30$), Moroccan ($n = 30$), Pakistani ($n = 31$), or Romanian ($n = 31$) origin, had lived in Catalonia, Spain, for a minimum of five years, had good knowledge of at least one of the two host languages (Catalan/Spanish), and had lived primarily in the metropolitan area of Barcelona (50 males, 72 females). They were between 18 and 63 years of age ($M = 32$, $SD = 10.4$). Individuals were either first-generation immigrants ($n = 83$), 1.5-generation individuals (immigration to Spain before the age of 15, $n = 29$), or second-generation immigrants (born in Spain with at least one parent born outside of Spain, $n = 10$). Foreign-born biculturals had resided in Spain for 10.0 years ($SD = 4.8$) and participants born in Spain for 23.2 years ($SD = 7.3$; as approximated by age). Of the respondents, 6.6% had no or primary education, 30.3% had secondary education, 24.6% had some university studies, 36.9% had a university degree, and the remaining 1.6% had received vocational or artistic training.

4.2.2 Procedure

We combined the data of two different projects into one data set. The first part of the data set came from a project entitled “Embracing Catalan Culture: Cultural Self-Identification(s) and Personal Social Networks among First and Second-Generation Immigrants.” In this project, participants’ social networks were elicited as well as psychological aspects of their acculturation experiences. Individuals were recruited through relevant cultural, religious, and immigrant-related organizations in Barcelona, Spain. Data was collected in 2012 in individual or small group sessions at UPF or directly in the buildings of the assisting organizations. Each respondent received a voucher of 15 €.

The second part of the data set was taken from a project called “Experiencing Cultural Diversity: Socio-cognitive Consequences of Interculturalism.” There a subset of the participants from the first project was sampled. Throughout 2013 and 2014, respondents came to the lab at UPF and answered questions on their personality,

multicultural experiences, and creativity. They were compensated for their participation with 15 €.

4.2.3 Instruments

In the first project, participants generated representations of their personal social networks using the software EgoNet and completed a paper-and-pencil questionnaire on language usage/proficiency, acculturation strategies, biculturalism experiences, cultural self-identifications, psychological wellbeing, acculturative stress, standard demographics, and migratory experience.¹⁴ In the second project, respondents answered an online survey on creativity, intergroup bias, multicultural exposure, personality, intergroup attitudes, socio-cultural adaptation, and demographics. The instruments of both projects were developed in English and, then, translated into Spanish and Catalan. Respondents were able to choose between the two host languages.

Psychological Attributes

The Big Five were measured using the Ten-Item Personality Inventory (TIPI; Gosling, Rentfrow, & Swann, 2003). Each of the 10 items represents one pole of the five personality dimensions: extraversion, agreeableness, conscientiousness, emotional stability and openness to experience. Participants were asked to rate to which extent the distinct personality traits applied to them on a 7-point Likert scale ranging from 1 (*completely disagree*) to 7 (*completely agree*).

Bicultural Identity Integration was measured with 10 selected items from the Bicultural Identity Scale (BIIS-2; Huynh et al., 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). Low scores on BII represent feeling conflicted between the Catalan and ethnic way of doing things and keeping the cultures separate. High scores on BII denote ease in balancing Catalan and ethnic cultures and endorsing a combined cultural

¹⁴ EgoNet is computer program developed for collecting, analyzing, and visualizing personal social network data (McCarty, 2003).

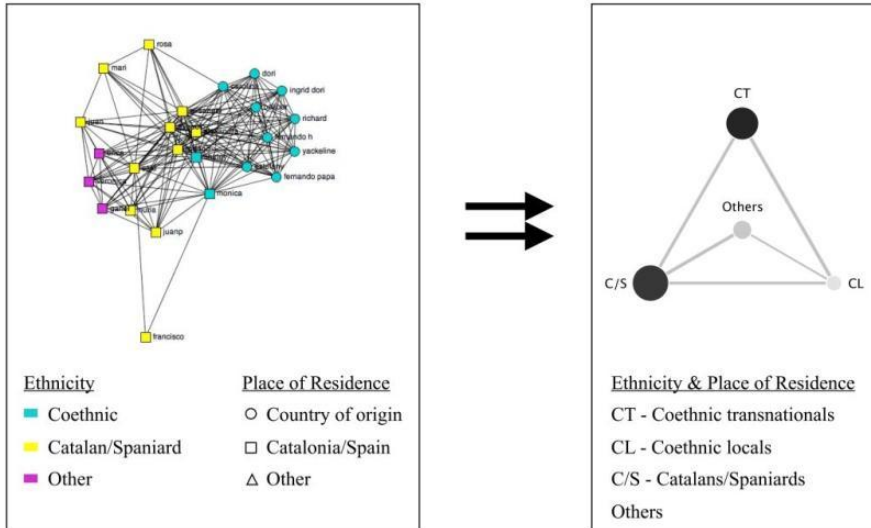
identity that is a mixture of both (Huynh et al., 2016). All 10 items were rated on a 5-point Likert scale ranging from 0 (*strongly disagree*) to 4 (*strongly agree*) ($\alpha = .76$).

Social Network Variables

In three steps, we collected egocentric network data: 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 two years, either face-to-face, by phone, mail or e-mail, and whom they could still contact if they had to. We provided a show card with distinct relationship spheres (i.e., family, romantic partner, friends, neighbors, colleagues, acquaintances from religious places) to facilitate participants' thinking and to counteract different memory biases (e.g., forgetting significant others, overreporting interactions with desirable people; see Brewer, 2000; Fischer, 1982). Second, egos provided information about each alter's ethnicity/culture, place of birth, place of residence, type of relationship, and language used between alter and ego. In the last step, egos indicated for each possible pair of alters whether a relationship was existent.

As social networks and their visualizations can be quite complex (i.e., encoding information of multiple alters and their structure), we adapted a method for classifying and clustering alters, and ultimately visualizing collections of clustered network graphs based on the latent role of actors (Brandes, Lerner, & Nagel, 2011; Molina, Lerner, & Mestre, 2008). Considering alters' ethnicity and place of residence, we partitioned the 25 network members of each respondent into four groups: (a) coethnic transnationals (CT; coethnic alters living in the country of origin such as Morocco, Ecuador, Pakistan, and Romania); (b) coethnic locals (CL; coethnic alters living in Spain); (c) Catalans/Spaniards (C/S; Catalan and Spanish alters); and (d) Others (see Figure 11). We calculated the following three types of measures:

Figure 11. Network Clustering



Note. This figure exemplifies what a standard egocentric network representation (left side) may look like after clustering (right side). Both networks are based on the exact same information (i.e., number of alters, number of ties, ethnicity of alters, place of residence of alters), but are graphically presented in distinct ways.

Group size is the ratio of the count of alters in each group (i.e., CT, CL, C/S, Others) to the total number of alters in the network (i.e., 25). The four groups are complementary to each other. We visualized each group with a circle. The area size of the circle is proportional to its group size. So the bigger the circle, the more people are part of that group (see Figure 12). Group size varies between 0 and 1. In our sample, the two biggest groups are CL ($M = .35$, $SD = .18$) and C/S ($M = .32$, $SD = .19$) followed by Others ($M = .17$, $SD = .13$) and CT ($M = .15$, $SD = .16$).

Intragroup connectedness. We computed how well, on average, each of the four groups was intraconnected, adjusted for their group size. More formally, intragroup connectedness is defined as the number of ties among individuals of the same group divided by the

number of individuals within the group. The weight of how strongly individuals within group A are intracommunicated is:

$$\omega (A, A) = \frac{e (A, A)}{|A|}, \quad (4.1)$$

where $e (A, A)$ is the number of existing ties within group A and $|A|$ is the number of individuals in group A. We encoded intragroup connectedness in our visualizations with different gray shades for each circle. The color intensity of each circle is proportional to the weight of the corresponding intragroup ties. The darker colored a circle, the more alters within that group are connected to each other (see Figure 12). In our sample, values for this type of variable ranged from 0 to 7.76. CL was the best-intracommunicated group ($M = 2.08$, $SD = 1.48$) followed by C/S ($M = 1.37$, $SD = 1.21$), CT ($M = .92$, $SD = 1.40$), and Others ($M = .59$, $SD = .69$).

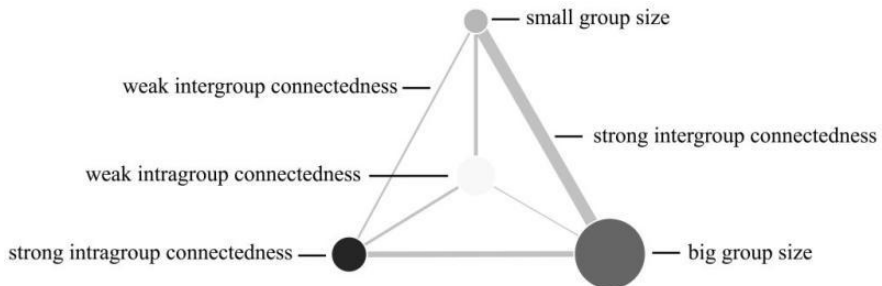
Intergroup connectedness indicates how well, on average, alters between two cultural groups are connected to each other, weighted in accordance to their group sizes. Taking into account the aforementioned four groups, this resulted in the construction of six intergroup connectedness variables: CT and CL ($M = 1.53$, $SD = 1.77$), CT and C/S ($M = .45$, $SD = .92$), CT and Others ($M = .60$, $SD = .93$), CL and C/S ($M = 1.80$, $SD = 1.86$), CL and Others ($M = 1.44$, $SD = 1.35$), and C/S and Others ($M = 1.25$, $SD = 1.22$). Formally, the weight of how strongly two groups A and B are interconnected is:

$$\omega (A, B) = \frac{e (A, B)}{\sqrt{|A| \cdot |B|}}, \quad (4.2)$$

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 also applies to intragroup connectedness, but with $B = A$, in which case Equation 4.2 reduces to the definition given in Equation 4.1. When $A = 0$ or $B = 0$, a value for the intergroup connectedness of these two groups is not available. The six intergroup connectedness variables were visualized as six lines connecting the four circles (i.e., the groups). The line width is proportional to the weight of the corresponding

intergroup ties. The thicker the line, the stronger two cultural groups are interconnected (see Figure 12). In our sample, values for this type of variable ranged from 0 to 10.80.

Figure 12. Group-Based Measures



Note. This visualization of group size, intra- and intergroup connectedness is our own graphic, but based on Brandes et al. (2008, p. 50)

The following demographics were included as control variables: gender, age, education, income, and years in Spain. Education was measured in nine categories ranging from *no formal education* to *PhD*. Income was assessed as monthly household income with steps of 500 € ranging from *less than 500 € per month* to *more than 2.500 € per month*. As our sample size is small and to avoid losing valuable data, we replaced missing values in the variable income with the overall sample mean ($n = 7$).

We corrected our data for measurement error resulting from imperfect quality of survey items and common method variance. The quality of our survey items was estimated with the freely available web program Survey Quality Predictor 2.0 (Sarıs & Oberski, 2014). For the quality of demographic variables (e.g., regarding personal characteristics, place of residence, and income), we relied on the estimates of Alwin (2007). Descriptive statistics and corrected correlations of the study variables are given in Appendix A2 in Table 20.

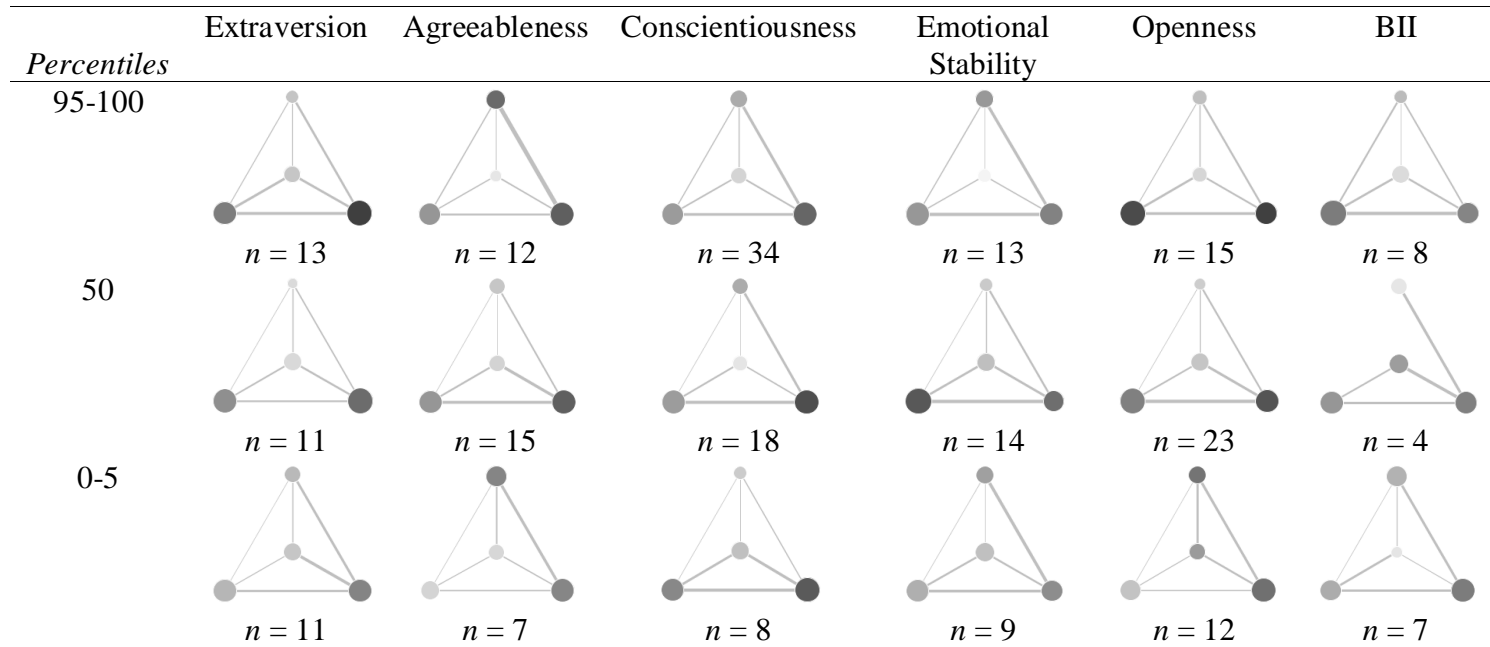
4.3 Results

Our analytical strategy consisted of two parts. First, we looked at the network as a whole by creating network profiles for different empirical realizations of each of our psychological variables. We, then, compared the network profiles across and within these variables. Second, we applied regression analysis to explore the relationship of the individual-level variables and each network variable individually.

