

Mainstream Social Participation Mediates the Relation between Mainstream Cultural  
Orientation and Language Outcomes

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## General Abstract

### Mainstream Social Participation Mediates the Relation between Mainstream Cultural Orientation and Language Outcomes

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Competence in the mainstream language (L2) plays a critical role in migrants' cultural adaptation to a new society and is closely tied to psychosocial adjustment. A substantial body of work on acculturation and Second Language Acquisition (SLA) has shown that migrants with a more positive outlook on the mainstream cultural group report more favourable language outcomes, broadly conceptualized here as “linguistic adjustment”. However, the mechanisms underlying this outlook-language outcomes link have not been fully explored. Targeting this gap, the present research shows that migrants' social participation in the mainstream society (interpersonal interactions and relationships) mediates the relation between cultural orientation toward the mainstream cultural group and L2 outcomes. Five manuscripts, reporting on six studies of multicultural first-generation immigrant students to Montreal, examine different aspects of this mediation model.

First, *Manuscript 1* discusses in detail the methodological issues facing acculturation research and that informed this dissertation. Second, two manuscripts provide empirical support for both quantitative and qualitative aspects of the relation between mainstream cultural orientation and social participation. *Manuscript 2* reports on two longitudinal studies showing that more positive baseline mainstream cultural orientation prospectively predicts greater social participation. *Manuscript 3* reports on two studies using a daily diary approach to show that moment-to-moment cultural affiliation during social interactions is related to characteristics of the local context and to mainstream cultural

orientation. Third, *Manuscript 4* shows that a more interconnected L2 social network, another aspect of mainstream social participation, is associated with lesser communication-related acculturative stress. Finally, *Manuscript 5* uses a path analysis and provides evidence supporting the overall mediation model guiding this research. Together, these studies make a strong case for the role of social participation as a mechanism underlying the relation between mainstream cultural orientation and language outcomes.

In parallel, this dissertation aims to support two arguments: (1) methodological issues hinder progress in acculturation research and therefore it is essential to go beyond cross-sectional self-report attitudinal scales, and (2) integrating acculturation research in cross-cultural psychology and research on SLA in applied linguistics – two largely separate research strands – would greatly benefit our understanding of migrants' cross-cultural adaptation processes.

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## Contribution of Authors

Marina Doucerain led the study design and data collection for the studies in *Manuscripts 4* and *5*, and participated in the study design and in all three years of data collection of the larger longitudinal project from which the data in Study 1 of *Manuscript 2* were drawn. Ms. Doucerain conceptualized and wrote *Manuscript 1* – a theoretical manuscript. Furthermore, Ms. Doucerain developed the research questions; designed, performed, and interpreted the statistical analyses; and wrote and edited all chapters included in the current thesis. Dr. Andrew Ryder was the co-principal investigator, along with Dr. Catherine Amiot, for the project from which the data in Study 1 of *Manuscript 2* were drawn and he was the principal investigator, with the help of Dr. Jessica Dere, for the project from which the data in *Manuscript 3* were drawn. Dr. Ryder also provided commentary on *Manuscripts 1, 2, 3, and 4*. Dr. Jessica Dere provided commentary on *Manuscript 3*. Dr. Jean-Philippe Gouin was the principal investigator for the project from which the data in Study 2 of *Manuscript 2* were drawn. Dr. Norman Segalowitz provided commentary on *Manuscripts 1* and *4*. Dr. Sonya Deschênes helped with data collection for the project from which the data in Study 2 of *Manuscript 2* were drawn and provided commentary on that manuscript. Ms. Raheleh Shiri Varnaankhaasti helped with collecting the data included in *Manuscript 4* and provided commentary on that manuscript.

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## General Introduction

Immigration represents one of the most significant demographic changes facing many industrialized countries (Policy Horizons Canada, 2011). As a case in point, twenty percent of the Canadian population is foreign-born. Migrants'<sup>1</sup> difficulties in adapting culturally to the new mainstream society – a change process referred to as “acculturation” – are associated with devastating personal consequences, including economic difficulties (Dustmann & Fabbri, 2003), and negative physical and mental health outcomes (Berry, 1997). A better understanding of the mechanisms underlying migrants' acculturation to the mainstream cultural context is a pressing concern for receiving societies.

Among the many changes that migrants experience upon settling into a new society, language is particularly critical. Indeed, competence in the mainstream language (L2<sup>2</sup>) is a key predictor of economic success, with greater proficiency predicting higher earnings and greater employment probability (Chiswick & Miller, 1999; Dustmann & Fabbri, 2003). Similarly, less developed language skills are associated with poorer psychological adjustment (Kang, 2006) and more pronounced decreases in migrants' physical health over time (Ng, Pottie, & Spitzer, 2011). It is therefore unsurprising that L2 outcomes, encompassing both competence (e.g., ability to use the language) and affective elements

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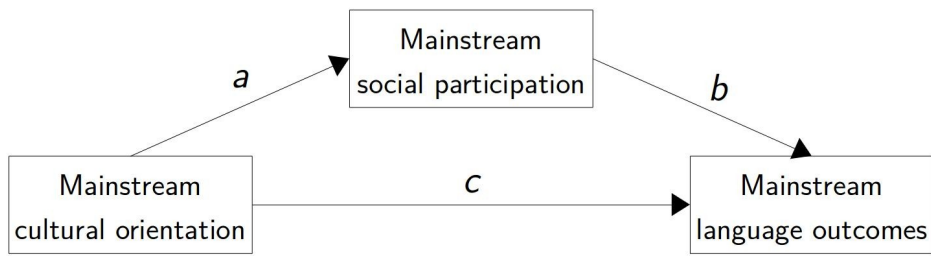
1 In keeping with customary usage in cross-cultural psychology, the term “migrants” is used here to refer to people settling in a new society for an extended period of time, irrespective of their legal status in the receiving country or long-term settlement goals. As such, this broad category includes not only landed immigrants, but also refugees and sojourners such as international students.

2 Hereafter, “L2” and “mainstream language” are used interchangeably for the sake of convenience, although for many migrants this language may represent a third or fourth language. Both refer to the language predominantly used by the mainstream (and usually culturally dominant) ethnolinguistic group, such as for example English in the United States or English and French in Canada. Similarly, the terms “mainstream cultural group”, “L2 ethnolinguistic group”, or “mainstream ethnolinguistic group” are also used interchangeably. They refer to the many cases where members of the mainstream cultural group consistently share a primary native language, such that speech community and cultural community largely overlap. Examples include Francophone Canadians in Quebec or Japanese speakers in Japan. It is understood, however, that these terms may not adequately characterize more complex cases of cultural hybridity and multilingualism.

(e.g., stress resulting from chronic communication difficulties), are routinely conceptualized as a marker of migrants' acculturation and social integration in the mainstream society (Hunt, Schneider, & Comer, 2004; Remennick, 2004).

A number of studies in acculturation and in second language acquisition (SLA) research have established that migrants with a more positive outlook on the mainstream cultural group report more favourable adjustment (Nguyen & Benet-Martínez, 2013) and language outcomes (Trofimovich & Turuševa, 2015), respectively. However, the mechanisms underlying this relation between migrants' mainstream cultural orientation and adjustment/language outcomes are still relatively unexplored. Researchers have suggested that migrants acquire knowledge of the mainstream cultural tradition through social participation in the mainstream culture (Wan, Dach-Gruschow, No, & Hong, 2010) and that the process of cross-cultural adaptation thus occurs “in and through communication” in the new cultural environment (Kim, 2001, p.36). In a related vein, research in applied linguistics has shown consistently that social contact with members of the L2 ethnolinguistic group is positively associated with L2 learning outcomes (e.g., Noels & Clément, 1996), a core aspect of cross-cultural adaptation.

The overarching goal of the present work is therefore to examine the role of migrants' social participation in the mainstream culture (here, social interactions and social relationships with members of the mainstream cultural group) as a key mechanism underlying the relation between migrants' orientation toward the mainstream cultural group and mainstream language outcomes. Figure 1 illustrates the conceptual model guiding this research. Although the present work focuses specifically on linguistic aspects of adjustment-relevant outcomes, social participation in the mainstream culture likely represents a core mechanism of acculturation processes in general, even beyond language outcomes.



*Figure 1.* Conceptual mediation model guiding the dissertation.

In addition to the main goal of providing empirical evidence for the role of social participation in acculturation, this dissertation aims at supporting the following two arguments pertaining to research on migrants' cultural adaptation. First, issues regarding current methodological approaches hinder progress in acculturation research. For the field to move forward, it is essential to go beyond cross-sectional self-report attitudinal scales. Second, integrating acculturation research from cross-cultural psychology and research on SLA in applied linguistics would greatly benefit our understanding of migrants' cross-cultural adaptation processes. Unfortunately, although both fields emphasize complementary facets of a similar phenomenon, these two research strands have remained largely separate (Rudmin, 2009).

In order to ground the plausibility of the proposed conceptual model, the next sections will provide a review of the literature on both acculturation and SLA. Instead of devoting separate sections to each field, relevant acculturation and SLA findings will be presented in parallel. This approach will underscore that both research strands are complementary and almost symmetrical in their emphasis. The literature review will also discuss important broader conceptual and methodological considerations relevant to research on acculturation and SLA and that informed the present research. A brief overview of the subsequent chapters follows this review.

## **Literature Review**

### **Adjustment and Language Outcomes**

Psychological acculturation, the phenomenon at the heart of the present work, refers to the change processes a person experiences as a result of having extended contact with a new cultural environment (Graves, 1967; Sam & Berry, 2010), as in the case of migrants. These changes are typically comprehensive and lead to a significant reconfiguration of migrants' lives. They include, among others, acquiring a new language, understanding new

cultural traditions, learning new social norms, forming new social relationships, and creating/renegotiating social identities. Stemming from a stress and coping framework (Lazarus & Folkman, 1984), the majority of research on psychological acculturation has examined adjustment-related consequences of acculturative changes. What constitutes “adjustment” can be defined and measured in many different ways, but acculturation researchers typically focus on two main domains: psychological and sociocultural adjustment (Ward & Kennedy, 1993, 1999). The former refers to psychological and emotional well-being and includes constructs such as life satisfaction or (low) stress, whereas the latter refers to behavioural competence and includes for example career success and social skills.

In the conceptualization of language outcomes adopted for the present research, language outcomes also broadly reflect these two types of adjustment. Variables such as L2 proficiency or accent reflect a speaker's behavioural competence, whereas language anxiety or stress arising from chronic communication difficulties in the L2 are more indicative of a migrant's emotional adjustment. Thus, language outcomes are conceptualized here in terms of “linguistic adjustment”: a migrant's subjective sense of being competent and comfortable using the mainstream language. As noted earlier, L2 outcomes are closely tied to other indicators of sociocultural and psychological adjustment, such as economic success (Chiswick & Miller, 1999; Dustmann & Fabbri, 2003) and psychological well-being (Kang, 2006) respectively, thus highlighting their importance in migrants' acculturation processes.

In the context of SLA, most research has focused on language learning in formal language classrooms. As a result, there has been surprisingly little work conducted on migrants' naturalistic L2 learning (Norton, 2013), i.e., in sociocultural contexts such as “on the job” or “on the street.” Possibly as a result of this general emphasis on classroom instruction, language outcomes are often not conceived in terms of “linguistic adjustment.”



Nevertheless, amid a wide variety of outcomes, including for example vocabulary size, grammaticality, or accent, the concept of L2 self-confidence (Clément, 1980) is consistent with the conceptualization of language outcomes adopted here. Indeed, L2 self-confidence includes both cognitive and affective aspects and refers to a combination of a person's self-assessment of L2 competence and a lack of anxiety when using the language. Noels and colleagues (Noels, Pon, & Clément, 1996) found that English self-confidence was positively related to psychological adjustment among Chinese immigrants to Canada, results that are consistent with studies mentioned earlier and documenting a link between language outcomes and psychosocial adjustment. Thus, language outcomes, broadly construed here in “linguistic adjustment” terms, have important implications for other aspects of migrants' adjustment.

### **Cultural Orientation and Adjustment and Language Outcomes**

**“Self-positioning” variables.** In the prediction of adjustment outcomes, the majority of acculturation research has emphasized a cluster of explanatory variables that all partake of a migrant's positioning of the self with respect to the cultures relevant to her/him (typically the mainstream culture and the migrants' heritage culture). Within this cluster, acculturation strategies/attitudes (Berry, 1980, 1997), cultural orientations (Flannery, Reise, & Yu, 2001; Ryder, Alden, & Paulhus, 2000), ethnic identity (Phinney, 1992), and cultural identity (Benet-Martínez & Haritatos, 2005) are the most prevalent. Unfortunately, although these variables are non-synonymous and reflect a variety of conceptual approaches, they are often used interchangeably in acculturation research, which can easily lead to confusion and confounding results (Liebkind, 2001; Snauwaert, Soenens, Vanbeselaere, & Boen, 2003).