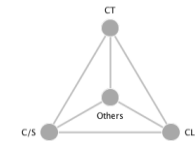
4.3.1 Intercultural Network Profiles

In order to investigate whether immigrants with different personality traits and identity structures also had distinct intercultural network profiles, we summarized collections of networks for each of the Big Five dimensions and BII using the aforementioned visualization method proposed by Brandes and his colleagues (2010, 2008). For each personality trait, we selected the respondents who were in the 0-5th percentile and in the 95-100th percentile, and visualized their mean networks to compare the two poles that each personality dimension entails. We used the same strategy for BII to contrast those who consider their cultural identities as conflictual and dissociated from one another with those who view their two cultural identities as compatible and feel part of a combined culture. As a reference for comparison, we also visualized the mean networks of the 50th percentile. The visualizations of the network profiles are presented in Figure 13. The values for all variables can be found in Appendix A2 in Tables 21-23.

Figure 13. Intercultural Network Profiles



Note. Intercultural network profiles by personality trait for respondents of 0-5, 50 and 95-100 percentiles. Starting at the top in clockwise order and ending in the middle, the circles represent: coethnic transnationals (CT), coethnic locals (CL), Catalans/Spaniards (C/S), and Others. The circle area is proportional to group size, the circle darkness to intragroup connectedness, and the line width to the intergroup connectedness.



Differences across personality domains. People scoring high (95-100th percentile) on the extraversion and openness to experience dimensions tended to have similar intercultural network profiles. More than 70% of their alters belonged to the two local network groups (i.e., CL and C/S) with the difference that open-minded individuals had, on average, higher proportions of host nationals and lower proportions of CL in their networks. For both highly extraverted and highly open-minded people, the two local network groups were best intra- and interconnected. Extraverted and open-minded biculturals had overall better interconnected networks when compared to the other personality domains (as captured by the sum of all intergroup connectedness variables). This lends some support to our first hypothesis that extraversion is positively associated with intergroup connectedness of the four groups, at least compared to agreeableness, conscientiousness, and emotional stability.

Likewise, the immigrants in our sample who were high in agreeableness and those who were high in conscientiousness had similar local networks (i.e., CL and C/S), especially with respect to group size and intragroup connectedness. However, the two coethnic groups were much stronger interconnected in the network profile of highly agreeable people than in the network profiles of the other personality domains. Still, conscientious people had their CL well interconnected with C/S, but they had them also similarly well interconnected with CT. Emotional stability was linked to having the three main groups (CT, CL, and C/S) similarly intraconnected. Plus, CL were well interconnected with CL and C/S.

Differences within personality domains. *Extraversion.* Introverted respondents (0-5th percentile of extraversion) had a little bit less CL but more CT than extraverted participants (95-100th percentile). Generally, the intra- and intergroup connectedness was lower for introverts than for extraverts. This applied in particular to the intergroup connectedness of C/S with the other groups.

Agreeableness. Agreeable versus non-agreeable participants of the study differed in their amounts of C/S and Others, in that people low in agreeableness had less C/S and more Others in their networks. This is suggestive of Hypothesis 2 that agreeableness is positively associated with the group size of C/S. Similarly, non-

agreeable individuals had lower levels of intragroup connectedness for all groups except for Others. Moreover, all the intergroup connectedness variables were lower with the exception of CT and Others.

Conscientiousness. Respondents low and high in conscientiousness had similar amounts of CL and C/S, who were also similarly intraconnected. They differed with regard to intergroup connectedness though. For individuals low in conscientiousness, the two local network groups and Others were well interconnected, whereas conscientious people had their two coethnic groups and their two local groups well interconnected with each other.

Emotional stability. Neurotic and emotionally stable participants differed mainly in the importance of Others. For people low in emotional stability, the group Others was approximately twice as big and six times better intraconnected. Their Others were also better interconnected with the local network (i.e., CL and C/S). Yet, the networks of emotionally stable respondents had higher and more similar levels of intragroup connectedness for the other three groups. More, neurotic and emotionally stable individuals had similar levels of intergroup connectedness for the two coethnic groups, but the two local network groups were highly and better interconnected for emotionally stable participants.

Openness to experience. The networks of individuals low in openness had mainly coethnic alters (56.0%) that were well intra- and interconnected. People high in openness had more C/S (40.5%) in their networks than closed-minded respondents (27.0%). This is consistent with Hypotheses 3a that openness is positively associated with the group size of C/S. However, we did not find any indication of openness being positively related to the group size of Others (H3b). Furthermore, open-minded compared to closed-minded participants had their C/S and Others better interconnected with all groups.

Differences within BII. People feeling conflicted between their ethnic and host cultures had more than twice as many coethnics than C/S in their networks (63.4% and 28.0%). In contrast, individuals who found it easy to balance both cultures had equal amounts of coethnics and C/S (40.0% and 42.0%). This finding is

consistent with Hypothesis 4a that BII would be associated with the amount of C/S. Next, C/S are better intraconnected for high BIIs than for low BIIs, lending support to Hypothesis 4b that BII is positively linked to the intraconnectedness of C/S. Furthermore, intergroup connectedness between C/S and the two coethnic groups is systematically higher for high BIIs, supporting Hypothesis 4c that BII is positively associated with the intergroup connectedness of C/S with coethnics.

4.3.2 Regression Analysis

After having looked, in a first descriptive step, at whether immigrants with different personality traits and identity structures have distinct intercultural networks profiles, we explored in a next step which individual psychological attributes are related to what part of the network controlling for demographic differences among respondents. We ran fourteen separate regressions for predicting the four group size variables, the four intragroup connectedness variables, and the six intergroup connectedness variables. Due to our small sample size, which makes detecting significant effects difficult, and additional measurement error resulting from the cognitive burden for the participant when recalling the network, we treated p values below .10 as significant (for similar procedure see Mok et al., 2007; Repke & Benet-Martínez, 2017).

Table 14 summarizes the regression results for the four group size variables. We would like to stress that all four dependent group size variables are completely complementary. That is all of them add up to 1. As already suggested in the descriptive analysis of the network profiles, we found a positive association between agreeableness ($\beta = .31$, $p = .003$) and the amount of C/S (H2). In addition, agreeableness was negatively related to Others ($\beta = -.31$, $p = .004$). However, this could be a methodological artifact due to the four dependent variables being complementary to each other. So the increase of one group means the simultaneously decrease of at least one of the other groups. Furthermore, BII predicted all types of group sizes. In particular, and in line with Hypothesis 4a, it was positively associated with the group size of C/S ($\beta = .20$, $p = .019$). We did not find any evidence for openness being linked to the group size of C/S and Others (H3a and H3b). Education, age,

and years in Spain were mainly associated with the group size of CT and Others, with education also being predictive of CL and C/S.

Table 14. Regression Results for Group Size

<i>Predictor</i>	CT	CL	C/S	O
<i>Demographic Characteristics</i>				
Gender	-0.02	0.07	0.03	-0.13
Age	0.34 ^{***}	-0.06	-0.08	-0.25 [*]
Education	-0.29 ^{**}	-0.21 [*]	0.24 ^{**}	0.31 ^{**}
Income	0.08	-0.11	0.08	-0.06
Years in Spain	-0.31 ^{***}	0.12	0.04	0.16 [†]
<i>Identity Management</i>				
BII	-0.20 [*]	-0.16 [†]	0.20 [*]	0.17 [†]
<i>Personality</i>				
Extraversion	-0.05	0.08	0.09	-0.17 [†]
Agreeableness	-0.05	-0.07	0.31 ^{**}	-0.31 ^{**}
Conscientiousness	0.04	0.02	-0.11	0.10
Emotional Stability	0.04	0.10	0.02	0.02
Openness	0.11	-0.09	0.02	-0.04
<i>R</i> ²	0.33	0.18	0.30	0.22

Note. *N* = 122. Standardized beta coefficients. Results are corrected for measurement error.

CT – coethnic transnationals; CL – coethnic locals; C/S – Catalans/Spaniards; O – Others.

[†] *p* < .10. * *p* < .05. ** *p* < .01. *** *p* < .001.

Table 15 shows the regression results for the four intragroup connectedness variables. The intragroup connectedness of CT and of Others were only predicted by demographic characteristics: age (beta = .45, *p* = .000; beta = -.18, *p* = .077), education (beta = -.21, *p* = .025; beta = .20, *p* = .050), and years in Spain (beta = -.34, *p* = .000; beta = .27, *p* = .003). In contrast, the intragroup connectedness

of CL was slightly linked to the personality traits agreeableness (beta = .22, $p = .058$) and emotional stability (beta = -.19, $p = .091$). As hypothesized (H4b), BII predicted higher levels of intraconnectedness for C/S (beta = .23, $p = .012$). Likewise, extraversion was positively related to the compactness of C/S (beta = .19, $p = .035$).

Table 15. Regression Results for Intragroup Connectedness

<i>Predictor</i>	CT	CL	C/S	O
<i>Demographic Characteristics</i>				
Gender	-0.04	0.03	0.04	-0.13
Age	0.45 ^{***}	0.12	0.03	-0.18 [†]
Education	-0.21 [*]	-0.25 [*]	-0.12	0.20 [†]
Income	0.12	-0.05	0.15	0.00
Years in Spain	-0.34 ^{***}	0.09	0.15 [†]	0.27 ^{**}
<i>Identity Management</i>				
BII	-0.10	-0.11	0.23 [*]	-0.00
<i>Personality</i>				
Extraversion	0.03	0.13	0.19 [*]	-0.10
Agreeableness	0.16	0.22 [†]	0.17	-0.12
Conscientiousness	-0.02	-0.08	-0.09	0.07
Emotional Stability	-0.08	-0.19 [†]	0.08	-0.16
Openness	0.13	0.09	0.04	-0.10
R^2	0.28	0.12	0.23	0.19

Note. $N = 122$. Standardized beta coefficients. Results are corrected for measurement error.

CT – coethnic transnationals; CL – coethnic locals; C/S – Catalans/Spaniards; O – Others.

[†] $p < .10$. ^{*} $p < .05$. ^{**} $p < .01$. ^{***} $p < .001$.

The results of the regression models for the six intergroup connectedness variables are shown in Table 16. The variables age, education, income, and years in Spain were linked to different intergroup connectedness variables with the exception of C/S and Others. Their interconnection was solely predicted by extraversion (beta = .30, $p = .002$) (H1). Possibly, socially more active people are also more likely to seek out host individuals who are outgoing and may also be more open to meeting different kinds of people. In a similar manner, extraversion was also predictive of the intergroup connectedness of CT and C/S. Next, the interconnection of CL and Others was only related to years in Spain (beta = .25, $p = .007$). More, the intergroup connectedness of C/S with both coethnic groups was associated with higher levels of BII (CL–C/S: beta = .22, $p = .015$; CT–C/S: beta = .26, $p = .005$), supporting Hypothesis 4c. Additionally, the interconnectedness of the two coethnic groups was linked to higher levels of agreeableness (beta = .22, $p = .037$) and openness (beta = .20, $p = .034$). Finally, there was a marginally significant effect of conscientiousness on the intergroup connectedness of CT and C/S (beta = .17, $p = .080$).

We want to mention on a side note that we checked whether social-personality factors also predicted, in social network research, commonly used global network variables tapping content and structure of intercultural networks (i.e., percentage of coethnics, cultural diversity, linguistic diversity, density). However, we found no relationship between personality and percentage of coethnics, cultural diversity, and linguistic diversity (see Table 24 in Appendix A2 for regression results); only BII was significantly linked to the amount of coethnics and cultural diversity. When considering global network measures exclusively, one could erroneously conclude that personality is not related to compositional and structural aspects of the network. That is because these measures may not necessarily be precise enough to capture intercultural relations (Kalish & Robins, 2006). Nonetheless, we found a positive relationship between density and openness to experience (beta = .21, $p = .024$). This suggests that open-minded immigrants may be social connectors in general by introducing people within their network to each other, but not necessarily from different culturally-based clusters.

Table 16. Regression Results for Intergroup Connectedness

<i>Predictor</i>	CT	CT	CT	CL	CL	C/S
	– CL	– C/S	– O	– C/S	– O	– O
<i>Demographic Characteristics</i>						
Gender	-0.02	0.12	-0.08	0.04	-0.08	0.05
Age	0.43***	0.15	0.29**	0.22*	0.08	-0.06
Education	-0.32**	-0.17†	-0.04	-0.33**	-0.09	-0.10
Income	0.15	0.21*	0.32**	0.04	-0.03	0.09
Yrs Spain	-0.17†	-0.05	-0.15	0.32***	0.25**	0.06
<i>Identity Management</i>						
BII	-0.10	0.26**	-0.17†	0.22*	0.07	0.12
<i>Personality</i>						
E	0.06	0.16†	-0.07	0.10	-0.16	0.30**
A	0.22*	-0.00	0.02	-0.01	-0.11	-0.01
C	-0.02	0.17†	-0.01	-0.03	-0.12	0.11
ES	-0.07	0.09	-0.06	0.06	-0.09	-0.04
O	0.20*	0.01	0.12	0.08	0.05	0.02
<i>R</i> ²	0.23	0.20	0.16	0.24	0.11	0.14

Note. *N* = 122. Standardized beta coefficients. Results are corrected for measurement error.

CT – coethnic transnationals; CL – coethnic locals; C/S – Catalans/Spaniards; O – Others. Yrs Spain – years in Spain. E – extraversion, A – agreeableness, C – conscientiousness, ES – emotional stability, O – openness to experience.

† *p* < .10. * *p* < .05. ** *p* < .01. *** *p* < .001.

4.4 Discussion

This paper integrates social-personality psychology and social network approaches by exploring the relationship between individual psychological differences and the degree of interculturality present in individuals' personal social networks. On the one hand, social-personality psychologists generally view individuals as independent, separate entities, thereby underestimating relational interdependencies present in daily life. On the other hand, social network researchers assume that the relational structures individuals are embedded in shape their behaviors and, thus, ignore possible effects that individual characteristics might have on social structures. Our findings are indicative of the still limited evidence that individuals' personality (i.e., the Big Five), identity management (i.e., BII), and demographic characteristics may influence compositional and structural aspects of personal social networks. In particular, we looked at four groups often existent in immigrants' networks: coethnic transnationals (CT), coethnic locals (CL), host nationals (C/S; Catalans/Spaniards), and Others. Our underlying assumption was that immigrants are more likely to proactively shape their networks because settling down in a new society also means having to find connection(s) to (new) others. As the social and cultural context may constraint, but also enable, immigrants in getting to know new social contacts, we kept the overall environment constant (i.e., participants all lived in the metropolitan area of Barcelona, Spain).

In our sample, personality traits and BII are related to distinct network profiles. For example, networks of people high in extraversion and of people high in openness to experience are quite similar in that the two local groups (CL and C/S) are not only important in size, but they are also strongly intra- and interconnected. Furthermore, in the network profiles of individuals high in agreeableness and high in emotional stability, CT constitute one fourth and one fifth of network members in contrast to solely one tenth and one seventh in the networks of extraverted and open-minded individuals. Additionally, being emotionally stable is reflected in network profiles in which the three main groups (CT, CL, and C/S) are relatively balanced with respect to all three types

of network measures (except for intergroup connectedness of CT and C/S). Likewise, BII is mirrored in network composition and structure. For high BIIs both worlds (coethnic and host national groups) are balanced with respect to all three measures.

Looking at network profiles allowed us to consider the intercultural networks as a whole. As network variables tend to be interdependent, are often multicollinear or complementary (e.g., all group size variables add up to 1), role based clustered networks give information that would not be retrieved from more standard methods such as regression analysis. Nonetheless, we also utilized regression analysis to see which social-personality variables predict the interculturality of immigrants' networks controlling for basic demographics. The findings from our regressions are suggestive of both personality (mainly agreeableness and extraversion, but also openness) and BII being related to the content and the structure of social networks, in particular with regard to the host national group. In the following paragraphs, we elaborate on the findings concerning our hypotheses.

We found partial evidence for Hypothesis 1 that extraversion is positively related to intergroup connectedness, especially for those groups whose connections may not occur as naturally (e.g., between CT and C/S or between C/S and Others). Repke and Benet-Martínez (2017) argued similarly that ego's influence on network structure is less strong within relational domains than between domains (i.e., friendships and colleagues). For instance, there is a general tendency for ego's close friends to know each other, while ego's acquaintances are not necessarily connected (Granovetter, 1983). Further, the structure of colleagues' relationships is often given by the company's internal organization, which leaves ego with a smaller degree of freedom for shaping network structure within the work context. The interconnection of two relational domains, however, does not occur as naturally or is not as exogenously imposed and may be more subject to ego's initiative in introducing individuals from different groups to each other. These tendencies may be comparable with those taking place in the migration context of intergroup relationships. Coethnic groups (CL and CT) probably include more family members than non-coethnic groups and, hence, are initially already better interconnected than non-coethnics. Of course, linguistic and cultural distance might play a role as well.

Consequently, relationships between coethnics as a whole occur more naturally than relationships between distinct cultural groups of different contexts (e.g., between CT and C/S).

Our second hypothesis that agreeableness is positively associated with the group size of C/S was supported by the data. The prosocial and communal orientation of agreeable immigrants is reflected in the tendency to include more host nationals in their networks. This adds to the idea that agreeable immigrants may be more likely to select members of the majority culture for social interaction and may also have higher quality contact with them (Vezzali et al., 2017). Hence, they are able to build and maintain relationships with host nationals.

Next, we did not find direct evidence for Hypotheses 3a and 3b that openness is related to the group size of C/S and Others. Instead, there was a positive association between openness and density in general. Lastly, results revealed that BII was positively associated with the amount of C/S (H4a) and their intraconnectedness (H4b). This is a replication of the findings of Mok et al. (2007) and supports the idea that accepting the host culture into one's identities is reflected in the inclusion of host nationals in the network, in terms of both group size and intragroup connectedness. In addition to Mok et al.'s study, we could show that integrating ethnic and host cultural orientations into a coherent self is also mirrored in having coethnics and host nationals better interconnected.

The current exploratory study had four important limitations. First, we interpreted our results in that individual psychological variables shape network formation, although we argued in the theoretical section that the network itself also influences the individual. Our cross-sectional study design does not permit us to make any causal statements and to disentangle this bidirectional relationship. Second, we combined data sets from two different measurement points in time. The network, BII, and demographic characteristics were measured prior to personality. So the effects that we found could also be interpreted as the network having an influence on personality. However, as personality is seen as something relatively stable that may change only slowly over time and due to restricted data availability, we considered the combination of the two data sets as a starting point for explorative analysis in a field in which

empirical studies still lack. Longitudinal data is what is ideally needed in future research to tackle the problem of causality. Third, we cannot exclude possible biases in ego's network perception. Although we tried to avoid different memory biases by giving show cards to the participants reminding them of different life domains, the network data we collected reflects the subjective perception of the respondent. Perceived network and actual network are likely to differ. More importantly, network perception might be influenced by personality. For example, Casciaro (1998) found that extraverts were slightly more accurate in recalling their friendship network. So an alternative interpretation of our results regarding extraversion could be that extraverted immigrants perceive their host national contacts to be better intraconnected than they actually are. This problem could be addressed in future studies by collecting sociocentric instead of egocentric network data to get a less subjective picture. Fourth, our sample of 122 immigrants is rather small, which makes it difficult to detect significant effects.

In spite of all these limitations, the current study has some strong points to be highlighted. First, we relied on a relatively hard to get community sample from four different ethnicity groups. The sample is, thus, more heterogeneous than convenience samples (e.g., psychology students) that are commonly used in cultural and social-psychological research. Second, our network data is extremely rich in that it captures for each respondent a real life environment of 25 people from different cultural backgrounds and different places of residence. Third, our study contributes to the existing research by exploring the relationship between individual psychological variables and the intercultural networks of immigrants. More precisely, we explored compositional and structural aspects, not only within, but also between different cultural groups that form part of these networks. We consequently went beyond global network measures, such as density or cultural diversity, and dissected the network in possible compositional and structural, cultural components. In doing so, we could show that social-personality factors are related to the content and the structure of immigrants' networks; these effects might otherwise be missed. Fourth, by applying a social network approach, we do not solely rely on self-reported interculturality, but include actual intercultural contact.

As already foreshadowed, future research should try to disentangle the bidirectional relationship between individual psychological variables and social networks by collecting and analyzing longitudinal data. Further, scholars could investigate the networks of other immigrant groups and other types of biculturals in the same and in other societal settings. Moreover, it would be interesting to see how people structure their relationship domains (e.g., family, friends, work) in general, and not only how immigrants manage different cultural groups. One could also try to see whether our results hold when other methods of collecting network data are applied (e.g., using a different network generator, eliciting other amounts of alters). Finally, as egocentric networks are usually self-reported, they might be biased due to the respondent's cognitive capacities (e.g., perception bias, memory bias). Incorporating sociocentric or complete networks in the analysis could help in eliminating these biases. Sociocentric networks do not focus on the network surrounding one individual, but on a set of individuals that are all part of one defined network with naturally occurring boundaries (e.g., students in a classroom, workers in a company). In that sense, no alter is left out from the analysis.

To conclude, this study contributes to the literature on intergroup relations, personality, and biculturalism as well as to the literature on egocentric social networks. This work is a first step in exploring how personality may matter in the interculturality present in social networks of acculturating individuals and how bicultural identity structure is reflected in these networks. Empirically, little is known about the interplay of individual psychological differences and network formation, especially in the case of biculturals and their intercultural networks. Further research is still needed to close this gap. While psychologists should incorporate more often the idea of individuals not being independent entities, but actually being part of a social structure, network researcher could more often step away from only considering network structure as the decisive effect and include individual differences. Instead of one determining the other, it is more likely that there is a dynamic interaction between the two levels of analysis that still needs to be explored.

Author Note

This research was supported with funds received from the EU (FP7-MC-CIG 294022), the “Agència de Gestió d’Ajuts Universitaris i de Recerca” (AGAUR) of the Government of Catalonia, Spain (2010 ARAFI 100022), and from RecerCaixa (2013-2015) by the second author.

CHAPTER 5
Conclusions

5. Conclusions

The overarching theme of this thesis was to bring together two different streams of research with the goal of improving the general understanding of immigrants' acculturation processes. Social-personality psychology and social network approaches complement each other, in that the first focuses on individuals as separate, independent entities, whereas the second one centers on network structure as explanans for individual or group outcomes. The combination of these two perspectives enables the researcher to explore the dynamic interplay of the micro and the meso level. This includes the bidirectional relationship between individual behavior and network dynamics such as influence and selection effects. Note, however, that these processes are possibly constrained and shaped by the social and cultural context.

5.1 Main Findings

5.1.1 Results Linked to the Main Hypotheses

The preceding chapters each addressed one of the main hypotheses from the Introduction: the complex contagion hypothesis, the culture and language similarity advantage hypothesis, and the individual differences hypothesis. The first hypothesis concerned how immigrants change their ethnic and host cultural identifications depending on whom they interact with (network composition) and depending on how these social contacts are connected to each other (network structure). The second hypothesis was based on the idea that the closer the immigrant's culture and language is to the host country's culture and language, the better integrated the immigrant's networks eventually are. Finally, the third hypothesis was about how individual social-personality differences (i.e., personality, BII) are reflected in the composition and structure of the immigrant's intercultural network.

Cultural identifications - complex contagion hypothesis. Chapter 2 dealt with the general idea that behaviors are spread via social contact. In other words, people change their behaviors in reaction to

the social network (influence effect). Assuming that immigrants' behavioral changes are reflected in a modification of their cultural identifications, my coauthor Verónica Benet-Martínez and I hypothesized that repeated contact with culture-specific, attitude-relevant information (e.g., communication styles, recreational activities, pace of life) from individuals representing different social roles is needed before a change in cultural identification may be initiated. More precisely, we predicted that the interconnection of same ethnicity alters (e.g., only coethnics or only host nationals) across relationship domains (e.g., friendship and work) is linked to the strength of immigrants' multiple cultural identifications.

Although we could not directly test this hypothesis due to lack of longitudinal data, our results were consistent with the idea of complex contagion. In Study 1, we used cross-sectional data of a culturally and generationally diverse community sample of 123 Latinos living in the US. In this particular context, we found that higher levels of interconnection between Latino friends and colleagues were associated with lower levels of U.S. identification. Likewise, the interconnection of non-Latino friends and colleagues was linked to lower levels of Latino identification.

Taking these static, but hypothesis-consistent findings as the departure point, in Study 2, we modeled this influence process in a dynamic way. We took three different identity negotiation mechanisms into account: coexisting cultural identities, conflicting cultural identities, and a mixture of the two. Two types of results may add to the better understanding of complex contagion in practice. First, network composition and network structure matter but not necessarily in a straightforward, homogenous way. While there are just a few, mostly extreme, network constellations (e.g., only Latino network members) that lead to stable identification outcomes over time, many other network constellations may result in very different outcomes even though some of these constellations may follow a similar trend. In some circumstances, one additional social contact from another culture may make a huge difference in the outcome identification depending on the number of connections between the network members. Second, we were able to identify network constellations that may lead to complete identification or disidentification with one or both cultures over time.

Acculturation process – culture and language similarity hypothesis. In Chapter 3, we looked at four immigrant groups of 54 individuals each (i.e., Ecuadorians, Moroccans, Pakistani, Romanians) living in the bicultural and bilingual context of Catalonia, Spain. The groups had distinct cultural and linguistic backgrounds, which led to varying degrees of cultural and linguistic similarity advantages towards the two host national groups. For Pakistani immigrants, moving to Spain may convey encountering radical changes in their social and cultural environment not only because of differences in culture and language, but also because of differences in religion and general unfamiliarity with the host context due to geographical distance. For Moroccans, these differences are also present to some extent, with religion arguably being the main dissimilarity. In contrast, Romanians and Ecuadorians share the Christian traditions common in Spain. While Romanians as European citizens enjoy a special legal status, Ecuadorians share the Spanish language and a colonial past with the host community.

We conjectured that immigrants with less cultural and linguistic distance towards the host culture would have better integrated networks (i.e., coethnic and host worlds interconnected). Indeed, Ecuadorians' and Romanians' similarity advantage seemed to translate into better integrated networks in the first generation. But to our surprise, Moroccans and Pakistani had culturally well-integrated networks, with even better integrated networks than the two Christian immigrant groups in the 1.5 generation. In particular, Ecuadorians had the smallest amount of host national contacts that were also not well intraconnected.

Although this finding could be due to our sampling method, we offered three possible substantive explanations for this counterintuitive finding: First, the higher the similarity advantage is for one immigrant group, the higher the expectations of the host society towards the particular immigrant might be. This could be perceived as pressure and lead to the formation of a reactive identity. Second, immigrants with high cultural and linguistic distance might be aware of their limitations and proactively look for host contact or host support to be able to manage daily life in a better way. As a result of increased contact with the society of settlement, these individuals might end up being well integrated. Third, as language may prime culture and, hence, induce cultural

frame switching (CFS), immigrants whose native language is the same as the host language may have more difficulties in attaching a new culture to their language and, consequently, have also more difficulties to engage in CFS.

Personality and BII – individual differences hypothesis. In Chapter 4, we considered two important sources of differences among acculturating immigrants. One was personality and the other one was the management of their ethnic and host cultural orientations. We assumed that individuals transitioning to a new setting would engage in shaping their network more actively, which would enhance the effect of psychological attributes on network formation. Thus, our overall hypothesis was that psychological predispositions (i.e., the Big Five) and identity management (i.e., BII) would be associated to different ways in which immigrants form and create their intercultural networks. We presented different sub-hypotheses.

For our analysis, we relied on a subset of participants ($N = 122$) of the community immigrant sample used in Chapter 3. Again, the presence of only cross-sectional data did not allow us to directly test our set of hypotheses. Yet, our findings were consistent with the idea of individual psychological differences having an effect on the composition and structure of immigrants' social networks. We first divided the network members into four groups: coethnic transnationals (i.e., coethnics living in the country of origin), coethnic locals (i.e., coethnics living in the country of settlement), host nationals, and others. Taking these four groups as a starting point, we then explored three types of network variables: group size (i.e., amount of people in one group), intragroup connectedness (i.e., how well members of one group are connected to each other), and intergroup connectedness (i.e., how well members of different groups are connected to each other).