As a result of its decade-old “social turn” (Block, 2003; Firth & Wagner, 2007) research in SLA has emphasized similar explanatory variables to account for individual

differences in L2 learning outcomes. In line with the view that second language learning is socially mediated and closely tied to its sociocultural context (Lantolf, 2000; Pavlenko & Blackledge, 2004), studies have investigated the link between L2 learning outcomes and variables such as identification with (Trofimovich & Turuševa, 2015), attitudes toward (Masgoret & Gardner, 2003), motivation for engagement in (Masgoret & Gardner, 2003), and orientation toward (Jiang, Green, Henley, & Masten, 2009) the L2 ethnolinguistic group.

Among these “self-positioning” variables used in acculturation or SLA research, the present work focuses on migrants' cultural orientation toward the mainstream culture, defined here as the motivation for engagement in the mainstream cultural group and appreciation of the mainstream cultural tradition. The mainstream cultural orientation is conceptually closer to mainstream language outcomes and social participation than its heritage counterpart, which is why the present work does not concentrate on the heritage orientation. In addition, cultural orientations include both motivational, attitudinal, and identity-related elements, thus providing a good coverage of the “self positioning” variables commonly used. By contrast, typically conceptualized as a form of social identity, ethnic and cultural identity both pertain to a person's self-categorization in, and psychological attachment to an ethnic/cultural group (Tajfel, 1981). Acculturation strategies/attitudes are also broader in scope than ethnic/cultural identity, but they adopt a typological rather than dimensional approach and consider mainstream and heritage components jointly, which interferes with the present goal of focusing primarily on migrants' self-positioning with respect to the mainstream culture.

**The cultural orientation-outcomes link (*path c of Figure 1*).** Overall, the extant research on acculturation has shown that a positive mainstream cultural orientation is associated with a range of positive adjustment outcomes, both in sociocultural and

psychological domains. For instance, Ryder and colleagues (Ryder et al., 2000) found that first- and second-generation Chinese-Canadians with a more positive mainstream orientation reported less depression, fewer somatic symptoms, less symptom distress, and less social and academic maladjustment. Importantly, a recent meta-analysis including 64 carefully selected studies showed a positive relation between mainstream cultural orientation and adjustment in general (Nguyen & Benet-Martínez, 2013).

Similarly in terms of language outcomes, a more positive cultural orientation toward the mainstream culture was related to better oral proficiency in English among Chinese migrant students to the US (Jiang et al., 2009). As another example, Jia and colleagues (Jia, Gottardo, Koh, Chen, & Pasquarella, 2014) found that first-generation Chinese-Canadian immigrant adolescents with a more positive cultural orientation toward the Canadian culture demonstrated greater English literacy skills. In a related vein, although focusing on ethnolinguistic identity rather than on mainstream cultural orientation, a number of studies have shown that stronger identification with the L2 ethnolinguistic group was associated with better L2 competence outcomes in a wide variety of contexts (Coupland, Bishop, Williams, Evans, & Garrett, 2005; Gatbonton & Trofimovich, 2008; Gatbonton, Trofimovich, & Segalowitz, 2011; Henning-Lindblom & Liebkind, 2007; Kang & Kim, 2012; Polat & Schallert, 2003). In the affective domain, Chinese American biculturals with greater bicultural identity integration, i.e., the perception of little distance and conflict between one's heritage and mainstream cultural identities, reported less stress arising from difficulties in L2 communication (Benet-Martínez & Haritatos, 2005). Taken together, these results suggest that having a positive outlook on the mainstream culture is beneficial for adjustment-relevant variables, including language outcomes, thus supporting the likelihood of *path c* in Figure 1.

### **Limitations and Critiques of Acculturation Research**

Over the last decade, researchers have criticized research on acculturation in general and on cultural orientations specifically on a number of fronts. Several of these critiques are quite relevant for the link between mainstream cultural orientation and adjustment/language outcomes documented above, and informed the present research. They are briefly reviewed below and discussed in greater detail in *Manuscript 1*.

In general, critics of acculturation research have argued that there is considerable inconsistency in how acculturation is conceptualized and measured, and that this conceptual and methodological murkiness has led to inconsistent results regarding the relation between acculturation and adjustment (Alegria, 2009; Cabassa, 2003; Hunt et al., 2004; Salant & Lauderdale, 2003). Further, researchers often use migrants' score on a cultural orientation scale as a single index of the entire acculturation process, although the process of adapting to a new cultural environment is dynamic (Lechuga, 2008), contextually dependent (Alegria, 2009; Lopez-Class, Castro, & Ramirez, 2011) and domain specific (Arends-Tóth & van de Vijver, 2004). As a result, acculturation is often treated in a “trait-like” manner. Similarly, even though acculturation is by nature a process of change over time, longitudinal studies of acculturation are scarce (Ryder & Dere, 2010). In short, these critiques put forward the idea that research on acculturation is hampered by almost exclusive reliance on cross-sectional self-report attitudinal scales. In other words, innovative methods and longitudinal designs are necessary to characterize the complexity and process nature of acculturation. The present research takes a step toward addressing these issues: two studies employed a longitudinal design, and three studies used innovative methods beyond self-report attitudinal scales.

A second main critique concerns cultural orientations more specifically. Boski (2008) has argued that “preferences are not competences” (p. 144) and that the relation between cultural orientations and actual behaviours is unknown, a critique that is still relevant

today. In other words, cultural orientations could represent general preferences not realized in migrants' daily lives. In a related vein, although many studies have focused on the relation between cultural orientations and adjustment, there is a dearth of research on explanatory mechanisms (Nguyen & Benet-Martínez, 2013) underlying this relation. How cultural orientations influence acculturation processes and adjustment, including language outcomes, is an open question. The present research targets this question directly by focusing on the role of social participation in the mainstream cultural group as such a mechanism.

### **Mainstream Social Participation as a Mechanism**

The overarching goal of this dissertation is to provide empirical support for the role of social participation in the mainstream cultural group, conceptualized here as migrants' social relationships with members of the mainstream cultural group and social interactions within that group, as a mediator of the relation between migrants' mainstream cultural orientation and mainstream language outcomes. The main hypothesis, illustrated in Figure 1, is that migrants with a more positive outlook on the mainstream cultural context will interact and form more social relationships with members of the mainstream group, which will in turn be associated with more proficiency and comfort using the mainstream language. This dissertation focuses on the role of social participation in fostering language outcomes, but social participation is likely to represent an important mechanism of acculturative changes in general, even beyond language aspects.

The idea that engaging in social interactions and activities in the mainstream culture facilitates adaptation to that context may seem so intuitive that the lack of empirical attention to this idea in acculturation research is surprising. Most acculturation studies use number of years since migration as a covariate, but they typically don't examine mainstream social participation explicitly and directly. Conceptually however, the role of

social participation is reasonable. Indeed, to a large extent, acculturation involves the learning of a new cultural meaning system (Rudmin, 2009). As such, acculturation can be subsumed under the more general process of cultural transmission – i.e., the process by which people learn and pass on cultural information – which has been described generically as “social learning” (Kashima, 2008). Importantly, social psychological accounts of cultural transmission stress the centrality of everyday social interactions as the micro-process underlying the transmission of cultural information (Kashima, 2014). In line with this view, some researchers have suggested that migrants' acquire knowledge of the mainstream cultural tradition through social participation in the mainstream group (Wan et al., 2010) and that the process of cross-cultural adaptation occurs through communication in the new cultural environment (Kim, 2001).

In contrast, the role of social contact in L2 learning is much more prevalent in SLA research, with many studies documenting its importance. As a matter of fact, researchers have directly suggested that a person's social participation in the L2 ethnolinguistic group may mediate the relation between identity and L2 learning outcomes (Segalowitz, Gatbonton, & Trofimovich, 2009; Trofimovich & Turuševa, 2015). Although little work has examined this proposal directly, a number of empirical studies on acculturation in cross-cultural psychology and on SLA in applied linguistics can be brought to bear on individual components of the proposed conceptual mediation model (namely, *paths a* and *b* in Figure 1).

### **Mainstream Cultural Orientation and Social Participation (*path a*)**

Mainstream cultural orientation reflects to some degree individual differences in migrants' openness toward intercultural contact. As such, it has a strong motivational component and are likely to “shape the social niche” (Segalowitz et al., 2009, p.174) in which migrants live. For example, a migrant with a positive mainstream cultural

orientation might decide to do his groceries in a mainstream rather than an ethnic supermarket, or choose an apartment outside of an ethnic enclave. This aggregation of small decisions increases the probability of daily interaction with members of the mainstream group. Supporting this idea, in a longitudinal study of ethnic German immigrant adolescents, Michel and colleagues (Michel, Titzmann, & Silbereisen, 2012) found that a more positive German cultural orientation prospectively predicted greater use of German at later time points.

Moreover, in addition to having an impact on the quantity of migrants' mainstream social contact, cultural orientations may influence how specific instances of social contact are experienced in the moment, i.e., qualitative aspects of mainstream social interactions. For example, a migrant with a positive mainstream cultural orientation may be more motivated to work on establishing a common ground with his interlocutor in spite of difficulties in cross-cultural communication, or he may experience such cross-cultural encounters more positively than someone with a less positive cultural orientation. An experience sampling study of Chinese-Americans (Yip, 2005) provides some evidence for the idea that cultural orientations influence the experience of moment-to-moment social contact, albeit indirectly as the study focused on the heritage dimension. Yip found that Chinese ethnicity was likely to be salient during interactions with family members, and even more so for participants for whom Chinese ethnicity was central in general, ethnic centrality being conceptually close to cultural orientations.

In summary, mainstream cultural orientation plausibly influences mainstream social participation at different levels, which also represent different time frames. At the macro-level, the mainstream cultural orientation likely contributes to shaping migrants' local ecology and thus affects how much migrants socially participate in the mainstream culture. This quantitative link is the focus of *Manuscript 2*. At the micro-level, the mainstream

cultural orientation likely influences the moment-to-moment subjective experience of mainstream social interactions. *Manuscript 3* investigates this more qualitative aspect of the relation.

### **Mainstream Social Participation and Language Outcomes (*path b*)**

As mentioned earlier, research examining the role of mainstream social participation in acculturative changes is scarce, with some notable exceptions. For example, De Leersnyder and colleagues (De Leersnyder, Mesquita, & Kim, 2011) found that migrants who reported greater social contact with members of the mainstream cultural group showed greater emotional fit with the mainstream culture: i.e., the extent to which their personal pattern of emotional response in daily situations resembles the typical mainstream pattern. Similarly, the personality profile of Japanese Americans who reported greater participation in the American culture resembled the US personality norm more than participants who reported less US cultural engagement (Güngör, Bornstein, De Leersnyder, Cote, Ceulemans, & Mesquita, 2013). In terms of adjustment, international students with more numerous social ties with members of the mainstream cultural group reported greater psychological adjustment (Hendrickson, Rosen, & Aune, 2011; Kashima & Loh, 2005). In contrast to the paucity of research on social participation in acculturation, a wealth of studies in the SLA literature have shown that various L2 learning outcomes are positively associated with more frequent social contact with members of the L2 ethnolinguistic group (e.g., Isabelli-García, 2006; Lybeck, 2002; Noels and Clément, 1996; Noels et al., 1996) and more frequent use of the L2 (e.g., Clément, Baker, Josephson, & Noels, 2005; Dewey, Bown, & Eggett, 2012; Hernández, 2010).

In summary, greater social participation in the mainstream culture, be it by interacting more often with members of the mainstream group or by forming more social relationships within that group, seems to be related to favourable L2 outcomes, and to



positive adjustment indicators more generally. *Manuscript 4* examines this relation between mainstream social participation and language outcomes.

### **Mainstream Social Participation: A Multifaceted Construct**

Given its centrality in this dissertation, the construct of “social participation” demands closer examination. For the present purposes, mainstream social participation is construed as migrants' social interactions and social relationships with members of the mainstream cultural group. This conceptualization emphasizes migrants' active engagement in interpersonal activities, i.e., activities that involve at least one interlocutor. As such, it is different from language exposure where researchers may, for example, measure whether people listen to the radio, watch television, or read the newspaper mostly in their L1 or mostly in their L2 (e.g., Clément et al., 2005).