Even after controlling for basic demographics, both personality (mainly agreeableness, extraversion, and openness to experience) and BII were linked to the content and the structure of our participants' social networks, in particular with regard to the host national group. Different social-personality variables were related to this group's size, intraconnectedness, and interconnectedness with coethnics.

5.1.2 Additional Results

Temporal patterns in multiple cultural identity negotiation and BII. The results of Chapter 2 indicated that there was a sense of tension or opposition between identifying as a Latino and as an American for our Latino community sample. The time individuals had resided in the US was linked to lower levels of Latino identification and higher levels of American identification, suggesting that with an increase in exposure to and engagement with U.S. culture ethnic and host identifications became subtractive. The temporal pattern of ethnic identification decreasing and host identification increasing by time was stronger for Latino-Americans who experienced their cultural orientations as conflictual and dissociated from one another (i.e., those lower in BII). This result improves our comprehension of BII and strengthens its validity as a psychological construct for understanding immigrants' negotiation processes of multiple cultural involvements with the pass of time.

Meso-level interculturality, adjustment, and BII. In Chapter 3, we examined psychological and sociocultural adjustment and the BII of Ecuadorian, Moroccan, Pakistani, and Romanian immigrants in Catalonia, Spain. Both types of adjustment and BII were positively related the cultural diversity of the network. Additionally, sociocultural adjustment and BII were linked to the intergroup connectedness of coethnics living in Spain and host nationals. The conclusion is that subjective, within-person interculturality (i.e., BII) is reflected in objective, meso-level interculturalism (i.e., culturally diverse networks with interethnic ties). These results hold even after controlling for individual-level demographic and traditional acculturation variables. They affirm that it is important to go beyond individuals' self-reported behavioral and value preferences by including actual intercultural relations for understanding immigrants' acculturation processes.

Survival of the "interconnectedest". Morris, Chiu, and Liu (2015) contrasted the survival and the intercultural (trading) behavior of Homo sapiens with Neanderthals. There is evidence that stone tools made by Homo sapiens traveled hundreds of kilometers, suggesting that Homo sapiens interacted with other populations. In contrast, at Neanderthal sites, only tools made from local materials were found in combination with signs of cannibalism, feeding into the idea that

they did not interact much with their neighbors (Ambrose, 2010). Morris and his colleagues derived to the conclusion that “sapiens may have won out because trading with outgroups proved a better strategy than eating them. The impulse to engage with other cultural groups and take influences from them seems to be a basic part of human nature” (Morris et al., 2015: 634). While this may seem like a stretch of the topic, it is closely related to one of the key findings of this dissertation: The interconnection of different cultural groups, in particular coethnic and host national groups, appeared to be a central ingredient for immigrants’ successful and peaceful integration into the society of settlement.

Having host nationals in the network is important, but it is only a prerequisite for immigrants’ overall adaptation. Immigrants need them to be connected to their coethnic locals in their networks. Crucially, it is the interconnection of these two worlds, and not necessarily the group size, that ensures a relational environment in which individuals are socioculturally well-adjusted and can have high levels of BII.

(Complex) influence effect and intra- versus intergroup ties. The idea that individuals change their behaviors in reaction to their network (influence effect) is captured by social contagion. In Chapter 2, we looked at complex contagion. In essence, the complex contagion hypothesis argues that in order for people to adopt socially risky or costly behaviors, they need multiple contact with multiple sources of activation. This relational pattern of receiving affirmation or reinforcement from several sources is more likely in clustered networks as they have more redundant ties. This hypothesis, however, does not make any predictions about the composition of the clusters that is between what individuals the redundant ties exist. We specified the complex contagion hypothesis by making a distinction between intra- and intergroup ties with respect to relationship domains. The underlying assumption was that the effects of affirmation and reinforcement would be stronger if multiple sources meant not only different individuals, but referred to individuals from different relationship domains (e.g., friends and colleagues). As repeated contact is more likely in clustered networks with redundant ties, we further conjectured that it is the ties across relationship domains (i.e.,

interconnections) and not within a domain (i.e., intraconnections) that matter more. Our results were consistent with this specification.

Selection effect and intra- versus intergroup ties. Selection processes occur when individuals choose their network members based on their personal characteristics and preferences. This includes the formation and the dissolution of relationships. Often individuals may not be able to choose their network members freely. For instance, family is to a wide extent naturally given. Colleagues too cannot be chosen most of the times. Who becomes a colleague depends on a variety of factors such as who applies to a job, who gets selected, and who accepts the offer. Friends, in contrast, are chosen relatively freely. In summary, people have varying degrees of freedom to determine the composition of their network (e.g., the size of different groups).

In Chapter 2, we suggested that individuals have limited control on who knows whom within a relationship domain (i.e., intragroup connectedness) and that there are some common trends by relationship type. For example, people's close contacts, like friends and immediate family members, generally know each other, whereas their acquaintances tend to not be involved with one another. Still, an individual may choose to keep friends from different areas of live intentionally separate (e.g., friends from flamenco class and friends from volleyball) or might be a social connector by bringing two acquaintances together. In addition, the relational structure of colleagues is often externally imposed by the company's organization (e.g., division of departments, sharing of offices). However, we theorized that people take a more active role in interconnecting different relationship domains as these connections do not occur as naturally and are usually not imposed by third parties. Our results were consistent with this idea. Similarly, we showed in Chapter 4 that the intragroup connectedness of a cultural group is less related to individual-level differences. We thus argued that individuals might have less influence on structuring the relationships within a cultural group as these are shaped to a higher extent by other forces or are confounded by relationship domains (e.g., family members are usually coethnics). The distinction between intra- and intergroup ties could be a valuable additional feature of network structure to be taken into account when studying selection processes.

Global versus group-based network variables. In social network studies, an important decision to be made is which variables are meaningful for the research question. Choosing the right variable is not always easy as networks can be summarized in many different ways. In the context of acculturation, one might be interested in exploring cultural diversity as a proxy for intercultural contact. Cultural diversity defined as the probability that two randomly selected network members are from different cultural groups is a global representation of the network. That is the overall diversity of the network is described with one single value. However, this measurement might be problematic for two reasons: First, there could be little variation in the variable of interest among respondents due to low cultural heterogeneity in the population, restricted contact opportunities, and the specifics of the name generator (e.g., number of alters, question to elicit names, chosen boundaries).

Second, one value could mean two very different network constellations. Cultural diversity, as defined above, solely captures network composition but not structure. Two individuals could have the same number of culturally distinct people in their network, and hence the same diversity score, but one might keep them separate while the other might combine them. Both network constellations mean very different things for intercultural contact. So depending on the research question and the case under study, relying only on global measures might lead to erroneous conclusions. In the case discussed here, it might be more appropriate to focus on specific elements of intercultural contact (e.g., group-based variables such as intergroup connectedness of different cultural groups). Nonetheless, in other cases, global network variables might be completely appropriate and a time-saving way to investigate the topic under study.

Interculturalism self-reports and social networks. Acculturation researchers often rely on interculturalism self-reports. The problem is that self-reports may be influenced by a variety of biases (e.g., social desirability, wishful thinking, lying about social interactions, memory biases). Moreover, they depend on the respondent's self-awareness. Another methodological issue is the problem of measurement equivalence. The way in which individuals understand questions about their behavior may significantly vary across cultural

groups. For instance, in one culture the understanding of socializing with host nationals may be understood in a broad sense (e.g., having work relationships with host nationals), while in another culture the understanding of that phrase might be narrower (e.g., having close or intimate relationships with host nationals). For this reason, the respondents' answers on their social interactions would not be directly comparable across groups.

In contrast, social network data can elude these challenges as they do not rely on people's self-assessments of their social lives, but grasp actual contact between individuals. Certainly, the way in which networks get generated is not free from biases, but the network data collection mode is still a more implicit and less obtrusive approach. As such, it runs a lower risk of being consciously manipulated by the respondent. Hence, in the acculturation context, the network perspective may offer a more adequate way of capturing intercultural contact when time and the necessary resources are available.

5.2 Future Research

This dissertation was a first exploration of a topic that still has a lot of potential for further investigation. While it contributed substantively, theoretically, and methodologically, it also led to the raise of many new questions—questions to be addressed by future research. In the following, I organize the recommendations and suggestions for future research around three points: type of data, analysis of other settings, and new hypotheses/research topics.

First, in order to investigate the dynamic interplay between the micro and meso level and to be able to make causal inferences, ultimately, longitudinal data is needed. Longitudinal studies could disentangle the bidirectional relationship of (a) how cultural identifications and personality determine network formation (selection effect), and of (b) how network composition and structure change people's cultural identifications and personality traits (influence effect). With a sequence of at least two observations, stochastic agent-based models could be set up that help understand

these behavior-network dynamics. Alternatively, a mixed-method research design, which includes participants being shown visual representations of their social networks during data collection, could help retrieve a richer set of information and facilitate the interpretation of the network's composition and structure. Likewise, qualitative interviews could be beneficial for gaining further insights.

Second, we explored two receiving contexts, a US-American and a European one: San Francisco, California, and Catalonia, Spain. The two differ in a variety of things, such as their immigration traditions/history, the types of immigrants they attract, and the observable attributes of diversity (e.g., skin color). Furthermore, we looked at immigrants from different cultural backgrounds. In the American case, participants were culturally and generationally diverse Latinos. In the European case, participants were first- to second-generation immigrants from four countries (Ecuador, Morocco, Pakistan, and Romania) representing four continents and two religions. Future research could extend on this by investigating and contrasting other receiving contexts and immigrant groups. Also, this research could benefit from studying other kinds of biculturals (e.g., refugees, people in cross-cultural relationships, expatriates) or other relationship domains to see whether results hold across settings.

Third, new hypotheses and research topics arose from our results. The counterintuitive finding from Chapter 3, that Ecuadorians had less integrated networks despite their culture and language similarity advantage, may have different reasons. One possible explanation deals with the idea that language may prime culture and, thus, may induce CFS. In that sense, immigrants for whom native and host languages are the same may have more difficulties in attaching a new culture to their language than individuals who have to learn a new language with the host culture. Consequently, it may be more demanding for those immigrants to engage in CFS. Future research could check whether the same pattern emerges in other settings (e.g., comparing the networks of Australian and Turkish immigrants in England). Then, one could test in experimental settings whether language plays an important role in CFS or whether contextual cues are more relevant.

An interesting perspective on network formation and acculturation could be gained from investigating networks of couples in romantic relationships. Ideally, that would include immigrant couples (i.e., of same or different ethnicity other than the one of the host country), host couples, and mixed couples (i.e., one partner is from the host society, the other one is foreign) to learn about the acculturation experiences of immigrants and host individuals with foreign partners and to compare these network dynamics with those of host couples. In a longitudinal study, one could track how couples' networks merge over time or to what extent they are kept separate. In a bicultural and bilingual context, such as the one of Catalonia, host partners could even be classified into different cultural groups (e.g., Spanish and Catalan).

5.3 Potential Policy Implications

The research presented in this dissertation is important for understanding acculturation processes and may inform policy makers about how to create the conditions necessary for peaceful intercultural relations to develop. The ongoing refugee crisis in Europe, the current episodes of terror attacks, and rising anti-immigration sentiments culminating in victimizing foreigners have once again brought up the importance of successful integration of immigrants and other cultural minorities in the public discourse. In an increasingly multicultural world, this involves the reduction of intercultural conflict and distress due to acculturation processes, the active prevention of risky patterns of disidentification or radicalization, and the development of harmonious multicultural identities.

We have demonstrated that within-person interculturality (e.g., perceiving ethnic and host cultures as compatible, reporting a hyphenated cultural identity) and within-network interculturalism (e.g., having culturally diverse networks in which different ethnic groups are well interconnected) are crucial for immigrants' adaptation to the host society. Integration policies often aim at creating opportunities for immigrants to learn the host language and to acquire culturally-relevant knowledge, with the idea that this

could facilitate the interaction with host nationals. Although having host nationals in the network is an important part of successful integration, immigrants should not have the feeling of having to give up their ethnic culture in return. Policy makers and other public actors should be made aware of the psychological damage they might induce by defining immigrants' integration in terms of single, unidirectional cultural orientations.

Our results suggest that both ethnic and host worlds are important, but that they should be interconnected. Especially in settings with high amounts of cultural minorities or immigrants, integration policies should not only focus on the foreigners but could also target host nationals. This could be done by offering multicultural trainings (e.g., as part of team building courses within a company). A more indirect way would be to make immigrants feel they can contribute to society instead of giving them the feeling they only receive help and are dependent on the host community. Creating platforms which immigrants could use for offering something they are good at (e.g., giving a cooking course, teaching their language) could be beneficial to host nationals in that they could make use of the immigrant's talent and, thereby, implicitly learn more about the minority culture. Lastly, policy makers could also reach out to individuals high in BII, who could work in public spaces as mediators for bridging cultures.