Even among conceptualizations of social participation that are consistent with the one adopted here, operationalisations and measures are highly heterogeneous. Focusing on the “frequency of L2 contact” represents a fairly typical approach in SLA research. For example, participants may be asked to evaluate how frequently they are in contact with members on the mainstream group using a rating scale ranging from “not frequently at all” to “extremely frequently” (e.g., Noels et al., 1996). A problem with that approach is that it confounds two interrelated yet distinct aspects of social participation: the frequency of social interactions, or quantity of mainstream language use; and social relationships with members of the mainstream group. As a case in point, the example above does not differentiate between a migrant greeting the bus driver every morning from a migrant having long conversations with a mainstream colleague during every lunch break, two situations that may have very different implications for L2 learning.

Among the studies focusing specifically on social ties and/or language use, operationalisations also show considerable variability. At one end of the range of language

use measures, researchers may simply ask participants to rate their frequency of language use on a scale ranging from “I speak my L1 all the time” to “I speak my L2 all the time” (e.g., De Leersnyder et al., 2011). At the other end of the range, participants may fill out a language log everyday for several days, where they enter the number of minutes of L2 usage during various daily activities such as talking to friends, commuting, eating meals, etc. (e.g., Martinsen, Baker, Dewey, Bown, & Johnson, 2010). Such logs then allow researchers not only to create aggregate L2 use measures, but also potentially to examine day-to-day variability in patterns of social participation and then to link this variability to characteristics of the day.

Similar heterogeneity exists for characterizing social ties, with the simplest measures asking participants to rate the cultural background of people with whom they usually associate from “Mostly mainstream cultural background” to “Mostly heritage cultural background”, as in the commonly used Suinn-Lew Asian Self Identity Acculturation scale (SL-ASIA; Suinn, Ahuna, & Khoo, 1992). Researchers assessing more specific types of social ties have typically focused on friendships in the mainstream culture, especially in the context of international students' acculturation or study-abroad language programs (e.g., Dewey et al., 2012, Hendrickson et al., 2011; Isabelli-García, 2006; Kashima & Loh, 2006). Such studies typically examine the proportion of participants' social network that comprises mainstream social ties and the strength of these social ties. Such measures adequately characterize the quantity and quality of mainstream social ties, but they unfortunately do not characterize the structure of these ties. Yet, social network theory emphasizes that people are embedded in webs of social relationships (Borgatti, Mehra, Brass, & Labianca, 2009) and that the *structure* of these relationships matters. In spite of related arguments that social networks are ideally suited to study sociolinguistic phenomena and acculturation processes (Milroy, 1987; Smith, 1999), this approach has

received surprisingly little empirical attention either in SLA or in acculturation research (Gallagher, 2012).

In summary, mainstream social participation is conceptualized here as migrants' social interactions and social relationships with members of the mainstream cultural group. A brief examination of the studies investigating social participation reveals substantial heterogeneity in how this construct is measured. This heterogeneity highlights the multifaceted nature of social participation and the need to unpack the different ways in which migrants' socially engage with the mainstream culture. Characterizing moment-to-moment variability and the structure of social ties are particularly promising approaches to do so. These ideas informed the present research.

### **The Present Research**

The main goal of this dissertation is to provide empirical evidence of the role of mainstream social participation as a mechanism underlying the relation between mainstream cultural orientation and mainstream language outcomes, where language outcomes include both competence and affective aspects. The above review supports the plausibility of the conceptual model guiding this study and highlights important additional considerations that informed this research. First, it underscored the symmetries between research on SLA and on acculturation. Both fields differ in their main outcome – L2 learning for SLA, adjustment for acculturation – but many of the explanatory constructs and theoretical frameworks are largely consistent across the two fields. Even outcomes overlap to an appreciable degree, with the current conceptualization of language outcomes in adjustment terms being relevant to both SLA and acculturation researchers. Thus, it is important to integrate these two strands of research that have unfortunately remained largely separate. This dissertation contributes to a small body of work (e.g., Gallagher, 2012; Noels et al., 1996) aimed at fostering such integration.

Second, the centrality of methodological considerations was evident in the above review. Many of the critiques levied at acculturation research pertain to methods. In parallel, the multifaceted nature of social participation and the existing heterogeneity in its measurement both support using methods that can adequately characterize various facets of social participation. Accordingly, methodological concerns played an important role in guiding the present research. While some aspects of the studies described in later sections adhered to standard methodological practices, most studies also included innovative methods and designs in order to address some of the concerns identified in the literature reviewed earlier. Thus, beyond its conceptual emphasis on the role of social participation in acculturation processes, the present dissertation also aims at contributing to existing research on methodological grounds.

In order to establish the mediating role of mainstream social participation in the mainstream cultural orientation-language outcomes link, this dissertation proceeds in several steps. First, *Manuscript 1* discusses in detail the methodological issues that acculturation research is facing and that informed this dissertation. This chapter argues that acculturation research is hindered by an almost exclusive reliance on self-report attitudinal scales and cross-sectional designs. Instead, researchers would benefit from using a set of flexible and complementary methods that can do justice to the multidimensional, multilevel, and developmental nature of acculturation processes.

Second, two manuscripts investigate the relation between mainstream cultural orientation and social participation (*path a* of Figure 1). In line with the conceptual framing of this relation adopted here, *Manuscript 2* focuses on how cultural orientations shape migrants' local ecology at the macro-level and *Manuscript 3* focuses on how they shape moment-to-moment interactions at the micro-level. Specifically, *Manuscript 2* reports on two longitudinal studies of international students recently arrived in Montreal.

These studies examine the role of baseline mainstream cultural orientation (shortly after arrival) in prospectively predicting two facets of social participation, namely, frequent mainstream interlocutors and mainstream friendships, at later time points. As such, this manuscript takes serious the idea that acculturation is a process of change over time and accordingly employs a longitudinal design. *Manuscript 3* moves away from a more “quantitative” account of the link between cultural orientation and social participation and focuses on more “qualitative aspects”. Two studies of multicultural first- and second-generation immigrant students in Montreal use a daily diary approach to characterize moment-to-moment variation in participants' subjective cultural affiliation. The second study examines in particular the joint contribution of participants' mainstream cultural orientation and of characteristics of the local context in predicting participants' subjective cultural affiliation during social interactions. This work employs an innovative method that allows us to investigate more dynamic and contextual aspects of acculturation, and that highlights the multilevel nature of acculturative processes.

In the third step, *Manuscript 4* focuses on the relation between mainstream social participation and language outcomes (*path b* of Figure 1). This study concentrates on affective aspects of language outcomes and examines the role of L2 social networks in L2 communication stress among first-generation multicultural immigrant students in Montreal. In line with the idea that we ought to go beyond assessing the quantity of social contact and that the structure of social ties matters, this study investigates the role of network density and inclusiveness, two structural measures indexing the interconnectedness of a network. This chapter characterizes a facet of social participation that is not typically examined and underscores the potential of egocentric social network approaches, an innovative method, for acculturation and SLA research.

In the final step, *Manuscript 5* tests the overall conceptual model illustrated in

Figure 1 in a path analysis study of multicultural first-generation immigrant student to Montreal. Specifically, this study examines the hypothesis that mainstream social participation mediates the relation between mainstream cultural orientation and mainstream proficiency and comfort. In addition, following the idea that it is important to unpack the different aspects of social participation, this study probes the relative contribution of social contact (here, friendship) and language use in predicting language outcomes. It is expected that together, these studies will make a strong case for the role of social participation as a mechanism underlying the cultural orientation-language outcomes link. As such, this dissertation would constitute the first step in a program of research aimed at examining the role of social participation in acculturative processes more generally.

**Manuscript 1** – Acculturation Measurement: From Simple Proxies to Sophisticated  
Toolkit

Marina M. Doucerain, Norman Segalowitz, & Andrew G. Ryder

### Of Acculturation Measurement and Birmingham Screwdrivers<sup>3</sup>

When deciding whether to use a hammer or a screwdriver, it is undoubtedly useful to know whether one is dealing with nails or screws. Similarly, the choice of a measurement method is critically predicated on the conceptualization of the phenomenon one purports to measure. Unfortunately, acculturation research has not consistently followed this seemingly obvious point. Two systematic reviews of research on the relations between acculturation and health among U.S. Hispanics found that a substantial proportion of reviewed studies (66% and 39%, respectively) did not include a definition of acculturation at all (Hunt, Schneider, & Comer, 2004; Thomson & Hoffman-Goetz, 2009). When provided, definitions were typically vague (Hunt et al., 2004). Unsurprisingly, this conceptual murkiness is accompanied by considerable heterogeneity and inconsistencies in how acculturation is operationalized, and hence how it is measured (Hunt et al., 2004; Lopez-Class, Castro, & Ramirez, 2011), leading to the conclusion that, “there has been no consensus on what to measure and how to measure it.” (Alegria, 2009). Even within a given study, how acculturation is defined sometimes contradict how it is measured (Thomson & Hoffman-Goetz, 2009). A number of scholars have argued that this lack of clarity and consistency are at the origin of discrepancies in findings on the relation between acculturation and health (Alegria, 2009; Baker, 2011; Koneru, Weisman de Mamani, Flynn, & Betancourt, 2007; Salant & Lauderdale, 2003). For the field to move forward, we must jointly address these fundamental conceptualization and measurement issues.

In this chapter, we argue for the importance of clear and precise conceptualizations of acculturation, and for a tight correspondence between definition, operationalization, and

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3 Defined in the Urban Dictionary as “A hammer. Usually used on delicate devices when a real screwdriver would be better. Refers to the habit of a Birmingham inhabitant (i.e., simpleton) to take a rather simplistic view of maintenance.”



measurement. Bearing in mind that all methodological choices involve trade-offs between cost/resources and affordances, the chapter is structured to facilitate usefulness to researchers with different research agendas. In the first half, we review commonly used definitions and methods and discuss their problematic aspects. We expect this section to be most useful for researchers wish to continue relying on a simple self-report measures – i.e., those who operate under significant time/resource constraints and for whom acculturation processes are not at the core of the research question (e.g., epidemiological studies where acculturation is used as a covariate). In the second half of the chapter, we focus on more nuanced conceptualizations and their corresponding methods. In particular, we argue that acculturation scales may not be able to do justice to the complexity of the phenomenon under study and consider some promising alternative methods. This section is intended primarily for researchers who are already convinced of the limitations of existing acculturation measurement and who seek to understand the mechanisms underlying the multifaceted relation between acculturation processes and health. Throughout, where relevant, we discuss method-specific health considerations, where health is broadly defined to include physical health, mental health, adjustment, and well-being. We also offer some recommendations aimed at helping researchers interested in acculturation and health move the field forward. In short, our main goal is to make a compelling case for an expanded acculturation research toolkit that does not rely unduly on Birmingham screwdrivers.

### **Acculturation Conceptualizations and Methods: State of Affairs**

The most widely used definition of acculturation is that of Redfield, Linton, and Herskovits (1936): “acculturation comprehends those phenomena which result when groups of individuals having different cultures come into continuous first-hand contact, with subsequent changes in the original culture patterns of either or both groups” (p.149). Although this definition refers to sociological changes occurring at the group level, most

theoretical and empirical work on acculturation using this definition focuses on psychological changes taking place intra-individually – and so does this chapter. Thus, for our purposes here, this definition could be rephrased as the intra-individual change processes resulting from a person living in a new cultural environment. Historically, the dimensionality of this change process has emerged as a core theoretical consideration. Earlier acculturation frameworks posited a unidimensional process whereby migrants gradually adapt to the mainstream cultural context at the expense of their heritage tradition (e.g., Gordon, 1964). From this perspective, acculturation can be equated with assimilation. More recently, psychologists such as Berry have argued that migrants<sup>4</sup> need not relinquish their heritage cultural tradition in order to adopt a new one (e.g., Berry, 1980). In this bidimensional framework, issues of cultural maintenance and cultural adoption represent two independent processes. Empirical work directly comparing both models has shown that the ability of the bidimensional model to predict adjustment outcomes is superior to that of the unidimensional model (Ryder, Alden, & Paulhus, 2000). Conceptually, a bidimensional acculturation framework is also better aligned with a growing body of work on biculturals who identify with multiple cultural groups (Benet-Martínez & Haritatos, 2005), who are competent in multiple cultural contexts (Chiu & Hong, 2013), and whose lifestyles reflect multiple cultural traditions (Hermans & Kempen, 1998).

### **Unidimensional Approaches**

Although unidimensional models of acculturation have largely been discredited, their influence and use in research is still pervasive. In a systematic review of studies on health and acculturation among U.S. Hispanics, Thomson and Hoffman-Goetz (2009) found that

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4 The term 'migrant', which we use to describe our target population, is in line with traditional definitions of acculturation. However, most of the arguments and methods discussed in this chapter are applicable to the study of cultural minorities or of people living in complex cultural environments.

just over half of the studies that provided a definition of acculturation described it as a unidimensional process. Even defining acculturation in bidimensional terms does not completely safeguard against unidimensional influences; Thomson and Hoffman-Goetz noted that a number of studies that defined acculturation in bidimensional terms proceeded to measure it unidimensionally. Methodologically, this unidimensional prevalence translates into widespread use of proxy measures of acculturation such as nativity, language preference, or length of stay. In a 2003 systematic review of research on health and acculturation among Asians in the United States, Salant and Lauderdale (2003) found that 64% of reviewed studies used a proxy measure. This proportion had dropped to 32% in a similar review published in 2009 (Thomson & Hoffman-Goetz, 2009). Around the same time, 34% of studies included in a systematic review focusing on mental health among U.S. ethnic minorities used a proxy measure of acculturation (Koneru et al., 2007).

This over-reliance on proxies in research on acculturation and health is problematic for several reasons. Conceptually, they rely on questionable, “linear and one-directional assumptions embedded in assimilation theory” (Baker, 2011, p. 89). As such, they cannot differentiate between cultural maintenance and cultural acquisition facets of acculturation, not to mention specific cultural domains (Koneru et al., 2007; Lopez-Class et al., 2011). In addition, proxy measures are exactly that, proxies, surrogate variables that do not directly assess psychological acculturation (Matsudaira, 2006) and that likely, “capture other phenomena that may or may not be associated with acculturation” (Thomson & Hoffman-Goetz, 2009, p. 989). More pointedly, proxy measures fail to consider the *process* of acculturation and are silent as to the mechanisms underlying the relation between acculturation and health; therefore, they cannot directly inform interventions (Alegria, 2009; Lawton & Gerdes, 2014). Alegria (2009) has suggested that the widespread use of proxy measures might be partly responsible for the inconsistent findings regarding the role

of acculturation in health outcomes, and that we need to move beyond these measures. We agree with this assessment.

Unidimensional scales, such as the Suinn-Lew Asian Self Identity Acculturation (SL-ASIA, Suinn, Ahuna, & Khoo, 1992) or the Acculturation Scale for Mexican Americans (Cuellar, Harris, & Jasso, 1980), tend to assess changes in several cultural domains (e.g., language, dietary preferences, entertainment and leisure, identity). In that regard, the measures are multidimensional; nonetheless, they face the same limitations as the unidimensional model. By forcing participants to make a choice between two cultural groups, they fail to capture the ways in which migrants negotiate independent issues of cultural maintenance and acquisition. In spite of these shortcomings, unidimensional scales are still widespread. In their systematic review of research on health and acculturation among U.S. Hispanics, Thomson and Hoffman-Goetz (2009) found that 58% of the studies using scales relied on a unidimensional scale. There exists a range of short, readily available bidimensional or even tridimensional scales, so continued reliance on unidimensional scales cannot be justified on grounds of participant burden or resources and time limitations. Given the flawed conceptual underpinnings of these measures, we strongly recommend that researchers interested in acculturation and health suspend using unidimensional instruments in favour of better alternatives.

### **Bidimensional Scales**

In line with their underlying bidimensional framework, bidimensional scales such as the Acculturation Index (AI, Ward & Rana-Deuba, 1999), the Stephenson Multigroup Acculturation Scale (SMAS, Stephenson, 2000), or the Vancouver Index of Acculturation (VIA, Ryder et al., 2000) address the zero-sum assumption at the core of unidimensional approaches. They allow people to, “carry two pieces of cultural luggage at the same time” (Cabassa, 2003, p. 134) and examine independently the extent to which migrants engage

with their heritage cultural group and with the new mainstream context. As such, they represent a marked improvement over unidimensional measures. A thorough review of bidimensional scales is beyond the scope of this chapter and the reader is referred to, for example, Kang (2006) or Huynh, Howell, and Benet-Martínez (2009) for a more exhaustive coverage of the topic. We will limit our discussion of bidimensional scales to two key methodological considerations: typological vs. dimensional scales and independence between the dimensions.

**Typological vs. dimensional scales.** The bidimensional acculturation framework posits two independent cultural engagement dimensions. Crossing these two dimensions yields a fourfold typology of acculturation orientations (Berry, 1980) – also referred to as “strategies”, “modes”, “alternatives”, “attitudes”, etc. (Rudmin & Ahmadzadeh, 2001). A separation orientation consists of greater motivation for cultural engagement in the heritage cultural group and appreciation of that tradition, combined with lesser motivation for cultural engagement in the mainstream cultural group and appreciation of that tradition. Assimilation consists of the opposite combination; marginalization entails a negative orientation toward both traditions; and integration of a positive orientation toward both traditions. Researchers relying on this bidimensional framework can choose between two types of scales. Typological scales, such as those developed by Berry and colleagues, directly measure each orientation by administering four scales. A sample item from an assimilation scale is, “When I have to furnish a room, I would not buy Korean furniture because it looks so out-of-place, and also because there is so much beautiful Canadian furniture available” (Kim, 1988, cited in Rudmin & Ahmadzadeh, 2001, p.44). By contrast, dimensional scales measure mainstream and heritage orientations in two separate scales, often with mirror wording. A sample item from the mainstream subscale of such an instrument is, “I am comfortable working with typical North American people”

(Ryder et al., 2000, p. 65). The corresponding item from the heritage subscale is, “I am comfortable working with people of the same heritage culture as myself.” Typological scales suffer from major psychometric flaws: most concerning, they are double-barrelled and measure cultural orientations ipsatively, thus violating assumptions of independence between the two dimensions (see Rudmin & Ahmadzadeh, 2001, for an exhaustive discussion). We thus encourage researchers to select measures from the variety of psychometrically more appropriate dimensional scales that are currently available.

Nonetheless, a substantial body of acculturation research has focused on the relation between specific acculturation strategies and health-relevant outcomes. In particular, numerous studies have investigated the relation between integration and adjustment/well-being, with the general conclusion that this orientation is associated with most favourable outcomes (for a meta-analysis, see Nguyen & Benet-Martínez, 2013). For all their psychometric advantages, bidimensional scales do not directly assess integration as a construct and the scores they yield are therefore at odds with theorizing on its benefits. To address this disconnect, researchers have resorted to a variety of dichotomization techniques (through mean, median, or midpoint splits) to assign an integration, assimilation, separation, or marginalization orientation to participants. For example, in the case of a median split, a participant whose scores are above the median on the mainstream dimension and below the median on the heritage dimensions falls into the “high mainstream/low heritage” category and therefore is deemed endorsing an assimilation strategy. Although this dichotomization approach makes some sense theoretically, it is fraught with statistical issues including loss of variability and power (Demes & Geeraert, 2014), and therefore should be discouraged. An alternative consists of keeping both continuous heritage and mainstream dimensional scores and examining the combination of both through an interaction term. This strategy is statistically more sound but it does not

allow one to test directly the effect of integration, or of the other three acculturation strategies. The reader is referred to Demes and Geeraert (2014) or to Ward and Rana-Reuba (1999) for a more complete discussion of issues related to recoding bidimensional acculturation scales. Given the prevalence of bidimensional scales in acculturation and health research, future research should help develop appropriate bidimensional scoring procedures that directly assess acculturation strategies.

**Independence between dimensions.** Conceptually, the bidimensional acculturation framework posits that heritage and mainstream dimensions are independent from one another. In practice, this means that correlations between heritage and mainstream scores of bidimensional scales should be null. However, not all instruments fulfil that requirement and Kang (2006) showed that this might be due in part to scale formats. Broadly speaking, items from acculturation scales follow either a frequency format (where typical answers range from *never/not at all* to *always/very much*) or an endorsement format (where typical answers range from *strongly disagree* to *strongly agree*). In her review of widely used bidimensional acculturation scales, Kang found that scales failing to meet the orthogonality criterion mix frequency and endorsement questions (e.g., the Language, Identity, and Behavioral Acculturation Scale Birman, Trickett, & Vinokurov, 2002), whereas scales demonstrating orthogonality include only endorsement questions (e.g., the Acculturation Index, Ward & Rana-Deuba, 1999). As Kang points out, endorsement questions are conceptually independent from one another; for example, appreciating mainstream entertainment does not constrain one's appreciation of heritage entertainment. By contrast, eating heritage food more often necessarily means eating mainstream food less often (given that the overall number of meals typically remains constant), illustrating that dependence is built into frequency acculturation questions. A plausible reason for the common inclusion of frequency items is that they are particularly

well-suited to assess language, a component that lies at the core of most acculturation instruments (Zane & Mak, 2003). We will discuss language issues in more detail later, but in the meantime, we would recommend selecting scales that use endorsement questions.

### **Multidimensional Scales**

The bidimensional framework discussed above has arguably become the dominant conceptual approach to acculturation, but in recent years a number of scholars have questioned its ability to capture the complexities of the acculturation process (Lopez-Class et al., 2011; Schwartz, Unger, Zamboanga, & Szapocznik, 2010). For example, in an era of “hyper-diversity” (Doucerain, Dere, & Ryder, 2013; Kirmayer, 2013), simple distinctions between heritage and mainstream cultural groups may not be sufficient to characterize the background of participants who negotiate more than two cultural traditions and idiosyncratically mix and combine cultural elements into hybrids (Arends-Tóth & van de Vijver, 2004). In a related vein, Cohen (2011) and Gim Chung, Kim, and Abreu (2004) have argued that the heritage group living in the new country (e.g., Chinese-Americans) is qualitatively different from the heritage group in the country of origin (e.g., Chinese living in China) and that these differences should be reflected in acculturation instruments. Their response was to add a third dimension to otherwise typical bidimensional instruments (thus leading to the creation of e.g., the Asian American Multidimensional Acculturation Scale; Gim Chung et al., 2004).

In parallel, critiques of the bidimensional framework have underscored that acculturation may be domain-specific. Indeed, past research has shown that people endorse different cultural orientations in public vs. private domains (Arends-Tóth & van de Vijver, 2004). Similarly, findings that changes in identities and in behaviours follow different trajectories (Schwartz et al., 2010) suggest that acculturation is also component-specific. These critiques are well-taken and accounts of acculturation increasingly describe it as a



dynamic, multidimensional, and multilevel phenomenon that is profoundly influenced by the context in which it takes place (Doucerain, Dere, & Ryder, 2013; Lopez-Class et al., 2011; Schwartz et al., 2010).

A common methodological response to these arguments has been to develop more scales. Multidimensional scales include separate components to assess various acculturation domains. For example, the Asian American Multidimensional Acculturation Scale (Gim Chung et al., 2004) comprises four subscales assessing cultural identity, language, cultural knowledge, and food consumption. Unfortunately, as Salant and Lauderdale (2003) point out, in most cases researchers aggregate scores across all items of a scale to create a single composite score. Computing separate, domain-specific scores, is a simple solution that would allow to examine the unique contribution of different acculturation components. However, creating and refining self-report rating scales may not directly address the core issues afflicting acculturation research, which are more conceptual. In that sense, we are sympathetic to Hunt and colleagues' (2004) conclusion that, “critical discussion about acculturation in the health literature has concentrated almost entirely on issues of psychometric modeling and principles of measurement, while neglecting the central question of what is being measured” (2004, p. 981).

In line with that view, and taking stock of the issues reviewed so far, we advance two proposals that will frame the remainder of this chapter. First, we need to take a step back and collectively work on clarifying and refining acculturation conceptualizations. The term “acculturation” itself is appropriate as an umbrella term that broadly delineates a conceptual space but it may be too vague to be the focus of a single study. A specific research question will typically focus on a single acculturation domain and, as Schwartz and colleagues argued, construct labels should reflect the fact that “what is being studied is only part of the whole” (Schwartz et al., 2010, p. 244). They suggest labels such as

“behavioral acculturation” or “identity-based acculturation.” We expect that greater conceptual clarity and precision would allow a closer fit between conceptualization and measurement. Second, we propose that self-report rating scales are not sufficient on their own to fully assess the complexity of acculturation as a phenomenon. If we want to better understand the mechanisms underlying the relations between acculturation and health, we need to explore alternative methods beyond rating scales. This suggestion is not entirely novel (see e.g., Thomson & Hoffman-Goetz, 2009, for a similar argument) but so far the field as a whole has struggled to carry it out. The second half of this chapter inventories a number of innovative methods used (or that could be used) to study acculturation processes and their relation to health. These examples are not meant as a prescriptive list of ideal methods, but rather as a source of inspiration for researchers interested in moving beyond self-report rating scales. Before we turn to these alternative methods, however, we want to address the issue that in acculturation research, as in any other field, “there ain't no such thing as a free lunch.”