Bibliography

- Aguilar, C. (2005). Visualización de redes personales en Sarajevo. *REDES*, 9(4), 1–14.
- Allport, G. W. (1954). *The Nature of Prejudice*. Reading, MA: Addison-Wesley.
- Allport, G. W. (1962). The general and the unique in psychological science. *Journal of Personality*, 30(3), 405–422. doi:10.1111/1467-6494.ep8932837
- Alwin, D. F. (2007). *Margins of Error: A Study of Reliability in Survey Measurement*. Hoboken, NJ: Wiley.
- Ambrose, S. H. (2010). Coevolution of composite-tool technology, constructive memory, and language. Implications for the evolution of modern human behavior. *Current Anthropology*, 51(S1), S135–S147. doi:10.1086/650296
- Asendorpf, J. B., & Wilpers, S. (1998). Personality effects on social relationships. *Journal of Personality and Social Psychology*, 74(6), 1531–1544.
- Baerveldt, C., Zijlstra, B., de Wolf, M., Van Rossem, R., & Van Duijn, M. A. J. (2007). Ethnic boundaries in high school students' networks in Flanders and the Netherlands. *International Sociology*, 22(6), 701–720.
- Bayona-Carrasco, J., & Gil-Alonso, F. (2012). Suburbanisation and international immigration: The case of the Barcelona metropolitan region (1998–2009). *Journal of Economic and Social Geography*, 103(3), 312–329.
- Baysu, G., Phalet, K., & Brown, R. (2011). Dual identity as a two-edged sword: Identity threat and minority school performance. *Social Psychology Quarterly*, 74(2), 121–143.
- Benet-Martínez, V. (n.d.). Multicultural identity and experiences: Cultural, social, and personality processes. In K. Deaux & M. Snyder (Eds.), *The Oxford Handbook of Personality and Social Psychology* (2nd ed.). New York, NY: Oxford University Press.
- Benet-Martínez, V., & Haritatos, J. (2005). Bicultural identity integration (BII): Components and psychosocial antecedents. *Journal of Personality*, 73(4), 1015–1049.
- Benet-Martínez, Leu, J., Lee, F., & Morris, M. W. (2002). Negotiating biculturalism: Cultural frame switching in

- biculturals with oppositional versus compatible cultural identities. *Journal of Cross-Cultural Psychology*, 33(5), 492–516.
- Berry, J. W. (1990). Psychology of acculturation. In N. R. Goldberg & J. B. Veroff (Eds.), *The Culture and Psychology Reader* (pp. 457–488). New York, NY: New York University Press.
- Berry, J. W. (1997). Immigration, acculturation, and adaptation. *Applied Psychology: An International Review*, 46(1), 5–68.
- Berry, J. W. (1998). Acculturative stress. In P. B. Organista, K. Chun, & G. Marin (Eds.), *Readings in Ethnic Psychology*. New York, NY: Routledge.
- Berry, J. W. (2003). Conceptual approaches to acculturation. In K. Chun, P. Organista, & G. Marín (Eds.), *Acculturation: Advances in Theory, Measurement, and Applied Research* (pp. 17–37). Washington, DC: American Psychological Association.
- Berry, J. W., Phinney, J. S., Sam, D. L., & Vedder, P. (2006). Immigrant youth: Acculturation, identity, and adaptation. *Applied Psychology: An International Review*, 55(3), 303–332.
- Berry, J. W., & Sam, D. L. (2014). Multicultural societies. In V. Benet-Martínez & Y. Hong (Eds.), *The Oxford Handbook of Multicultural Identity* (pp. 97–117). New York, NY: Oxford University Press.
- Bijak, J., Hilton, J., Silverman, E., & Cao, V. D. (2013). Reforging the wedding ring: Exploring a semi-artificial model of population for the United Kingdom with Gaussian process emulators. *Demographic Research*, 29(27), 729–766. doi:10.4054/DemRes.2013.29.27
- Bilecen, B., Gamper, M., & Lubbers, M. J. (2017). The missing link: Social network analysis in migration and transnationalism. *Social Networks*, in press. doi:10.1016/j.socnet.2017.07.001
- Binder, J., Zagefka, H., Brown, R., Funke, F., Kessler, T., Mummendey, A., ... Leyens, J.-P. (2009). Does contact reduce prejudice or does prejudice reduce contact? A longitudinal test of the contact hypothesis among majority and minority groups in three European countries. *Journal of Personality and Social Psychology*, 96(4), 843–856. doi:10.1037/a0013470
- Blau, P. M. (1993). Multilevel structural analysis. *Social Networks*, 15(2), 201–215. doi:10.1016/0378-8733(93)90005-6
- Bochner, S. (1982). The social psychology of cross-cultural

- relations. In S. Bochner (Ed.), *Cultures in Contact: Studies in Cross-Cultural Interaction* (pp. 5–44). Oxford: Pergamon.
- Borgatti, S. P., & Halgin, D. S. (2011). On network theory. *Organization Science*, 22(5), 1168–1181. doi:10.1287/orsc.1100.0641
- Borgatti, S. P., Mehra, A., Brass, D. J., & Labianca, G. (2009). Network analysis in the social sciences. *Science*, 323, 892–895.
- Bornstein, M. H. (2017). The specificity principle in acculturation science. *Perspectives on Psychological Science*, 12(1), 3–45.
- Brandes, U., Lerner, J., Lubbers, M. J., McCarty, C., & Molina, J. L. (2008). Visual statistics for collections of clustered graphs. In *2008 IEEE Pacific Visualization Symposium* (pp. 47–54). Kyoto: IEEE. doi:10.1109/PACIFICVIS.2008.4475458
- Brandes, U., Lerner, J., Lubbers, M. J., McCarty, C., Molina, J. L., & Nagel, U. (2010). Recognizing modes of acculturation in personal networks of migrants. *Procedia - Social and Behavioral Sciences*, 4, 4–13.
- Brandes, U., Lerner, J., & Nagel, U. (2011). Network ensemble clustering using latent roles. *Advances in Data Analysis and Classification*, 5(2), 81–94.
- Branje, S. J. T., van Lieshout, C. F. M., & van Aken, M. A. G. (2004). Relations between Big Five personality characteristics and perceived support in adolescents' families. *Journal of Personality and Social Psychology*, 86(4), 615–628.
- Brewer, D. D. (2000). Forgetting in the recall-based elicitation of personal and social networks. *Social Networks*, 22(1), 29–43. doi:10.1016/S0378-8733(99)00017-9
- Brown, R., & Zagefka, H. (2011). The dynamics of acculturation: An intergroup perspective. In M. P. Zanna & J. M. Olson (Eds.), *Advances in Experimental Social Psychology* (Vol. 44, pp. 129–184). San Diego, CA: Academic Press (Elsevier).
- Brubaker, R., & Cooper, F. (2000). Beyond “identity.” *Theory and Society*, 29(1), 1–47.
- Burt, R. S. (1992). *Structural Holes: The Social Structure of Competition*. Cambridge, MA: Harvard University Press.
- Burt, R. S., Jannotta, J. E., & Mahoney, J. T. (1998). Personality correlates of structural holes. *Social Networks*, 20(1), 63–87. doi:10.1016/S0378-8733(97)00005-1
- Casciaro, T. (1998). Seeing things clearly: Social structure, personality, and accuracy in social network perception. *Social*

- Networks*, 20(4), 331–351. doi:10.1016/S0378-8733(98)00008-2
- Centola, D. (2010). The spread of behavior in an online social network experiment. *Science*, 329, 1194–7.
- Centola, D., & Macy, M. (2007). Complex contagions and the weakness of long ties. *American Journal of Sociology*, 113(3), 702–734. doi:10.1086/521848
- Chen, S. X., Benet-Martínez, V., & Bond, M. H. (2008). Bicultural identity, bilingualism, and psychological adjustment in multicultural societies: Immigration-based and globalization-based acculturation. *Journal of Personality*, 76(4), 803–837.
- Chen, S. X., Benet-Martínez, V., Wu, W. C. H., Lam, B. C. P., & Bond, M. H. (2013). The role of dialectical self and Bicultural Identity Integration in psychological adjustment. *Journal of Personality*, 81(1), 61–75.
- Chua, R. Y.-J. (2013). The costs of ambient cultural disharmony: Indirect intercultural conflicts in social environment undermine creativity. *Academy of Management Journal*, 56(6), 1545–1577.
- Chua, R. Y.-J. (2015). Innovating at cultural crossroads. *Journal of Management*, 1–28. doi:10.1177/0149206315601183
- Clifton, A. (2014). Variability in personality expression across contexts: A social network approach. *Journal of Personality*, 82(2), 103–115. doi:10.1111/jopy.12038
- Cohen, J., Cohen, P., West, S. G., & Aiken, L. S. (2003). Outliers and multicollinearity: Diagnosing and solving regression problem II. In J. Cohen, P. Cohen, S. G. West, & L. S. Aiken (Eds.), *Applied Multiple Regression/Correlation Analysis for the Behavioral Sciences* (pp. 390–430). Mahwah, NJ: Lawrence Erlbaum.
- Cohen, S., & Hoberman, H. (1983). Positive events and social supports as buffers of life change stress. *Journal of Applied Social Psychology*, 13(2), 99–125. doi:10.1111/j.1559-1816.1983.tb02325.x
- Cohen, S., & Wills, T. A. (1985). Stress, social support, and the buffering hypothesis. *Psychological Bulletin*, 98(2), 310–357.
- Costa, P. T., & McCrae, R. R. (1992). *Revised NEO Personality Inventory (NEO-PI-R) and NEO Five-Factor Inventory (NEO-FFI) Professional Manual*. Odessa, FL: Psychological Assessment Resources.
- Crosier, B. S., Webster, G. D., & Dillon, H. M. (2012). Wired to

- connect: Evolutionary psychology and social networks. *Review of General Psychology*, 16(2), 230–239.
- Damstra, A., & Tillie, J. (2016). How crosscutting weak ties are established—the case of Muslims in Europe. *Journal of Ethnic and Migration Studies*, 42(2), 237–260.
- Davis, M. H., Morris, M. M., & Kraus, L. A. (1998). Relationship-specific and global perceptions of social support: Associations with well-being and attachment. *Journal of Personality and Social Psychology*, 74(2), 468–481.
- de Federico de la Rúa, A. (2007). Networks and identifications: A relational approach to social identities. *International Sociology*, 22(6), 683–699. doi:10.1177/0268580907082247
- de la Sablonnière, R., Amiot, C. E., Cárdenas, D., Sadykova, N., Gorborukova, G. L., & Huberdeau, M. E. (2016). Testing the subtractive pattern of cultural identification. *European Journal of Social Psychology*, 46(4), 441–454.
- DeLeeuw, J. (1992). Introduction to Akaike (1973) information theory and an extension of the maximum likelihood principle. In S. Kotz & N. L. Johnson (Eds.), *Breakthroughs in Statistics. Volume 1. Foundations and Basic Theory* (pp. 599–609). New York, NY: Springer Science+Business Media. doi:10.1007/978-1-4612-0919-5_37
- Derogatis, L. R., Rickels, K., & Rock, A. F. (1976). The SCL-90 and the MMPI: A step in the validation of a new self-report scale. *The British Journal of Psychiatry*, 128(3), 280–289.
- Diener, E., Emmons, R. A., Larsen, R. J., & Griffin, A. (1985). The Satisfaction With Life Scale. *Journal of Personality Assessment*, 49, 71–75.
- Domínguez, S., & Maya-Jariego, I. (2008). Acculturation of host individuals: Immigrants and personal networks. *American Journal of Community Psychology*, 42(3–4), 309–327.
- Fearon, J. D. (2003). Ethnic structure and cultural diversity by country. *Journal of Economic Growth*, 8(2), 195–222.
- Ferrari, L., Rosnati, R., Manzi, C., & Benet-Martínez, V. (2015). Ethnic identity, bicultural identity integration, and psychological well-being among transracial adoptees: A longitudinal study. *New Directions for Child and Adolescent Development*, 150, 63–76.
- Fischer, C. S. (1982). What do we mean by “friend”? An inductive study. *Social Networks*, 3(4), 287–306. doi:10.1016/0378-8733(82)90004-1

- Flannery, W. P., Reise, S. P., & Yu, J. (2001). An empirical comparison of acculturation models. *Personality and Social Psychology Bulletin*, 27(8), 1035–1045.
- Gadermann, A. M., Guhn, M., & Zumbo, B. D. (2012). Estimating ordinal reliability for Likert-type and ordinal item response data: A conceptual, empirical, and practical guide. *Practical Assessment, Research & Evaluation*, 17(3), 1–13. doi:http://pareonline.net/getvn.asp?v=17&n=3
- Gans, H. (1973). Introduction. In N. Sandberg (Ed.), *Ethnic Identity and Assimilation: The Polish Community*. New York, NY: Praeger.
- Generalitat de Catalunya. (2009a). Les persones de nacionalitat marroquina a Catalunya. *La Immigració En Xifres*, 2, 1–7.
- Generalitat de Catalunya. (2009b). Les persones de nacionalitat romanesa a Catalunya. *La Immigració En Xifres*, 3, 1–7.
- Generalitat de Catalunya. (2010). Les persones de nacionalitat equatoriana a Catalunya. *La Immigració En Xifres*, 4, 1–7.
- Generalitat de Catalunya. (2011). La població de nacionalitat pakistanesa a Catalunya. *La Immigració En Xifres*, 9, 1–7.
- Gibson, M. A. (2001). Immigrant adaptation and patterns of acculturation. *Human Development*, 44(1), 19–23.
- Gordon, M. (1964). *Assimilation in American life: The role of race, religion, and national origins*. New York, NY: Oxford University Press.
- Gosling, S. D., Rentfrow, P. J., & Swann, W. B. (2003). A very brief measure of the Big-Five personality domains. *Journal of Research in Personality*, 37(6), 504–528.
- Gottlieb, B. H. (1981). Preventive interventions involving social networks and social support. In B. H. Gottlieb (Ed.), *Social Networks and Social Support*. Beverly Hills, CA: SAGE Publications.
- Granovetter, M. S. (1973). The strength of weak ties. *American Journal of Sociology*, 78(6), 1360–1380.
- Granovetter, M. S. (1983). The strength of weak ties: A network theory revisited. *Sociological Theory*, 1(1983), 201–233.
- Grimm, V., Berger, U., Bastiansen, F., Eliassen, S., Ginot, V., Giske, J., ... DeAngelis, D. L. (2006). A standard protocol for describing individual-based and agent-based models. *Ecological Modelling*, 198(1–2), 115–126. doi:10.1016/j.ecolmodel.2006.04.023
- Grimm, V., Berger, U., DeAngelis, D. L., Polhill, J. G., Giske, J., &

- Railsback, S. F. (2010). The ODD protocol: A review and first update. *Ecological Modelling*, 221(23), 2760–2768. doi:10.1016/j.ecolmodel.2010.08.019
- Hanneman, R. A., & Riddle, M. (2005). *Introduction to Social Network Methods*. Riverside, CA: University of California, Riverside. doi:10.1016/j.socnet.2006.08.002
- Heckathorn, D. D. (1997). Respondent-driven sampling: A new approach to the study of hidden populations. *Social Problems*, 44(2), 174–199.
- Hogg, M. A., & Adelman, J. (2013). Uncertainty-identity theory: Extreme groups, radical behavior, and authoritarian leadership. *Journal of Social Issues*, 69(3), 436–454. doi:10.1111/josi.12023
- Hong, Y., Benet-Martínez, V., Chiu, C., & Morris, M. W. (2003). Boundaries of cultural influence: Construct activation as a mechanism for cultural differences in social perception. *Journal of Cross Cultural Psychology*, 34(4), 453–464.
- Hong, Y., Morris, M. W., Chiu, C., & Benet-Martínez, V. (2000). Multicultural minds: A dynamic constructivist approach to culture and cognition. *American Psychologist*, 55(7), 709–720.
- Huynh, Q.-L., Benet-Martínez, V., & Nguyen, A.-M. D. (2016). *Measuring variations in bicultural identity across US ethnic and generational groups: Development and validation of the Bicultural Identity Integration Scale–Version 2 (BIIS-2)*. Unpublished manuscript.
- Huynh, Q.-L., Nguyen, A.-M. D., & Benet-Martínez, V. (2011). Bicultural identity integration. In S. J. Schwartz, K. Luyckx, & V. L. Vignoles (Eds.), *Handbook of Identity Theory and Research* (pp. 831–846). New York, NY: Springer Science+Business Media.
- Instituto Nacional de Estadística. (2017). Principales series de población desde 1998. Retrieved July 10, 2017, from <http://www.ine.es/dynt3/inebase/es/index.htm?type=pcaxis&path=/t20/e245/p08/&file=pcaxis&dh=0&capsel=0>
- Jang, K. L., Livesley, W. J., & Vernon, P. A. (1996). Heritability of the Big Five personality dimensions and their facets: A twin study. *Journal of Personality*, 64(3), 577–592. doi:10.1111/j.1467-6494.1996.tb00522.x
- Jasinskaja-Lahti, I., Liebkind, K., Jaakkola, M., & Reuter, A. (2006). Perceived discrimination, social support networks, and psychological well-being among three immigrant groups.