### **Methodological Trade-offs: A Tiered Approach**

For researchers with only a few moments at their disposal to assess acculturation as a covariate, complex multidimensional methods designed to unpack acculturation processes may not be feasible. By contrast, using a proxy measure to understand the mechanisms underlying the relation between acculturation and, say, depression is – to be generous – insufficient. In other words, the choice of an acculturation measure is crucially predicated on the centrality of acculturation in the research question: Is acculturation itself the phenomenon under study or is it peripheral? Relatedly, researchers are limited in the time and resources they can devote to any single construct, particularly in the context of large population health studies. To address this reality, a tiered approach to acculturation research may be suitable.

The first tier includes studies where acculturation is not central to the research question (it is used as a covariate or as one among many indicators) and/or that face substantial time constraints (e.g., in the case of epidemiological studies). In these cases, more thorough acculturation instruments do not represent an efficient cost-benefit solution and proxy measures may be appropriate (Alegria, 2009). However, given the argument that the widespread use of proxies has largely contributed to inconsistent and ambiguous results in research on acculturation and health (Alegria, 2009), and in the spirit of advancing the field of acculturation beyond its conceptual and methodological flaws, we would recommend moving away from labelling research in this first tier as “acculturation research” by using more explicit and accurate terminology. For example, an article entitled “Acculturation and Maternal Health Behaviors: Findings from the Massachusetts Birth Certificate” (Hawkins, Gillman, Shafer, & Cohen, 2014) could easily be retitled “Nativity, language preference, and maternal health behaviors: Findings from the Massachusetts Birth Certificate.” This approach would have the advantage of signalling clearly that the emphasis is not on acculturation as a *process*, but on the role of sociodemographic indicators of minority members' *exposure* to the mainstream context. Many other published papers could be interrogated in a similar way.

In parallel, there is a need for more research systematically comparing the performance of different proxies or establishing the optimal combination of proxies (see e.g., Cruz, Marshall, Bowling, & Villaveces, 2008, for an example of research in that direction). The validity and reliability of scales need to be established empirically, and so should it be for proxies. For studies in this tier that face less severe time and resources limitations, bidimensional or multidimensional scales would be better suited than proxy measures to provide a general assessment of acculturation.

The second tier includes studies that focus on acculturation as a *process* and on the

mechanisms underlying it. In these cases, proxy measures are certainly counter-indicated, but even sole reliance on bidimensional or multidimensional scales may not be sufficient. As discussed earlier, acculturation is “dynamic, multifaceted and complex” (Lopez-Class et al., 2011, p. 1560), and it is unlikely that any single scale would be sufficient to fully characterize these phenomena. Thus, studies in this tier would be best served by approaching methodological considerations in two ways. At the conceptual level, acculturation should be conceptualized clearly and precisely. In most cases, a specific aspect of acculturative processes would be examined – e.g., identity negotiation – and this aspect should be labelled appropriately and clearly defined. At the operational level, the methods and study design selected should tightly fit the chosen conceptualization of acculturation: researchers should not default to acculturation scales. A range of alternative methods are probably better suited to examine certain acculturative processes. We review some promising alternative methods in the second half of this chapter.

## **Beyond Acculturation Scales**

### **What Changes During Acculturation?**

Reviews of research on acculturation and health have stressed the importance of carefully conceptualizing acculturation, arguing that the definitions provided – when provided at all – are typically too vague (Hunt et al., 2004; Salant & Lauderdale, 2003; Thomson & Hoffman-Goetz, 2009). Indeed, definitions such as, “the change processes resulting from a person living in a new cultural environment,” are too broad for effective operationalization. A common way to refine these all-encompassing definitions is to consider along what dimensions/domains acculturative changes take place and to emphasize the contingent nature of acculturation processes. Different authors have carved the space of acculturative changes differently and emphasized different characteristics, but overall, considerable overlap can be observed among conceptualizations. A thorough review

of theoretical accounts of acculturation is beyond the scope of this chapter, but informed by the work of a number of authors (Baker, 2011; Chirkov, 2009; Koneru et al., 2007; Lopez-Class et al., 2011; Rudmin, 2009; Thomson & Hoffman-Goetz, 2009), we offer the following conceptualization: Acculturation is a multilevel, contextually-dependent developmental process, with changes taking place at differential rates across a number of domains that fall roughly into the following three categories: cultural competence, cultural engagement, and cultural positioning – all of which bear important implications for the health of acculturating migrants. We will consider emerging approaches to each of these categories in turn.

### **Measuring Cultural Competence Aspects of Acculturation**

Cultural competence pertains to migrants' knowledge of the relevant cultural traditions and to the ability to flexibly use this knowledge in response to environmental demands. It includes not only issues of mainstream language proficiency or heritage language maintenance but also more implicit aspects of cultural knowledge, such as the ability to follow social norms.

**Language variables.** Language variables are among the most widely used indices in acculturation research. Zane and Mak (2003), for example, reported that of 22 published acculturation measures, 86% (19/22) included language use and/or preference items as indices of acculturation. Language was the category with the highest representation across the 22 measures, with a mean of 41% of items in a given acculturation measure being language based (range from 1-100%). By contrast, the next most represented category was daily living habits, used in 73% (16/22) of measures, with a mean of only 26% of items making up a given acculturation measure (range = 8-67%). Hunt and colleagues (2004) reported that language preference was used as a diagnostic of culture in 90% (62/69) of the studies they examined and was the *only* indicator of acculturation in 28%. Clearly

language preference and use are considered by many researchers to be highly indicative of a person's acculturation level. This is not hard to understand. It is natural to think that the degree to which a person has acculturated, and hence engaged with members of the majority community, will reflect that person's language use, preference and proficiency, and therefore these variables may provide a useful proxy measure of acculturation.

There are, however, several problems with this approach. First, by using language as a proxy measure of acculturation, it becomes logically difficult to study any role language might play in the acculturation process without circularity. Second, treating language as a proxy measure or reflection of acculturation entails thinking about language as merely a marker or symptom of closeness to the majority culture and thereby ignoring the very specific role that language likely plays in the acculturation process. It is primarily through language use that a person establishes relationships with members of the majority community, accesses resources through that community, and learns about its values, beliefs, tastes and behaviors. This renders language different in kind from other characteristics that might be acquired through acculturation.

Third, if we wish to consider language as providing a *means* for achieving acculturation, and not simply as a reflection of that acculturation, then we need to have a richer conception of language that goes beyond thinking of it as a collection of pronunciation, vocabulary, and/or grammar skills to be invoked during communication. This point is discussed further below. Fourth, there are problems with the scales typically encountered in the acculturation literature for measuring language use, preference and proficiency. A measure of relative (percentage) language use (heritage versus majority) creates a psychometrically different kind of measure from language preference. The former is a zero-sum, interdependent measure where greater use of one language necessarily implies reduced use of the other whereas this is not necessarily true of preference

measures. Finally, self-report measures of language proficiency face the potential risk that people may differ in the reference points used for self-assessment. Further problems arise when such disparate measures are combined to produce a single, global language measure as an index of acculturation, a measure that would be inherently difficult to interpret.

Most seriously, perhaps, is that by taking just simple measures of language (i.e., preference, use and proficiency) one ignores the pivotal role language plays in the acculturation process itself, and this makes it difficult to study that role. On this point, usage-based theorists of language (Barlow & Kemmer, 2000; Tomasello, 2003) provide an important perspective on language acquisition, in particular with respect to second language proficiency development. Here the idea is that communication is about more than simply transmitting a cognitive message; rather, virtually every linguistic act is seen to involve interlocutors attempting to establish joint attention (i.e., conveying construals or perspectives on what is being talked about) and attempting to read each other's social intentions (understanding the state of mind of the other person).

Different languages provide different ways of achieving these goals and this creates a challenge when learning the majority group's language. To achieve a high level of acculturation—that is, to be able to enter into the world of the majority community in a culturally appropriate way—a person has to become familiar with the specific ways that speakers formulate messages for various speech functions including requesting, persuading, apologizing, using humor, being polite, etc. This includes mastering the many fixed and idiomatic expressions and speech styles a community uses to convey subtleties of meaning, to achieving joint attention, to read social intentions and to manage conversations (Wray, 2002). Thus, to “plug into” the majority community, a person engaged in acculturation needs to learn how to speak sufficiently like a member of that community in order to achieve certain social goals, and not just know how to speak in semantically and

grammatically correct sentences (Pawley & Syder, 1983). Such learning requires appropriate exposure to majority speakers and a great deal of practice, and the process will involve complex interactions among considerations of motivation, sense of identity, and specific linguistic experiences, all of which can influence each other (Segalowitz, 2010, especially Chapter 5). Importantly, a certain level of language proficiency in the sociolinguistic aspects of communication will be necessary for building social networks that make possible further gains in language proficiency and improving access to the resources of the majority community.

There are tests of language proficiency with idioms, fixed expressions, collocations and sociolinguistic knowledge, all of which are aspects of communication that normally would be learned from social engagement with speakers in the target language community. These tests generally focus on learners and aim to determine, for example, whether a particular language learning experience (in the classroom, study abroad, etc.) has impacted on proficiency with these aspects of language. For example, Bardovi-Harlig (2007; 2013; Bardovi-Harlig & Dörnyei, 1998) discusses ways of measuring knowledge of pragmatics—that is, the sociolinguistically appropriate ways of accomplishing certain social goals, such as requesting information, apologizing, persuading. The volume edited by Schmitt (2004) provides other examples of laboratory tests of knowledge of fixed expressions and idioms. It should be possible to adapt many of these tests for use in field studies to study the role these socially important linguistic skills play in the acculturation process.

For all these reasons, we would encourage researchers to define acculturation independently from the very language skills that are necessary to achieve that acculturation, so that it becomes possible to study how language serves as a mediating mechanism in the acculturation process. As well, we would encourage researchers to look



beyond operationalizations of language skills in terms of simple measures of use, preference and global proficiency (interesting and valuable as these might be). Instead, we suggest they investigate variables that touch on skills regarding the sociolinguistic uses of language, and knowledge of fixed expressions, idioms, and speaking styles, all of which provide minority speakers important keys to gaining access to the majority community in culturally appropriate and effective ways. Pragmatic and sociolinguistic aspects of language are closely tied to cultural norms and conventions, which we discuss more directly in the next section.

**Cultural schemata.** Cultural schemata, or cognitive structures organizing related pieces of cultural knowledge and mediating our understanding of the social environment (Casson, 1983; D’Andrade, 1992; Strauss & Quinn, 1998), are at the core of more implicit aspects of cultural competence. In the process of acculturation, migrants acquire new cultural schemata, which emerge out of repeated engagement with the new cultural context. For example, restaurant scripts are different in Chinese vs. American contexts (Meng, 2008), and upon settlement in the US a Chinese migrant needs to adjust his internalized expectations about the sequence of events in a restaurant to reflect American customs. This process of negotiation of cultural schema leads not only to mundane changes in expectations about the role of a waiter, but also to profound modifications in the ways in which one interacts with the social world, such as one’s emotional reaction to given situations (De Leersnyder, Mesquita, & Kim, 2011).

This aspect of acculturation occurs mostly implicitly, thus limiting the usefulness of introspective methods. The methods used in a few recent studies on “cultural fit” (De Leersnyder et al., 2011; Güngör et al., 2013; Ward & Chang, 1997) suggest a promising way to examine the extent to which migrants have internalized cultural schema normative in the new cultural environment. Cultural fit refers to the concordance between a person’s

characteristics and the typical characteristics in a given cultural environment. In these studies, cultural fit is operationalized as the correlation between a migrant's pattern of response and the dominant pattern of response among members of the mainstream cultural group. For example, in the domain of emotional acculturation, De Leersnyder and colleagues (2011) examined the concordance between Korean American immigrants' patterns of emotional reaction to daily situations, and the average pattern reported by an European American sample. They found that higher cultural fit, indexed by higher correlations between individual patterns and the average US pattern, was related to higher levels of migrants' exposure and engagement in the mainstream culture.

This method is interesting for several reasons. First, in contrast to standard acculturation scales, this “cultural fit” approach offers a fairly implicit assessment. Thus, it circumvents critiques that typically high scores on acculturation scales reflect a general preference for multiculturalism rather than actual cultural knowledge and competence (Boski, 2008). Second, the method is easily adaptable to different domains. For example, while De Leersnyder and colleagues used it to examine emotional acculturation, Güngör and colleagues (2013) and Ward and Chang (1997) applied it in the area of personality. Humans rely on cultural schemata to navigate numerous aspects of their social environment and this approach provides an example of how to measure the extent to which migrants have acquired and internalized new cultural schemata. Third, this method has important health implications. The degree to which a migrant has acquired the cultural schemata necessary to function in the new cultural environment may be directly related directly related to well-being.

Supporting this idea, De Leersnyder, Mesquita, Kim, Eom, and Choi (2014) found that greater degrees of emotional fit were related to greater relational well-being. Consedine, Chentsova-Dutton, and Krivoshekova (2014) found a similar relation between

greater emotional acculturation and lesser somatic symptomology. The application of this approach to the health domain represents a second type of health implication. Just as restaurant scripts, cultural scripts surrounding health-relevant situations differ across cultural contexts and represent an important part of migrants' acculturation process. For example, Ranney (1992) uncovered important differences between American and Hmong medical consultation scripts. In light of documented disparities in health access and health services usage among members of cultural and linguistic minorities (Center for Disease Control and Prevention, 2013), implicit methods allowing one to track changes in migrants' cultural competence aspects of acculturation may represent an important addition to acculturation researchers' toolkit.

### **Measuring Cultural Positioning in Acculturation**

Cultural positioning refers to the various motivational, cognitive and emotional processes by which migrants position themselves vis-à-vis the relevant cultural traditions. This includes, for example, how they position themselves with respect to social and cultural identities and their level of endorsement of cultural values.

**Identity scales.** The formation of new social identities and the integration of these identities into the self-concept represent an important aspect of acculturation. Unfortunately, identity issues are often subsumed in generic acculturation scales, without making it explicit. As a result, acculturation attitudes and cultural identity are sometimes used interchangeably (Phinney, Horenczyk, Liebkind, & Vedder, 2001), with unfortunate consequences. For example, in an article describing the development of a general acculturation scale, Ryder and colleagues (2000) used the term “cultural identity” to refer to the construct of cultural orientation, which could potentially lead a reader to confound identity with orientation. Supporting this concern, studies have found that phrasing items on acculturation scales in terms of identification vs. willingness for cultural contact can

lead to different levels of endorsement and to different relations between acculturation and adjustment (Berry & Sabatier, 2011; Ward & Kus, 2012). Thus, we believe it is important to keep identity and acculturation attitudes/orientations as separate constructs and, if the goal is to examine identity aspects of acculturation, to rely on an identity scale rather than a general acculturation scale.

For example, grounded in part in an Eriksonian perspective of ego identity development and in line with a bidimensional acculturation framework, the Multigroup Ethnic Identity Measure (Phinney, 1992) is a widely used identity measure in acculturation research in youth. With a different emphasis, the Bicultural Identity Integration scale (Benet-Martínez & Haritatos, 2005) examines how bicultural individuals integrate and maintain their dual cultural identities. Even the simple term “identity scale” may be too generic. Indeed, cultural identity – a form of collective identity – is itself multidimensional (Ashmore, Deaux, & McLaughlin-Volpe, 2004) and the examination of different dimensions call for different measures. For example, scales suited to characterize self-categorization (e.g., Phinney, 1992) are inadequate to assess evaluation (e.g., Sellers, Smith, Shelton, Rowley, & Chavous, 1998) aspects of identity.

However, as for measuring acculturation in general, rating scales that assess explicitly held beliefs and attitudes are not the only – nor necessarily the best – way to measure identity. Implicit measures may provide certain advantages.

**Measuring cultural positioning implicitly.** Learning to manage multiple cultural identities may involve negotiating conflicting allegiances and managing tensions between contradictory cultural ideals (No, Wan, Chao, Rosner, & Hong, 2010). Because of this potential for ambivalence and internal conflict, explicit measures of identity such as identity rating scales may not be sufficient to fully capture cultural identity processes (Kim, Sarason, & Sarason, 2006; Weinreich, 2009). In support of that idea, Benet-

Martínez, Leu, Lee, and Morris (2002) found that Chinese-Americans who perceived their two cultural identities as incompatible behaved in culturally non-congruent ways when primed with cultural icons, while the reverse was true for those who perceived their cultural identities as compatible. These results point to the importance of examining implicit aspects of cultural identity in acculturative processes.

Kim, Sarason, and Sarason (2006) used one such implicit measure, the Implicit Association Test (IAT; Greenwald, McGhee, & Schwartz, 1998), to compare the relative contribution of implicit and explicit cultural identification and attitudes in predicting psychological distress. Widely used in social psychology, the IAT is a latency-based task that measures the strength of the association between concepts (e.g., male vs. female) and attributes (e.g., pleasant vs. unpleasant). In their study, Kim and colleagues asked Korean American immigrants to classify Korean and American names into self vs. other categories to tap into implicit cultural identification and into pleasant vs. unpleasant categories to tap into their cultural attitudes. Supporting the importance of implicit measures, they found that implicit measures predicted psychological distress better than explicit measures (i.e., traditional self-report rating scale).

In addition, for participants with inconsistent scores between explicit and implicit attitude measures (e.g., someone who explicitly report positive attitudes toward Koreans but implicitly express a preference for Americans), they found a positive relation between psychological distress and the magnitude of the discrepancy between explicit and implicit scores. These results suggest that culturally-related aspects of migrants' implicit social cognition may have interesting health implications and that the methods used to implicitly measure cultural positioning are worth exploring. Although there are some technical controversies concerning validity and reliability issues with this methodology (see e.g., Blanton, Jaccard, Christie, & Gonzales, 2007), the IAT is arguably the most popular

method to measure implicit cognitions. We discuss it here as a case in point; exploring how other implicit measures of social positioning could be adapted to research on acculturation and health is a promising direction.

**Identity structure analysis.** According to Weinreich (2009), the dominant bidimensional acculturation framework implies making conscious “gross identity choices,” based on, “wholesale acceptance and/or rejection of mainstream and heritage cultures” (p. 125), which, “does not accord with the actuality of identity processes, these being far more nuanced and generally without explicit conscious awareness” (p.125). Instead, he argues, “cultural formulations are selectively incorporated into people’s identities and are varyingly expressed by people as aspects of their identities” (p. 126). Accordingly, Weinreich developed a methodological framework, Identity Structure Analysis (ISA; Weinreich & Saunderson, 2003), to accommodate the study of these complex identity processes. Drawing on Kelly's repertory grid methods, Erikson's psychodynamic work, and symbolic interactionism, ISA conceptualizes a person's identity through self-relevant entities and constructs that the person uses to appraise self and others. Self-relevant entities include not only temporal and aspirational facets of the self (e.g., “me as I would like to become”, “me as I was as a child”, “me as I am afraid of becoming”), but also salient others (e.g., “a person I hate”, “my best friend”). In an ISA instrument, participants evaluate these entities using bipolar constructs chosen according to the research question investigated (e.g., “is conservative” vs. “is adventurous”). Next, specific mathematical formulas make it possible to compute the degree of similarity between participants' self-representations and the self-relevant entities included (see Weinreich & Saunderson, 2003, for an exhaustive description of these formulas), indexing the degree to which participants view themselves as similar or dissimilar to relevant others.

Weinreich, Luk, and Bond (1996) used ISA in a study of ethnic stereotyping and

identification among Hong Kong Chinese students. In this study, the list of entities reflected the local multicultural context by including entities such as “a typical Taiwanese male” or “a typical male Vietnamese boatpeople.” Relevant to health researchers, they found a positive relation between self-esteem and empathetic identification with valued entities and a negative relation between self-esteem and empathetic identification with devalued groups. This study is only a case in point, but it demonstrates the usefulness of ISA for acculturation and health research. Several advantages of the method are noteworthy. First, unlike traditional identity scales, the ISA provides an implicit measure of identity, thus addressing potential issues of social desirability bias. Second, both the self-relevant entities and constructs used in a particular implementation of the ISA can be customized to fit a specific research question and cultural context. This allows researchers to create different instruments that are customized to the specific issues under study while at the same time fitting within a single coherent theoretical and methodological framework.

**Life story narratives.** Weinreich's ISA can capture the nuances and multiple facets of complex multicultural identities. In-depth qualitative interview methods, such as life story narratives, provide another way to reach that goal. Theoretically, the life story narrative approach, popularized by McAdams (2001; McAdams, Josselson, & Lieblich, 2006), is grounded in a narrative identity framework. From that perspective, identity is an “internalized and evolving self-story, an integrative narrative of self” that provides life with unity and purpose (McAdams, 2001, p. 101). The stories that people tell about their lives reflect conjointly how they make sense of life events and circumstances and the sociocultural environments in which the stories are embedded. As such, life story narratives could become a method of choice for acculturation researchers seeking to understand the complexities of multicultural identity negotiations. Furthermore, of

particular interest to researchers interested in health, narrative coherence – a core structural characteristic of life stories – represents an indicator of well-being (Yampolsky, Amiot, & de la Sablonnière, 2013).

In practice, the life story narrative interview (as formulated by McAdams, 2008) consists of a methodological structure guiding participants through their story telling. Participants are instructed to divide their life into chapters and to address a number of specific events (e.g., “a peak experience”, “a turning point”). In addition, participants are prompted to incorporate several narrative features such as “challenges” and “positive and negative influences.” This framework ensures a certain level of equivalence among the narratives collected, thus facilitating later coding. At the same time, the procedure focuses on structural aspects of the narrative, thus leaving ample room for participants' idiosyncratic stories and for researchers' specific questions.

For example, Yampolsky et al. (2013) adapted the procedure to examine the relation between various identity configurations and narrative coherence, taken as an indicator of well-being. They asked participants to tell the story of their cultural identification, instead of their entire life story. They found that stories about integrated cultural identities evinced more narrative coherence than stories about compartmentalized cultural identities, thus shedding some light on the processes by which multicultural identities may be related to well-being. This study underscores the potential for research on acculturation and health of life story narratives in particular, but also of qualitative or mixed-methods in general.

Indeed, by combining the strengths of two complementary research traditions, mixed-methods are ideally suited for research touching on complex cultural meanings (Douceirain, Vargas, & Ryder, in press). Acculturation is at the core a process of cultural change, but critics have argued that the concept of culture is largely absent from both theoretical and



empirical accounts of acculturation (Ryder & Dere, 2010). Integrating qualitative methods that afford more in-depth and nuanced examination of cultural meanings with more traditional quantitative approaches to acculturation may provide a way to address this pertinent critique.

### **Measuring Cultural Participation Aspects of Acculturation**

Cultural participation pertains to behavioral aspects of migrants' engagement with their relevant cultural traditions. For instance, what language migrants use, what food they eat, in what neighbourhood they choose to live, or what friendships they choose to form are all issues related to cultural participation. Importantly, these facets of acculturation may be related to health issues in different ways. For example, the health implications of adopting new lifestyles may be very different from health issues associated with inner struggles to develop a sense of belonging in two separate cultural groups.

**Behaviours and practices.** Acculturation scales typically assess culturally-relevant behaviours/practices by asking participants to assess the overall cultural characteristics of a very few, fairly broad behavioural categories. The item “How often do you actually eat the food of the your culture of origin” in the Asian American Multidimensional Scale (AAMS; Gim Chung et al., 2004) is a case in point. In the AAMS, food consumption is, beside language, the only category tapping into behavioural aspects of acculturation, thus constituting a limited indicator of the general construct of behavioral acculturation. In addition, this item is very vague, thus opening the door to potential biases, e.g., as participants try to figure out what counts and what doesn't count as, “the food of their culture of origin.”

The Flannery Listing Protocol (FLIP; Flannery, Reise, & Yu, 2001) and the Multicultural Assessment of Preferences and Identities (MAP-ID, an extension of the FLIP; Yampolsky & Ryder, 2009), address these issues by starting with concrete elements

in a given participant's life and then relating these elements to cultural categories. Practically, participants begin by identifying salient cultural identities in a guided free-listing exercise, with examples provided to encourage broad thinking about various cultural affiliations. Next, participants identify and rank order their top three foods, TV programs, practices, stores, etiquette rules, etc. These categories aim at covering the majority of life domains, including both concrete components, such as favourite books and movies, and less tangible aspects, such as important people, practices and aspirations. In the next step, participants associate each identified element with its most relevant cultural identity by using the previously-listed affiliations. For example, in the “favourite musicians” category, a participant might associate the entry “Francis Cabrel” with the cultural affiliation “French” and “Alphaville” with the affiliation “German.” Requiring participants to use previously-listed cultural identity labels ensures that only personally-relevant cultural affiliations will be used. The resulting data offers a fairly comprehensive inventory of participants' engagement with their local cultural ecology.