- Journal of Cross-Cultural Psychology*, 37(3), 293–311.
- John, O. P., Naumann, L. P., & Soto, C. J. (2008). Paradigm shift to the integrative big-five trait taxonomy: History, measurement, and conceptual issues. In O. P. John, R. W. Robins, & L. A. Pervin (Eds.), *Handbook of Personality: Theory and Research* (3rd ed., pp. 114–158). New York, NY: Guilford Press.
- John, O. P., & Srivastava, S. (1999). The Big Five trait taxonomy: History, measurement, and theoretical perspectives. In L. A. Pervin & O. P. John (Eds.), *Handbook of Personality: Theory and Research I* (pp. 102–138). New York, NY: Guilford Press.
- Jugert, P., Leszczensky, L., & Pink, S. (2017). The effects of ethnic minority adolescents' ethnic self-identification on friendship selection. *Journal of Research on Adolescence*, in press.
- Kalish, Y., & Robins, G. (2006). Psychological predispositions and network structure: The relationship between individual predispositions, structural holes and network closure. *Social Networks*, 28(1), 56–84. doi:10.1016/j.socnet.2005.04.004
- Killworth, P. D., Johnsen, E. C., Bernard, H. R., & McCarty, C. (1990). Estimating the size of personal networks, 12, 289–312.
- Kim, Y. Y. (2001). *Becoming Intercultural: An Integrative Theory of Communication and Cross-Cultural Adaptation*. Thousand Oaks, CA: Sage Publications.
- Klein, K. J., Lim, B. C., Saltz, J. L., & Mayer, D. M. (2004). How do they get there? An examination of the antecedents of centrality in team networks. *Academy of Management Journal*, 47(6), 952–963. doi:10.2307/20159634
- Knight, J., Thompson, A., & Lever, J. (2017). Social network evolution during long-term migration: A comparison of three case studies in the South Wales region. *Social Identities*, 23(1), 56–70.
- Krause, J., James, R., & Croft, D. P. (2010). Personality in the context of social networks. *Philosophical Transactions of the Royal Society B: Biological Sciences*, 365(1560), 4099–4106. doi:10.1098/rstb.2010.0216
- LaFromboise, T., Coleman, H. L. K., & Gerton, J. (1993). Psychological impact of biculturalism: Evidence and theory. *Psychological Bulletin*, 114(3), 395–412.
- Lebon, A. (1983). Maintien des liens culturels et insertion des migrants: Quelles relations? *Revue Francaise Des Affaires Sociales*, 372, 89–114.
- Leszczensky, L. (2013). Do national identification and interethnic

- friendships affect one another? A longitudinal test with adolescents of Turkish origin in Germany. *Social Science Research*, 42(3), 775–788.
- Lieung, A. K., Maddux, W. W., Galinsky, A. D., & Chiu, C. (2008). Multicultural experience enhances creativity: The when and how. *American Psychologist*, 63(3), 169–181.
- Liebkind, K. (2001). Acculturation. In R. Brown & S. L. Gaertner (Eds.), *Blackwell Handbook of Social Psychology: Intergroup Processes* (pp. 386–408). Oxford, UK.
- Liu, M.-M. (2013). Migrant networks and international migration: Testing weak ties. *Demography*, 50(4), 1243–1277.
- Lubbers, M. J., Molina, J. L., Lerner, J., Brandes, U., Ávila, J., & McCarty, C. (2010). Longitudinal analysis of personal networks. The case of Argentinean migrants in Spain. *Social Networks*, 32(1), 91–104.
- Lubbers, M. J., Molina, J. L., & McCarty, C. (2007). Personal networks and ethnic identifications: The case of migrants in Spain. *International Sociology*, 22(6), 721–741.
- Luo, S.-H., & Wiseman, R. L. (2000). Ethnic language maintenance among Chinese immigrant children in the United States. *International Journal of Intercultural Relations*, 24(3), 307–324. doi:10.1016/S0147-1767(00)00003-1
- Lyons-Padilla, S., Gelfand, M. J., Mirahmadi, H., Farooq, M., & van Egmond, M. (2015). Belonging nowhere: Marginalization & radicalization risk among Muslim immigrants. *Behavioral Science & Policy*, 1(2), 1–12.
- Marsden, P. V. (2005). Recent developments in network measurement. In P. J. Carrington, J. Scott, & S. Wasserman (Eds.), *Models and Methods in Social Network Analysis* (pp. 8–30). Cambridge: Cambridge University Press.
- Marsden, P. V., & Campbell, K. E. (1984). Measuring tie strength. *Social Forces*, 63(2), 482–501. doi:10.1093/sf/63.2.482
- Martínez García, M. F., García Ramírez, M., & Maya Jariego, I. (2002). Social support and locus of control as predictors of psychological well-being in Moroccan and Peruvian immigrant women in Spain. *International Journal of Intercultural Relations*, 26(3), 287–310.
- Massey, D. S., Arango, J., Hugo, G., Kouaouci, A., Pellegrino, A., & Taylor, J. E. (1993). Theories of international migration: A review and appraisal. *Population English Edition*, 19(3), 431–466. doi:10.2307/2938462

- McCarty, C. (2002). Structure in personal networks. *Journal of Social Structure*, 3.
- McCarty, C. (2003). EgoNet. Personal network software. Available at <https://sourceforge.net/projects/egonet/>.
- McFarland, D., & Pals, H. (2005). Motives and contexts of identity change: A case for network effects. *Social Psychology Quarterly*, 68(4), 289–315. doi:10.1177/019027250506800401
- McPherson, M., Smith-Lovin, L., & Brashears, M. E. (2008). Social isolation in America: Changes in core discussion networks over two decades. *American Sociological Review*, 73(6), 1022–1022. doi:10.1177/000312240807300610
- McPherson, M., Smith-Lovin, L., & Cook, J. M. (2001). Birds of a feather: Homophily in social networks. *Annual Review of Sociology*, 27, 415–444.
- Meer, N., & Modood, T. (2012). How does interculturalism contrast with multiculturalism? *Journal of Intercultural Studies*, 33(2), 175–196.
- Mehra, A., Kilduff, M., & Brass, Daniel, J. (2001). The social networks of high and low self-monitors: Implications for workplace performance. *Administrative Science Quarterly*, 46(1), 121–146. doi:10.2307/2667127
- Miller, M. J., Kim, J., & Benet-Martínez, V. (2011). Validating the Riverside Acculturation Stress Inventory with Asian Americans. *Psychological Assessment*, 23(2), 300–310.
- Mok, A., Morris, M. W., Benet-Martínez, V., & Karakitapoglu-Aygün, Z. (2007). Embracing American culture: Structures of social identity and social networks among first-generation biculturals. *Journal of Cross-Cultural Psychology*, 38(5), 629–635.
- Molina, J. L., Lerner, J., & Mestre, S. G. (2008). Patrones de cambio de las redes personales de inmigrantes en Cataluña. *Redes*, 15(4), 50–63.
- Molina, J. L., Maya-Jariego, I., & McCarty, C. (2014). Giving meaning to social networks: Methodology for conducting and analyzing interviews based on personal network visualizations. In S. Domínguez & B. Hollstein (Eds.), *Mixed Methods Social Networks Research. Design and Applications* (pp. 305–335). New York, NY: Cambridge University Press.
- Morris, M. W., Chiu, C., & Liu, Z. (2015). Polycultural psychology. *Annual Review of Psychology*, 66(1), 631–659.
- Neal, J. W., Durbin, C. E., Gornik, A. E., & Lo, S. L. (2017).

- Codevelopment of preschoolers' temperament traits and social play networks over an entire school year. *Journal of Personality and Social Psychology*. doi:10.1037/pspp0000135
- Nesdale, D. (2002). Acculturation attitudes and the ethnic and host-country identification of immigrants. *Journal of Applied Social Psychology*, *32*(7), 1488–1507.
- Newman, M. E. J. (2003). Ego-centered network and the ripple effect. *Social Networks*, *25*, 83–95. doi:10.1016/S0378-8733(02)00039-4
- Nguyen, A.-M. D., & Benet-Martínez, V. (2007). Biculturalism unpacked: Components, measurement, individual differences, and outcomes. *Social and Personality Psychology Compass*, *1*(1), 101–114.
- Nguyen, A.-M. D., & Benet-Martínez, V. (2013). Biculturalism and adjustment: A meta-analysis. *Journal of Cross-Cultural Psychology*, *44*(1), 122–159.
- Oberg, K. (1960). Cultural shock: Adjustment to new cultural environments. *Practical Anthropology*, *7*, 177–182. doi:10.1177/009182966000700405
- Ono, H. (2006). Assimilation, ethnic competition, and ethnic identities of U.S.-born persons of Mexican origin. *International Migration Review*, *36*(3), 726–745. doi:10.1111/j.1747-7379.2002.tb00102.x
- Ozer, D. J., & Benet-Martínez, V. (2006). Personality and the prediction of consequential outcomes. *Annual Review of Psychology*, *57*(1), 401–421.
- Park, R. E. (1950). *Race and Culture*. Glencoe: The Free Press.
- Pettigrew, T. F., & Tropp, L. R. (2000). Does intergroup contact reduce prejudice? Recent meta-analytic findings. In S. Oskamp (Ed.), *Reducing Prejudice and Discrimination*. Mahwah, NJ: Lawrence Erlbaum Associates.
- Phinney, J. S. (1990). Ethnic identity in adolescents and adults: Review of research. *Psychological Bulletin*, *108*(3), 499–514. doi:10.1037/0033-2909.108.3.499
- Phinney, J. S., Berry, J. W., Vedder, P., & Liebkind, K. (2006). The acculturation experience: Attitudes, identities and behaviors of immigrant youth. In *Immigrant Youth in Cultural Transition: Acculturation, Identity, and Adaptation Across National Contexts* (pp. 71–116). Mahwah, NJ: Lawrence Erlbaum Associates.
- Phinney, J. S., Horenczyk, G., & Vedder, P. (2001). Ethnic identity,

- immigration, and well-being: An interactional perspective. *Journal of Social Issues*, 57(3), 493–510.
- Phinney, J. S., Romero, I., Nava, M., & Huang, D. (2001). The role of language, parents, and peers in ethnic identity among adolescents in immigrant families. *Journal of Youth and Adolescence*, 30(2), 135–153.
- Postmes, T., Akkus, B., & Stroebe, K. (2015). The discovery of the other in social and cultural psychology. *Journal of Cross-Cultural Psychology*, 46(10), 1336–1340.
- Pouliasi, K., & Verkuyten, M. (2007). Networks of meaning and the bicultural mind: A structural equation modeling approach. *Journal of Experimental Social Psychology*, 43(6), 955–963.
- Pujolar, J. (2010). Immigration and language education in Catalonia: Between national and social agendas. *Linguistics and Education*, 21(3), 229–243.
- R Development Core Team. (2011). R: A Language and Environment for Statistical Computing. Vienna, Austria: R Foundation for Statistical Computing.
- Ramos, M. R., Cassidy, C., Reicher, S., & Haslam, S. A. (2015). Well-being in cross-cultural transitions: Discrepancies between acculturation preferences and actual intergroup and intragroup contact. *Journal of Applied Social Psychology*, 45(1), 23–34.
- Repke, L., & Benet-Martínez, V. (2017). Conceptualizing the dynamics between bicultural identification and personal social networks. *Frontiers in Psychology*, 8(469), 1–19. doi:10.3389/fpsyg.2017.00469
- Rivera, L. M. (2010). Acculturation: Theories, measurement, and research. In J. G. Ponterotto, J. M. Casas, L. A. Suzuki, & C. M. Alexander (Eds.), *Handbook of Multicultural Counseling* (pp. 331–341). Los Angeles, CA: Sage.
- Roberts, B. W. (2007). Contextualizing personality psychology. *Journal of Personality*, 75(6), 1071–1082.
- Roberts, B. W., Walton, K. E., & Viechtbauer, W. (2006). Patterns of mean-level change in personality traits across the life course: A meta-analysis of longitudinal studies. *Psychological Bulletin*. doi:10.1037/0033-2909.132.1.1
- Robins, G. (2009). Understanding individual behaviors within covert networks: The interplay of individual qualities, psychological predispositions, and network effects. *Trends in Organized Crime*, 12(2), 166–187.
- Robins, G., & Kashima, Y. (2008). Social psychology and social

- networks: Individuals and social systems. *Asian Journal of Social Psychology*, 11(1), 1–12.
- Robinson, M. D., Moeller, S. K., & Fetterman, A. K. (2010). Neuroticism and responsiveness to error feedback: Adaptive self-regulation versus affective reactivity. *Journal of Personality*, 78(5), 1469–1496. doi:10.1111/j.1467-6494.2010.00658.x
- Rogers, E. M. (1995). *Diffusion of Innovations*. New York, NY: Free Press.
- Ross, J., Anderson, J. R., & Campbell, R. N. (2010). Situational changes in self-awareness influence 3- and 4-year-olds' self-regulation. *Journal of Experimental Child Psychology*, 108(1), 126–138. doi:10.1016/j.jecp.2010.08.003
- Ryan, L. (2011). Migrants' social networks and weak ties: Accessing resources and constructing relationships post-migration. *The Sociological Review*, 59(4), 707–724.
- Ryder, A. G., Alden, L. E., & Paulhus, D. L. (2000). Is acculturation unidimensional or bidimensional? A head-to-head comparison in the prediction of personality, self-identity, and adjustment. *Journal of Personality and Social Psychology*, 79(1), 49–65.
- Sam, D. L., & Berry, J. W. (2010). Acculturation: When individuals and groups of different cultural backgrounds meet. *Perspectives on Psychological Science*, 5(4), 472–481.
- Sandberg, N. (1973). *Ethnic Identity and Assimilation: The Polish Community*. New York, NY: Praeger.
- Saris, W. E., & Oberski, D. (2014). Survey quality predictor 2.1. Available at <http://sqp.upf.edu>.
- Saris, W. E., Revilla, M., Krosnick, J. A., & Shaeffer, E. M. (2010). Comparing questions with agree/disagree response options to questions with item-specific response options. *Survey Research Methods*, 4(1), 61–79. doi:10.18148/srm/2010.v4i1.2682
- Schachner, M. K., Noack, P., Van de Vijver, F. J. R., & Eckstein, K. (2016). Cultural diversity climate and psychological adjustment at school-Equality and inclusion versus cultural pluralism. *Child Development*, 87(4), 1175–1191.
- Scheuch, E. K. (1968). The cross-cultural use of sample surveys: Problems of comparability. In S. Rokkan (Ed.), *Comparative Research Across Cultures and Nations* (pp. 176–209). Paris: Mouton.