Three advantages of this approach are noteworthy. First, the concrete nature of the elements listed may help this instrument yield more objective scores than do typical acculturation scales. Second, the stepwise procedure temporally disconnects listed elements and listed cultural affiliations, thus lending a more implicit character to the instrument. Third, researchers can choose categories that are directly relevant to their research question, thus allowing easy customization of the breadth and depth of this inventory. For example, an acculturation researcher interested in the relation between acculturation and diabetes may choose to focus more heavily on food categories, perhaps differentiating food choices by context, by asking participants about their top three “dishes typically eaten at home”, “dishes typically eaten at work,” etc. Finally, this approach allows one to investigate not only the extent of participants' engagement with their cultural traditions

but also the homogeneity of their engagement across domains. Scholars have shown a clear distinction between cultural preferences in private vs. public domains (e.g., Arends-Tóth & van de Vijver, 2004) and this type of instrument allows one to explore such distinctions by examining the extent to which people culturally compartmentalize their life in domain-specific ways.

**Examining daily life.** Scholars have argued that acculturation processes are context-specific (Lopez-Class et al., 2011) but that, “acculturation measures do not capture this interaction between context and individual level processes” (Alegria, 2009, p. 3). In most cases, these authors seem to construe “context” in terms of macro-level influences such as sociopolitical characteristics of the receiving society (for example, widespread immigration ideologies). While these influences are significant, we believe it equally important to consider the local contexts within which acculturating people actually live. The notion that local, typical, spontaneous contextual influences matter lies at the core of the “daily life” approach (Mehl & Conner, 2012). Daily life protocols include a broad range of methods such as daily diaries, experience sampling, or event-contingent sampling, that all aim at characterizing the texture of people's lives.

In spite of its potential, this approach has been largely ignored by acculturation researchers. As a notable exception, Yip (2005) used an experience sampling method to examine the association between contextual cues, ethnic salience, and well-being. For one week, Chinese American students answered questions on a Palm Pilot device each time they were beeped (six times each day). She found that aspects of the local context—specifically, language spoken and ethnicity of others present—were associated with the extent to which ethnic identity was salient in the moment. Participants also reported greater well-being in moments when ethnic salience was greater. These results illustrate the fluid nature of acculturation processes and underscore the importance of going beyond

static measures of individual differences in cultural orientations or cultural identities. Unfortunately, experience sampling methods have two important drawbacks, perhaps partly explaining why they have not been widely adopted in acculturation research. First, they are fairly burdensome for participants. Beeps can be intrusive and disrupt the flow of participants daily lives. Second, they require substantial resources (in this example, an entire set of Palm Pilots).

Diary methods represent an interesting alternative addressing these issues. For example, the Cultural Day Reconstruction Method (C-DRM; Doucerain et al., 2013) is an adaptation for acculturation research of Kahneman and colleagues' (Kahneman, Krueger, Schkade, Schwarz, & Stone, 2004) well-validated diary method. In practice, participants divide their previous day into episodes, like scenes in film, and answer a series of questions for each episode. Doucerain, Dere, and Ryder (2013) used the C-DRM to examine shifts in momentary cultural affiliation among Canadian multicultural students. They found that both characteristics of the local context of an episode (e.g., language spoken, cultural background of interlocutor, physical location) and individual differences in cultural orientations were associated with momentary cultural affiliation. These results underscore the significant role of local contextual factors in the study of acculturation, but they also speak to the importance of combining research methods to capture complex acculturation processes. They support the argument that traditional acculturation scales play an important role, but are insufficient on their own to fully assess acculturation. We believe that they are most useful when used in combination with methods that tap into more malleable, context-specific, dynamic aspects of acculturation.

**Social networks.** The migrant's re-creation of a social architecture (a structured network of social contacts) is a central task of acculturation (Kuo & Tsai, 1986), although the magnitude of this task depends partly on a person's preexisting social ties with the

new context. This re-building of a social environment will be influenced by individual agency (those with whom one chooses to associate) as well as by contextual constraints (e.g., the likelihood of meeting X vs. Y, which will be influenced by one's occupation or social status) (Smith, 1999). As such, migrants' social networks both index their social participation in their various cultural communities and reflect their preferences and cultural orientation (Smith, 1999, p. 646). Indeed, past research has shown a positive association between identity integration and the number of friendships with members of the mainstream cultural group (Mok, Morris, Benet-Martínez, & Karakitapoğlu-Aygün, 2007). In that sense, the structure of a migrant's social network might provide a more implicit index of his/her acculturation attitudes than self-report questionnaires. In addition, relevant to research on acculturation and health, existing studies have established a clear link between social ties and psychological well-being (Kawachi & Berkman, 2001). For these reasons, a social network approach is ideally suited to research on cultural participation aspects of acculturation and holds great promise, “to explain the structural configurations encompassing the process of cultural adjustment and the role they play as culture acquisition mechanisms” (Smith, 1999, p. 637).

A number of traditional acculturation scales assess aspects of migrants' social networks, albeit in very rough and approximate ways. The item “Whom do you now associate with in the outside community?” in the Acculturation Rating Scale for Mexican Americans (ARSMA; Cuellar et al., 1980) is a case in point. Participants can choose between “Almost exclusively Mexicans, Chicanos, Mexican Americans (LA RAZA)”, “Mostly Mexicans, Chicanos, Mexican Americans”, “About equally Raza (Mexicans, Chicanos, or Mexican Americans) and Anglos or other ethnic groups” and “Almost exclusively Anglos, Blacks, or other ethnic groups,” thus yielding a very crude picture of the cultural composition of one's social network. In contrast, social network theory, which

is gaining prominence in psychology (Butts, 2008; Westaby, Pfaff, & Redding, 2014), provides a theoretical and methodological framework to make sense of social structure in complex and quantifiable ways. At the core, social network theory emphasizes that people are embedded in webs of social relations (Borgatti, Mehra, Brass, & Labianca, 2009) and that the *structure* of the system influences and constrains the individual actors within it.

In practice, studies investigating personal social networks (or egocentric networks) all follow a similar procedure. First, participants nominate alters, that is, other members of their social network. Name elicitation methods vary, ranging from simple, single name generators such as the commonly used General Social Survey item (“Looking back over the last six months, with whom did you discuss matters important to you?”) to complex procedures allowing one to build comprehensive contact diaries (e.g., Fu, 2007). The relative pros and cons of name elicitation methods are currently under active discussion in the social network literature (see e.g., Marin, 2004; Marin & Hampton, 2007). Next, participants answer a series of questions about each alter, and indicate whether each pair of alters know one another. The resulting adjacency matrix, combined with alters' characteristics, can yield a number of indices characterizing the structure of participants' personal social network such as, for example, the interconnectedness or cultural homogeneity of their network.

A growing number of studies have documented associations between social network characteristics and health outcomes (e.g., Hall & Valente, 2007; Valente, Fujimoto, Chou, & Spruijt-Metz, 2009), but unfortunately acculturation and health researchers have not yet exploited this potential. When including social network variables, acculturation studies have typically relied on network size only (e.g., Suarez, Lloyd, Weiss, Rainbolt, & Pulley, 1994), neglecting structural aspects. However, the idea that structure matters, which is at the core of a social network approach, is a promising direction to examine social

participation mechanisms underlying acculturative changes. Supporting this argument, a recent study showed that immigrant students with more interconnected second language social networks reported less communication-related acculturative stress (Doucerain, Shiri Varnaamkhaasti, Segalowitz, & Ryder, under review).

### **Acculturation as Multilevel Phenomenon**

Recent conceptualizations of acculturation emphasize its context-specific nature (Alegria, 2009; Lopez-Class et al., 2011). Expanding on this idea, acculturation can be described as a multilevel phenomenon. For example, cultural orientations do not emerge in a vacuum. They are strongly influenced by the surrounding social and political context, including for example immigration ideology and attitudes endorsed by members of the mainstream group (Bourhis, Moïse, Perreault & Senécal, 1997) or ethnolinguistic vitality of the minority group (Clément, 1986). Similarly, a variety of physiological processes underlie and influence the emergence and expression of cultural orientations. This range of contexts, from local to global, from biological substrates to societal variables, form a continuum shaping acculturative processes. It may be useful to consider this continuum as a single, multilevel dynamical system (Ryder, Ban, & Chentsova-Dutton, 2011): configurations and changes characterizing a given level afford and constrain at the same time the emergence of configurations at another level.

Methodologically, this perspective invites acculturation researchers to move beyond single level studies that focus on migrants' stable dispositions by including variables that characterize various levels along this continuum. Examining the influence of neighbourhood characteristics on acculturation can be a way to expand in the direction of more macro-levels. For example, a study of immigrant students living in Montreal showed that more positive heritage cultural orientations were related to lower depression, but only for participants living in ethnically dense neighbourhoods (Jurcik, Ahmed, Yakobov,

Solopieieva-Jurcikova, & Ryder, 2013). Through participants' postal code, the researchers were able to use census data on neighbourhood-level ethnic concentration, an approach that highlights the potential of combining small scale psychological data with variables from large scale population studies.

Another promising direction is to consider the joint contribution of biological and cultural factors to the relation between acculturation and health. A recent study examining the role of Respiratory Sinus Arrhythmia (RSA), a physiological marker of social engagement capacity, in the development of cultural orientations (Doucerain, Deschênes, Aubé, Ryder, & Gouin, under review) illustrates multilevel approaches toward the micro end of the continuum. In this longitudinal study of international students recently arrived in Canada, the authors found that higher baseline RSA levels predicted a greater increase in cultural orientations toward the mainstream cultural group in the following months, thus suggesting that it may be important for acculturation researchers to take into account physiological factors. Taken together, these results highlight the potential of conceptualizing acculturation as a multilevel phenomenon and to consider variables that span micro- to macro-levels.

### **Acculturation as Developmental Process**

Conceptually – and etymologically – acculturation is a process of change over time. In spite of this, the vast majority of acculturation studies employ cross-sectional designs, thus treating acculturation more as a trait than as a process (Ryder & Dere, 2010). Encouragingly however, the last decade has witnessed an increase in longitudinal studies of acculturation, with a general tendency to focus on changes in cultural orientations and adjustment in youth (Brown et al., 2013; Kiang, Witkow, & Champagne, 2013; Rogers-Sirin & Gupta, 2012; Schwartz et al., 2013; Updegraff, Umaña-Taylor, McHale, Wheeler, & Perez-Brena, 2012). Given the overall novelty of longitudinal designs in acculturation



research, these studies mostly map out trajectories of change in acculturation in descriptive ways (Schwartz et al., 2013). However, it will be important for future research to build upon this growing body of longitudinal work and to investigate antecedents and outcomes of different trajectories of change.

As an example of research in that direction, Schwartz and colleagues (Schwartz et al., 2013) examined the associations between different trajectories of change in cultural orientations and family functioning and risky behaviour among Hispanic adolescents in the US. What is needed is not only more longitudinal acculturation studies, but also longitudinal studies that unpack the mechanisms underlying the temporal dynamics of acculturation and health. The increasing popularization of trajectory modelling techniques (including hierarchical modelling, latent class analysis, growth mixture modelling, and group-based trajectory modelling; Nagin & Odgers, 2010) should facilitate this line of research.

### **Conclusion**

Ten years ago, after reviewing the major flaws of acculturation research, Hunt, Schneider, and Comer (2004) concluded that the concept of acculturation represents an, “ideologically convenient blackbox” (p. 982). They recommended that, “use of acculturation measures be suspended, at least until their ambiguity and lack of predictive power can be remedied: an event that [they] do not anticipate is forthcoming” (p.982). Today, although we agree with the tenor of critiques of acculturation research, we do not support this pessimistic proposal. A substantial proportion of studies on the relation between health and acculturation still rely on questionable conceptualizations and measures, but the last decade has also witnessed an increasing number of noteworthy efforts to pull acculturation research out of its methodological quagmire. In the second half of this chapter, we discussed a number of such efforts. Our goal was not to produce an

exhaustive review of novel ways to study acculturation, but rather to provide a rough map of possibilities in the hope of inspiring researchers interested in acculturation and health. Collectively, we feel that these methods suggest exciting and promising future directions for research on acculturation and health.

We realize that such an eclectic collection of methods, ranging from social networks to life history narratives, may be disconcerting to readers expecting a more unified perspective on “best practices” in acculturation and health research. However, we have come to appreciate that, as handy as they are, Birmingham screwdrivers will not suffice. Rather, the complex and multifaceted nature of acculturation must be met with sophisticated and multi-pronged methods. Thus, our hope with this chapter was to persuade acculturation researchers to leave behind concerns about the “best tool”, in favour of “toolkit” considerations: i.e., assembling a set of flexible, complementary methods that can do justice to the multidimensional, multilevel, and developmental nature of acculturation processes.