- Schultz, O. (2001). The effect of social psychological training on personality changes among immigrants (The German example). In N. S. Hrustaleva (Ed.), *Psychological Problems Among Russian Immigrants in Germany* (pp. 38–45). St. Petersburg, Russia: St. Petersburg University Press.
- Schwartz, S. J., Montgomery, M. J., & Briones, E. (2006). The role of identity in acculturation among immigrant people: Theoretical propositions, empirical questions, and applied recommendations. *Human Development*, *49*(1), 1–30.
- Schwartz, S. J., Unger, J. B., Zamboanga, B. L., & Szapocznik, J. (2010). Rethinking the concept of acculturation: Implications for theory and research. *American Psychologist*, *65*(4), 237–251.
- Schwartz, S. J., Vignoles, V. L., Brown, R., & Zagefka, H. (2014). The identity dynamics of acculturation and multiculturalism: Situating acculturation in context. In V. Benet-Martínez & Y. Hong (Eds.), *The Oxford handbook of multicultural identity* (pp. 57–93). New York, NY: Oxford University Press.
- Scott, J. (2000). *Social Network Analysis: A Handbook* (2nd ed.). SAGE Publications.
- Scott, J. (2017). *Social network analysis* (4th ed.). Thousand Oaks, CA: Sage.
- Searle, W., & Ward, C. (1990). The prediction of psychological and sociocultural adjustment during cross-cultural transitions. *International Journal of Intercultural Relations*, *14*, 449–464.
- Selfhout, M., Burk, W., Branje, S., Denissen, J., van Aken, M., & Meeus, W. (2010). Emerging late adolescent friendship networks and Big Five personality traits: A social network approach. *Journal of Personality*, *78*(2), 509–538. doi:10.1111/j.1467-6494.2010.00625.x
- Simon, B., Reichert, F., & Grabow, O. (2013). When dual identity becomes a liability. *Psychological Science*, *24*(3), 251–257.
- Smith, L. R. (1999). Intercultural network theory: A cross-paradigmatic approach to acculturation. *International Journal of Intercultural Relations*, *23*(4), 629–658.
- Smith, L. R. (2005). The structural context of intercultural personhood: Identity re-formation. *International Journal of Communication*, *1 and 2*, 89–112.
- Smith, L. R. (2013). Female refugee networks: Rebuilding post-conflict identity. *International Journal of Intercultural Relations*, *37*(1), 11–27.

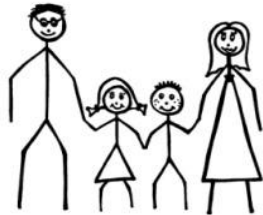
- Tanaka, T., Takai, J., Koyama, T., Fujihara, T., & Minami, H. (1997). Effects of social networks on cross-cultural adjustment. *Japanese Psychological Research*, 39(1), 12–24.
- Trimble, J. E. (2003). Introduction: Social change and acculturation. In K. Chun, P. B. Organista, & G. Marin (Eds.), *Acculturation: Advances in Theory, Measurement, and Applied Research* (pp. 3–13). Washington, DC: American Psychological Association.
- Tsai, J. L., Chentsova-Dutton, Y., & Wong, Y. (2002). Why and how we should study ethnic identity, acculturation, and cultural orientation. In G. C. Nagayama Hall & S. Okazaki (Eds.), *Asian American Psychology: The Science of Lives in Context* (pp. 41–65). Washington: American Psychological Association.
- Vacca, R., Solano, G., Lubbers, M. J., Molina, J. L., & McCarty, C. (2017). A personal network approach to the study of immigrant structural assimilation and transnationalism. *Social Networks*, in press. doi:10.1016/j.socnet.2016.08.007
- Van Oudenhoven, J. P., Ward, C., & Masgoret, A. M. (2006). Patterns of relations between immigrants and host societies. *International Journal of Intercultural Relations*, 30(6), 637–651. doi:10.1016/j.ijintrel.2006.09.001
- Veenstra, R., Dijkstra, J. K., Steglich, C., & Van Zalk, M. H. W. (2013). Network-behavior dynamics. *Journal of Research on Adolescence*, 23(3), 399–412. doi:10.1111/jora.12070
- Verkuyten, M., & Pouliasi, K. (2006). Biculturalism and group identification: The mediating role of identification in cultural frame switching. *Journal of Cross-Cultural Psychology*, 37(3), 312–326.
- Verkuyten, M., & Yildiz, A. A. (2007). National (dis)identification and ethnic and religious identity: A study among Turkish-Dutch Muslims. *Personality and Social Psychology Bulletin*, 33(10), 1448–1462.
- Vezzali, L., Turner, R., Capozza, D., & Trifiletti, E. (2017). Does intergroup contact predict personality? A longitudinal study on the bidirectional relationship between intergroup contact and personality traits. *European Journal of Social Psychology*. doi:10.1002/ejsp.2313
- Walker, M. H., & Lynn, F. B. (2013). The embedded self: A social networks approach to identity theory. *Social Psychology Quarterly*, 76(2), 151–179. doi:10.1177/0190272513482929
- Ward, C., & Kennedy, A. (1993). Where's the "culture" in cross-

- cultural transition? Comparative studies of sojourner adjustment. *Journal of Cross-Cultural Psychology*, 24(2), 221–249.
- Ward, C., & Kennedy, A. (1994). Acculturation strategies, psychological adjustment, and sociocultural competence during cross-cultural transitions. *International Journal of Intercultural Relations*, 18(3), 329–343.
- Wasserman, S., & Faust, K. (1994). *Social network analysis: Methods and applications*. Cambridge: Cambridge University Press.
- Wellman, B. (1983). Network Analysis: Some Basic Principles. *Sociological Theory*, 1, 155–200.
- Wilensky, U. (1999). NetLogo. Evanston, IL: Center for Connected Learning and Computer-Based Modeling, Northwestern University.
- Wood, P. (Ed.). (2010). *Intercultural cities: Towards a model for intercultural integration, Joint Action of the Council of Europe and the European Commission*. Strasbourg, France: Council of Europe.
- Wright, S. C., Aron, A., McLaughlin-Volpe, T., & Ropp, S. A. (1997). The extended contact effect: Knowledge of cross-group friendships and prejudice. *Journal of Personality and Social Psychology*, 73(1), 73–90.
- Yoon, E., Lee, R. M., & Goh, M. (2008). Acculturation, social connectedness, and subjective well-being. *Cultural Diversity and Ethnic Minority Psychology*, 14(3), 246–255.
- Zimmermann, J., & Neyer, F. J. (2013). Do we become a different person when hitting the road? Personality development of sojourners. *Journal of Personality and Social Psychology*, 105(3), 515–30.
- Zumbo, B. D., Gadermann, A. M., & Zeisser, C. (2007). Ordinal versions of coefficients alpha and theta for Likert rating scales. *Journal of Modern Applied Statistical Methods*, 6(1), 21–29. doi:10.1107/S0907444909031205

Appendix A1: Chapter 3

Figure 14. Show Card

Family



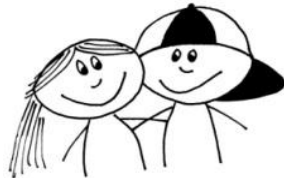
Love



Work or Education



Friendship



Neighborhood



Religion



Table 17. Uncorrected Correlation Matrix for Regression Variables

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
<i>Adjustment</i>																		
1 Psych	–																	
2 Socio	.43	–																
<i>Bicultural Identity</i>																		
3 BII	.30	.43	–															
<i>Demographics</i>																		
4 Sex	-.02	-.09	-.06	–														
5 Age	.02	-.07	.12	-.11	–													
6 Inc	.27	.31	<u>.18</u>	-.12	-.04	–												
7 Edu	.07	.01	.24	-.09	.30	<u>.22</u>	–											
8 Yr Sp	.08	.14	.12	-.01	.08	.26	.12	–										
<i>Cultural Identifications</i>																		
9 Cat	<u>.18</u>	.14	.35	-.01	.11	.16	.24	.00	–									
10 Sp	.06	.05	<u>.19</u>	-.07	.13	.08	.11	.07	.44	–								
11 Eth	.12	-.11	-.01	.02	-.02	-.04	.00	-.06	.03	.06	–							
<i>Tie Strength</i>																		
12 W Cat	<u>.18</u>	.23	.26	-.13	.13	.15	.24	.17	<u>.19</u>	.03	-.06	–						
13 W Sp	.07	.09	-.06	.05	.01	<u>.20</u>	-.01	.01	.02	<u>.21</u>	-.12	-.02	–					
14 S Eth	-.14	-.34	-.25	.06	.05	-.26	<u>-.20</u>	<u>-.22</u>	-.32	-.10	<u>.20</u>	<u>-.21</u>	-.06	–				

(continued)

Table 17 (continued). Uncorrected Correlation Matrix for Regression Variables

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
<i>Global Network Variables</i>																		
15 Div	<u>.21</u>	.35	.34	-.08	.03	.25	.24	.26	.26	.14	-.09	.44	.27	-.70	–			
16 Dens	.13	.06	-.06	.06	.04	.05	<i>-.16</i>	.04	-.03	-.03	.03	-.11	-.05	.16	-.26	–		
<i>Group-Based Network Variables</i>																		
17 CL	<u>-.21</u>	-.23	<i>-.15</i>	.13	-.12	-.13	<u>-.21</u>	.00	-.22	<i>-.14</i>	.24	-.36	-.08	.47	-.44	.16	–	
18 CL-C/S	.13	.23	<u>.19</u>	.01	.08	<u>.18</u>	-.09	.23	.16	.11	-.04	.06	.11	-.28	.32	.53	.05	–

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. *Global network variables:* 12 diversity; 13 density. *Group-based network variables:* 14 group size of coethnic locals; 15 intergroup connectedness of coethnic locals and Catalans/Spaniards. *Tie Strength:* 16 weak Catalan ties; 17 weak Spanish ties; 18 strong coethnic ties.

Italic correlations $p < .05$. Underlined correlations $p < .01$. **Bold** correlations $p < .001$.

Table 18. Corrected Correlation Matrix for Regression Variables

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
<i>Adjustment</i>																		
1 Psych	.82																	
2 Socio	.43	.84																
<i>Bicultural Identity</i>																		
3 BII	.30	.43	.75															
<i>Demographics</i>																		
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										
<i>Cultural Identifications</i>																		
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							
<i>Tie Strength</i>																		
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				

(continued)

Table 18 (continued). Corrected Correlation Matrix for Regression Variables

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
<i>Global Network Variables</i>																		
15 Div	<u>.21</u>	.35	.34	-.08	.03	.25	.24	.26	.26	.14	-.09	.44	.27	-.70	1			
16 Dens	.13	.06	-.06	.06	.04	.05	<i>-.16</i>	.04	-.03	-.03	.03	-.11	-.05	.16	-.26	1		
<i>Group-Based Network Variables</i>																		
17 CL	<u>-.21</u>	-.23	<i>-.15</i>	.13	-.12	-.13	<u>-.21</u>	.00	-.22	<i>-.14</i>	.24	-.36	-.08	.47	-.44	.16	1	
18 CL-C/S	.13	.23	<u>.19</u>	.01	.08	<u>.18</u>	-.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. *Global network variables:* 12 diversity; 13 density. *Group-based network variables:* 14 group size of coethnic locals; 15 intergroup connectedness of coethnic locals and Catalans/Spaniards. *Tie Strength:* 16 weak Catalan ties; 17 weak Spanish ties; 18 strong coethnic ties.

Italic correlations $p < .05$. Underlined correlations $p < .01$. **Bold** correlations $p < .001$.

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.

Table 19. Ethnic and Generational Mean Differences

Variable	Ethnicity					Generation			
	E ^a	M ^a	P ^a	R ^a	$\chi^2(3)$	1st ^b	1.5 ^c	2nd ^d	$\chi^2(2)$
Group Size									
Coethnic transnationals	.17 _{ab}	.10	.17 _a	.20 _b	12.7**	.19 _a	.13 _b	.04	20.0***
Coethnic locals	.42 _a	.42 _a	.38 _a	.31	15.0**	.37	.40	.40	1.8
Catalans/Spaniards	.21	.32 _a	.27 _a	.34 _a	12.8**	.27	.28	.36	3.8
Others	.20	.17	.17	.15	6.0	.16	.18	.20	.9
Intragroup Connectedness									
Coethnic transnationals	1.09 _{ac}	.63 _b	1.03 _{ab}	1.42 _c	11.5**	1.25 _a	.83 _b	.09	17.7***
Coethnic locals	2.49	2.57	2.10	2.11	7.2	2.21	2.57	2.44	5.6
Catalans/Spaniards	.86 _a	1.23 _{bc}	.95 _{ab}	1.60 _c	12.0**	1.14	1.09	1.48	2.2
Others	.67	.56	.64	.45	2.7	.51	.63	.92	4.0
Intergroup Connectedness									
Coethnic trans.-locals	1.84	1.29	1.34	2.15	7.7	1.78 _a	1.72 _a	.69	7.4*
Coethn. trans.-Cat./Sp.	.36 _a	.36 _a	.14 _a	.76	16.9***	.46	.30	.27	3.4
Coethnic trans.-Others	.50 _a	.52 _a	.66 _a	.91	9.5*	.75	.51	.27	4.8
Coethn. locals-Cat./Sp.	1.92 _a	2.42 _a	1.07	1.98 _a	20.6***	1.75	1.92	2.39	3.9
Coethnic locals-Others	2.20 _a	1.77 _a	1.16 _b	1.08 _b	20.0***	1.35	2.00 _a	1.90 _a	6.4*
Cat./Sp.-Others	1.15	1.15	1.05	1.23	.7	1.08	1.19	1.50	3.3

Note. The χ^2 is derived from the Kruskal-Wallis equality-of-populations rank test. Means with differing subscripts within rows are significantly different at the $p < .05$ based on Dunn Bonferroni's post-hoc paired comparison.

^aN = 54. ^bN = 145. ^cN = 50. ^dN = 21. E = Ecuadorians. M = Moroccans. P = Pakistani. R = Rumanians.

* $p < .05$. ** $p < .01$. *** $p < .001$.

Appendix A2: Chapter 4

Table 20. Descriptive Statistics and Correlations of Study Variables

	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
<i>Demographic Characteristics</i>																	
1 Gender	0.4	–	1														
2 Age	32.2	10.4	-.15	.99													
3 Edu	4.1	1.8	-.06	.26	.88												
4 Inc	2.6	1.4	-.05	-.04	.32	.79											
5 Years	11.1	6.2	-.10	.02	.13	.24	.62										
<i>Identity Management</i>																	
6 BII	2.6	0.8	-.11	.09	.29	.20	.11	.86									
<i>Personality</i>																	
7 E	3.7	1.5	-.14	.03	.21	.19	.17	.01	.69								
8 A	4.5	1.1	-.02	-.08	-.01	.08	.05	.14	-.12	.60							
9 C	4.7	1.2	-.12	.25	.07	.02	.02	.10	-.02	.20	.69						
10 ES	4.0	1.3	.09	.12	.03	-.02	-.00	.07	-.10	.32	.12	.67					
11 Op Ex	4.3	1.1	-.20	-.07	.14	.04	-.00	.21	.16	.02	.09	.08	.62				
<i>Class Size</i>																	
12 CT	0.15	0.16	-.01	.25	-.25	-.19	-.29	-.24	-.13	-.07	.08	.05	-.03	1			
13 CL	0.35	0.18	.10	-.12	-.28	-.16	.02	-.27	.01	-.11	-.09	-.11	-.15	-.25	1		
14 C/S	0.32	0.19	-.00	-.06	.31	.25	.14	.32	.10	.25	.01	.13	.11	-.50	-.49	1	
15 O	0.17	0.13	-.12	-.06	.25	.08	.13	.20	-.00	-.13	.01	-.10	.07	-.18	-.34	-.19	1

(continued)

Table 20 (continued). Descriptive Statistics and Correlations of Study Variables

	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
<i>Intragroup Connectedness</i>																	
16 CT	0.92	1.39	-.09	.32	-.10	-.08	<u>-.25</u>	-.09	-.04	.02	.11	.04	.03	.82	<u>-.23</u>	-.40	-.12
17 CL	2.08	1.48	-.02	-.04	<u>-.21</u>	-.08	.04	-.13	.07	.03	-.04	-.08	-.01	<u>-.20</u>	.67	<u>-.26</u>	<u>-.28</u>
18 C/S	1.37	1.21	-.03	-.02	.09	<u>.24</u>	<u>.21</u>	<u>.27</u>	.17	.17	.00	.12	.10	-.36	-.31	.69	-.15
19 O	0.59	0.69	-.14	-.08	.15	.13	.23	.04	.05	-.10	-.01	-.20	-.04	-.09	<u>-.24</u>	-.16	.72
<i>Intergroup Connectedness</i>																	
20 CT-CL	1.53	1.77	-.11	<u>.27</u>	-.14	-.02	-.11	-.05	.00	.10	.13	.08	.08	.51	-.05	<u>-.25</u>	-.22
21 CT-C/S	0.45	0.92	.02	.17	.08	.19	.05	<u>.26</u>	.10	.09	.18	.11	.07	.04	<u>-.25</u>	<u>.24</u>	-.05
22 CT-O	0.60	0.93	-.13	.23	.08	.17	-.06	-.06	.02	-.03	.08	-.01	.04	.32	-.11	-.19	.03
23 CL-C/S	1.80	1.86	-.07	.15	-.07	.08	<u>.27</u>	<u>.20</u>	.10	.04	.04	.07	.07	<u>-.26</u>	-.00	<u>.27</u>	-.07
24 CL-O	1.44	1.35	-.09	.04	-.05	-.00	.16	.05	-.05	-.11	-.10	-.10	-.01	-.11	.09	-.17	<u>.27</u>
25 C/S-O	1.25	1.22	-.05	-.05	.06	.16	.13	.11	<u>.26</u>	.00	.06	-.05	.09	<u>-.29</u>	-.23	<u>.28</u>	<u>.28</u>

Note. $N = 122$. *Demographic characteristics*: 1 gender; 2 age; 3 education; 4 income; 5 years in Spain. *Identity management*: 6 bicultural identity integration. *Personality*: 7 extraversion; 8 agreeableness; 9 conscientiousness; 10 emotional stability; 11 openness to experience. *Class size*: 12 coethnic transnationals; 13 coethnic locals; 14 Catalans/Spaniards; 15 Others. *Intragroup connectedness*: 16 coethnic transnationals; 17 coethnic locals; 18 Catalans/Spaniards; 19 Others. *Intergroup connectedness*: 20 coethnic transnationals and coethnic locals; 21 coethnic transnationals and Catalans/Spaniards; 22 coethnic transnationals and Others; 23 coethnic locals and Catalans/Spaniards; 24 coethnic locals and Others; 25 Catalans/Spaniards and Others.

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.

Italic correlations $p < .05$. Underlined correlations $p < .01$. **Bold** correlations $p < .001$.

(continued)

Table 20 (continued). Descriptive Statistics and Correlations of Study Variables

	16	17	18	19	20	21	22	23	24	25
<i>Intragroup Connectedness</i>										
16 CT	1									
17 CL	-.08	1								
18 C/S	<u>-.24</u>	.04	1							
19 O	-.07	-.11	-.06	1						
<i>Intergroup Connectedness</i>										
20 CT-CL	.68	.20	-.05	-.14	1					
21 CT-C/S	.11	-.06	.46	-.08	<u>.28</u>	1				
22 CT-O	.38	.02	-.08	.09	.36	.17	1			
23 CL-C/S	-.15	.38	.53	.01	.07	.38	-.04	1		
24 CL-O	-.04	.34	.00	.48	.06	-.02	.05	.46	1	
25 C/S-O	-.16	.02	.56	.33	-.07	.31	-.08	.45	<u>.28</u>	1

Note. $N = 122$. *Intragroup connectedness*: 16 coethnic transnationals; 17 coethnic locals; 18 Catalans/Spaniards; 19 Others. *Intergroup connectedness*: 20 coethnic transnationals and coethnic locals; 21 coethnic transnationals and Catalans/Spaniards; 22 coethnic transnationals and Others; 23 coethnic locals and Catalans/Spaniards; 24 coethnic locals and Others; 25 Catalans/Spaniards and Others.

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.

Italic correlations $p < .05$. Underlined correlations $p < .01$. **Bold** correlations $p < .001$.

Table 21. Mean Values of Network Variables for 95 to 100 Percentiles for Personality Traits and BII

<i>Variables</i>	Extraversion (<i>n</i> = 13)	Agreeableness (<i>n</i> = 12)	Conscientiousness (<i>n</i> = 34)	Emotional Stability (<i>n</i> = 13)	Openness (<i>n</i> = 15)	BII (<i>n</i> = 8)
<i>Class Size</i>						
CT	0.095	0.243	0.182	0.209	0.141	0.110
CL	0.394	0.357	0.355	0.326	0.307	0.290
C/S	0.332	0.307	0.300	0.351	0.405	0.420
O	0.178	0.093	0.162	0.113	0.147	0.180
<i>Intragroup Connectedness</i>						
CT	0.769	1.946	1.090	1.346	0.713	0.888
CL	2.501	2.082	1.996	1.634	2.135	1.587
C/S	1.696	1.372	1.297	1.362	2.007	1.711
O	0.739	0.322	0.555	0.141	0.456	0.470
<i>Intergroup Connectedness</i>						
CT-CL	1.646	2.958	1.946	1.908	1.577	0.922
CT-C/S	0.711	0.881	0.804	0.792	0.769	1.061
CT-O	0.645	0.592	0.842	0.418	0.958	0.262
CL-C/S	2.077	1.292	1.841	2.101	2.162	1.891
CL-O	1.748	1.062	1.177	0.844	1.439	1.139
C/S-O	1.837	0.883	1.113	0.829	1.849	1.309

Note. CT = coethnic transnationals; CL = coethnic locals; C/S = Catalans/Spaniards; O = Others. BII = bicultural identity integration.

Table 22. Mean Values of Network Variables for 50 Percentile of Personality Traits and BII

<i>Variables</i>	Extraversion (<i>n</i> = 11)	Agreeableness (<i>n</i> = 15)	Conscientiousness (<i>n</i> = 18)	Emotional Stability (<i>n</i> = 14)	Openness (<i>n</i> = 23)	BII (<i>n</i> = 4)
<i>Class Size</i>						
CT	0.069	0.152	0.153	0.106	0.084	0.160
CL	0.396	0.355	0.362	0.266	0.327	0.300
C/S	0.342	0.328	0.340	0.417	0.395	0.320
O	0.193	0.165	0.144	0.211	0.197	0.220
<i>Intragroup Connectedness</i>						
CT	0.473	0.741	1.079	0.690	0.550	0.318
CL	1.919	2.089	2.305	1.898	1.906	1.653
C/S	1.466	1.371	1.290	2.182	1.422	1.367
O	0.494	0.574	0.329	0.834	0.645	1.275
<i>Intergroup Connectedness</i>						
CT-CL	0.815	1.094	1.557	1.405	1.197	1.497
CT-C/S	0.229	0.262	0.205	0.418	0.479	0
CT-O	0.714	0.347	0.441	0.843	0.589	0
CL-C/S	1.043	1.948	1.944	2.290	2.217	1.306
CL-O	1.185	1.899	0.9107	1.707	1.676	1.698
C/S-O	0.923	1.233	1.108	1.605	1.114	0.968

Note. CT = coethnic transnationals; CL = coethnic locals; C/S = Catalans/Spaniards; O = Others. BII = bicultural identity integration.

Table 23. Mean Values of Network Variables for 0-5 Percentiles of Personality Traits and BII

<i>Variables</i>	Extraversion (<i>n</i> = 11)	Agreeableness (<i>n</i> = 7)	Conscientiousness (<i>n</i> = 9)	Emotional Stability (<i>n</i> = 8)	Openness (<i>n</i> = 12)	BII (<i>n</i> = 7)
<i>Class Size</i>						
CT	0.156	0.280	0.100	0.187	0.193	0.274
CL	0.324	0.349	0.380	0.280	0.367	0.360
C/S	0.331	0.217	0.315	0.316	0.270	0.280
O	0.189	0.154	0.205	0.218	0.170	0.086
<i>Intragroup Connectedness</i>						
CT	0.909	1.596	0.679	1.231	1.047	1.007
CL	1.608	1.574	2.158	1.481	2.115	1.711
C/S	0.952	0.553	1.550	1.037	0.819	1.082
O	0.740	0.522	0.814	0.814	0.813	0.332
<i>Intergroup Connectedness</i>						
CT-CL	1.592	1.602	0.862	1.918	1.499	1.106
CT-C/S	0.304	0.297	0.352	0.265	0.108	0.317
CT-O	0.708	0.814	0.636	0.353	0.689	0.447
CL-C/S	1.418	0.797	2.350	1.659	0.788	1.038
CL-O	1.899	0.733	2.090	1.213	1.321	0.398
C/S-O	0.622	0.578	1.749	1.245	0.525	1.003

Note. CT = coethnic transnationals; CL = coethnic locals; C/S = Catalans/Spaniards; O = Others. BII = bicultural identity integration.

Table 24. Regression Results for Global Network Variables

<i>Predictor</i>	Percentage of Coethnics	Cultural Diversity ^a	Linguistic Diversity ^a	Density ^b
<i>Demographic Characteristics</i>				
Gender	0.01	0.01	0.11	0.04
Age	0.20*	-0.24*	-0.06	0.42***
Education	-0.38***	0.33**	0.41***	-0.46***
Income	0.02	-0.10	0.07	0.17 [†]
Years in Spain	-0.18*	0.15 [†]	0.16 [†]	0.14 [†]
<i>Identity Management</i>				
BII	-0.26**	0.30**	-0.12	0.01
<i>Personality</i>				
E	0.02	0.03	-0.12	0.12
A	-0.10	-0.03	0.13	0.07
C	0.08	-0.05	0.03	-0.04
ES	-0.03	0.07	-0.05	-0.08
O	-0.08	0.05	0.04	0.21*
<i>R</i> ²	0.38	0.30	0.22	0.25

Note. *N* = 122. Standardized beta coefficients. Results are corrected for measurement error.

CT = coethnic transnationals; CL = coethnic locals; C/S = Catalans/Spaniards; O = Others. BII = bicultural identity integration. E = extraversion, A = agreeableness, C = conscientiousness, ES = emotional stability, O = openness to experience.

^a Diversity is defined as the probability that two randomly selected alters are from different (e.g., cultural or linguistic) groups. ^b Density is defined as the ratio of the number of ties between alters and the number of possible ties (Wasserman & Faust, 1994).

[†] *p* < .10. * *p* < .05. ** *p* < .01. *** *p* < .001.