In any given domain, theories and methods are often considered separately, obfuscating the synergistic relationship between these two facets of science. Not only do existing theories shape the development of new methods, new methods can yield results that lead to “previously inconceivable theories” (Greenwald, 2012, p. 99). As a case in point, when Galileo built and used the first telescopes, his observations profoundly influenced theoretical controversies between Ptolemaic and Copernican views of astronomy and helped pave the way to the scientific revolution. In a similar way – but obviously on a much more modest scale – we strongly believe that developing and using new methods in research on acculturation and health is desirable not only to address known limitations of the field but also to prompt new research questions and inspire new theories.

## Transition

Acculturation encompasses a suite of change processes cutting across many life domains, and *Manuscript 1* underscores the importance of specifying precisely what facet of acculturation is examined in any given study. The present research focuses on migrants' mainstream cultural orientation as an antecedent of mainstream social participation and language outcomes. *Manuscript 1* raised important issues concerning the measurement of cultural orientations, in terms of reliability, item format, and typological vs. dimensional approaches. In light of these issues, all studies reported in this dissertation rely on the Vancouver Index of Acculturation (VIA; Ryder, Alden, & Paulhus, 2000) to assess migrants' mainstream acculturation. The VIA is a dimensional instrument, which is preferable to typological scales, with good reliability (as established by a meta-analysis by Huynh, Howell, & Benet-Martinez, 2009) and validity (Ryder, Alden, & Paulhus, 2000). In addition, the VIA does not assess language preferences and behaviours at all, which is important given the present emphasis on language outcomes as a separate dependent variable.

*Manuscript 1* also highlighted the need to go beyond self-report attitudinal scales and to use a wider range of methods and designs in the study of acculturation. With this goal in mind, beyond the VIA, a typical self-report acculturation scale, the present research makes use of longitudinal designs and explores the potential of alternative methods, namely daily diaries and egocentric social network approaches.

As a first step in providing support for the conceptual mediation model guiding this research, *Manuscript 2* examines the link between migrants' mainstream cultural orientation and social participation in the mainstream cultural group in two longitudinal studies of multicultural international students recently arrived to Montreal.

**Manuscript 2** - Initial Mainstream Cultural Orientations Predict Early Social  
Participation in the Mainstream Cultural Group

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## Abstract

We argue that migrants' baseline self-reported cultural orientations constitute an important antecedent of initial social participation in a new community, a key mechanism underlying cultural adaptation. Results from two longitudinal studies of newly arrived international students ( $N=98$  and  $N=60$ ) show that more positive mainstream cultural orientations early after migration prospectively predict higher social participation specifically in the mainstream cultural group within the following months. This relation held after controlling for important alternative predictors, namely extraversion/shyness, mainstream language proficiency, and respiratory sinus arrhythmia, a physiological index of social engagement capacity. Conceptually, the relation between cultural orientations and social participation may be considered from three interrelated perspectives: a motivational dimension where cultural orientations contribute to shaping migrants' local ecology; an interactional perspective where these orientations influence the subjective experience of momentary interactions; and a developmental dimension where cultural orientations and social participation exert long-term reciprocal influence through feedback loops reiterated across interactions.

Keywords: cultural orientations, social participation, longitudinal, cultural adaptation

## Introduction

“Preferences are not competences”, warns Boski (2008, p. 144) in his review of acculturation research. In a field where most studies focus on people's self-reported attitudes toward their various cultural groups, this observation is particularly relevant. Considering that acculturation is a complex process of re-socialization and culture acquisition, attitudinal scales can only capture one aspect of this complex and multifaceted experience. In addition, some critics have argued that elevated scores on acculturation scales might reflect more an appreciation of multiculturalism than actual cultural knowledge or competence (Boski, 2008). Supporting this contention, implicit measures of cultural competence, evaluating the degree of fit between migrants' pattern of response and the typical pattern of the mainstream cultural group, were unrelated to self-reported cultural orientations (e.g., De Leersnyder, Mesquita, & Kim, 2011 for the emotional domain). In short, the meaning of high scores on cultural orientation scales and their relation to actual individual behaviors and cultural practices are unclear. Given that the literature on acculturation is contradictory (Heine, 2011, p. 386), this problem underscores the importance of clarifying the theoretical contribution of the cultural construct to our understanding of cultural adaptation processes as they unfold over time, in particular in relation to the socially relevant issue of migrants' concrete integration into their new society.

The present work examines the role of cultural orientations – a subjective, attitudinal construct – as a potential antecedent of early social engagement behaviors in the cultural communities that migrants inhabit. Scores on acculturation scales may be limited in capturing the texture of migrants' lived experience or in directly assessing their competence in the new culture, but they might represent an important predictor of social participation, one of the behavioral cornerstones of acculturation. This paper reports on

two longitudinal studies investigating the hypothesis that initial cultural orientations toward a cultural group prospectively predict social participation shortly after arrival in that specific group.

### **Acculturation as Culture Acquisition**

Psychological acculturation encompasses the change processes resulting from a person living in a new cultural environment (Sam & Berry, 2010). These changes are typically comprehensive and far-reaching. They include but are not limited to acquiring a new language, learning new social norms, forming new social relationships, and creating new and/or adjusting old identities. At the core, however, all of these transformations hinge on acquiring the meanings and practices of a new cultural tradition. Becoming a functional member of a new cultural community necessitates becoming experienced and knowledgeable in the multiple ways in which human functioning is shaped by that new culture. As such, acculturation is to a large degree a matter of second-culture acquisition (see Rudmin, 2009 for elaboration of that argument).

Since the turn of the century, an increasing number of studies have documented the effects of knowing and experiencing more than one cultural tradition. For example, De Leersnyder and colleagues (2011) found that, over time, migrants' pattern of emotional responses to daily situations resembled more closely that of members of the mainstream cultural group, reflecting implicit and internalized knowledge of the emotional landscape of the mainstream cultural context. Other researchers observed a similar pattern for personality and self-esteem (Güngör et al., 2013; Heine & Lehman, 2004). As well, Hong and colleagues (Hong, Morris, Chiu, & Benet-Martínez, 2000) have shown that biculturals (i.e., people who identify with two cultural groups) respond to cultural cues in their environment by changing their causal attribution style, thus switching between different internalized cultural frames. In other words, along their acculturation journey migrants not

only acquire implicit knowledge of cultural schemas, they also rely on these schemas to concretely navigate their new cultural environment in a flexible way.

### **Culture Acquisition through Social Engagement**

Although the exact mechanisms by which migrants develop cultural knowledge of their new context are largely unknown, a number of scholars have argued that transmission of knowledge occurs through social interactions with members of the mainstream group (Kashima, 2014; Wan, Dach-Gruschow, No, & Hong, 2010). Kashima (2014) provides a comprehensive model of how within-culture transmission of cultural meaning occurs through 'grounding' during social interaction: people start engaging in an interaction with a certain level of common ground (i.e., meanings that all involved accept and take for granted, including for example knowledge of their respective social roles), and then negotiate new information during the interaction (see Kashima, 2014, for a full description). Thus, the grounding process can be understood as “accumulating the participants’ common ground: that is, the participants gain and incrementally accumulate representations of the information that they share and believe that they share” (Kashima, Klein, & Clark, 2011, p. 30). Over time, socially, temporally, and spatially bound cultural meanings become generalized across relationships, times, and contexts through repeated social interactions with members of that cultural group (see Boiger & Mesquita, 2012, for a similar argument on the dynamic construction of emotions over time in interactions, relationships and cultural environments). Although this model of cultural dynamics was not intended to describe acculturation processes, it provides a compelling starting point to understand how migrants develop cultural knowledge and competence in a new cultural environment. Through repeated interactions with members of the new cultural group, migrants construct and integrate a shared social reality that enables them to be functional members of that community.



This translation of Kashima's grounding model of cultural transmission in acculturation terms is tentative, but adopting such a lens highlights the following point: acculturation is inherently a social phenomenon and becoming competent in a cultural group hinges crucially on social participation in that group. As a corollary, in order to facilitate the acculturation process, it is imperative to better understand what predicts migrants' social participation in the new community. The contribution of this paper is to examine the role of cultural orientations as an antecedent of social participation. We propose that migrants' initial self-reported cultural orientation toward the mainstream cultural group predicts social engagement with members of that group. Cultural orientations are defined here as migrants' motivation for cultural engagement and appreciation of the cultural tradition. Underlying these orientations are a suite of behavioral, cognitive, and affective mechanisms that facilitate an approach-oriented stance toward a given culture. In this perspective, we can construe migrants' cultural orientations as a motivational antecedent of mechanisms underlying the acquisition of cultural knowledge.

Investigating how cultural orientations predict actual social participation in a new cultural environment may prove beneficial for two reasons. First, doing so addresses critiques questioning the usefulness of cultural orientations scales (e.g., Boski, 2008; Chirkov, 2009). Second, it might connect two relatively disparate strands of research focusing on biculturals' experiences. Acculturation research emphasizing attitudes and orientations could effectively characterize the antecedents of migrants' social engagement. Research on biculturalism in cultural psychology, on the other hand, with its emphasis on the outcomes of recurrent social participation in the new cultural community, could explicate how multicultural minds develop through the progressive internalization of new cultural frames of meaning. Social participation might bridge these two lines of inquiry.

## **Cultural Orientations as Predictors of Social Participation**

Conceptually, the motivational component of cultural orientations suggests that they are good candidate predictors of social participation. Although this particular question is not commonly asked in acculturation research, a number of studies support this hypothesis. Fleischmann, Phalet, and Swyngedouw (2013) found that the more European-born Muslims who identified with their country of residence, the more they were politically engaged, which can be considered as a form of social participation. In the economic domain, de Vroome, Coenders, van Tubergen, and Verkuyten (2011) observed a positive relation between identification with the mainstream identification and actual economic participation in that society. Similarly, students reporting more positive multicultural attitudes and more identity integration reported having a greater number of international/cross-cultural friendships (Mok, Morris, Benet-Martínez, & Karakitapoğlu-Aygün, 2007; Williams & Johnson, 2011). In a related vein, Yip and Cross (2004) used a daily diary to show that Chinese-American youth who identified more strongly with their heritage cultural group showed more behavioral involvement in that community. Ryder, Alden, Paulhus, and Dere (2013) showed that among Chinese-Canadian students, a more positive mainstream cultural orientation was associated with fewer interpersonal problems indicating disengagement (e.g., shyness) and more interpersonal problems indicating overengagement (e.g., problematic assertiveness), specifically in the context of interactions with Euro-Canadians. Heritage cultural orientations showed a similar pattern specific to interactions with Chinese-Canadians. More directly, Stoessel, Titzmann, and Silbereisen (2012) found that stronger identification with the mainstream cultural group predicted greater social participation over time in that group, among adolescent diaspora immigrants to Germany and Israel. Taken together, these results support our overarching hypothesis that migrants' positive orientation toward the mainstream cultural group would

prospectively predict higher social participation in that community.

### **Study Design to Test the Directionality of Effects**

To demonstrate the temporal precedence of migrants' cultural orientations, we employ a longitudinal design where we assess the impact of baseline cultural endorsed shortly after arrival in the host culture on later social participation. Migrants' orientations toward heritage and mainstream cultural groups change over time as a result of various acculturative experiences. Therefore, it is important to assess cultural orientations at a time where they are still unshaped by these experiences. International students are well-suited for this approach as they represent a highly accessible population compared to other groups of recent migrants. In addition, their time of arrival is relatively predictable based on the academic year cycle, allowing us to recruit them almost immediately after settlement. We expect that baseline cultural orientations to the mainstream cultural group prospectively predict social participation in that group. As a stricter test of the temporal precedence of orientations over social participation, the reverse model was also tested.

### **Overview of the Studies**

Overall, the present paper seeks to contribute to acculturation research by examining a potentially important predictor of social participation, namely cultural orientations. Cultural orientations include a substantial motivational component that may influence migrants' concrete social behaviors in the new cultural environment. Two longitudinal studies tested the overarching hypothesis that international students' cultural orientations to the mainstream group predict social participation in that group prospectively and specifically, above and beyond important alternative predictors. In Study 1, we examined the role of baseline mainstream cultural orientations in predicting friendships in the mainstream language. Study 2 replicated and extended the first study by further testing the specificity of the relation: international students' social participation was examined in

several cultural groups and we controlled for extraversion and respiratory sinus arrhythmia (RSA), an important physiological marker of social engagement capacities. In the theoretical framework adopted here, acculturation to a large degree involves cultural acquisition through social interaction. As such, the expected results would support the idea that cultural orientations are antecedents of a key mechanism underlying acculturative changes.

### Study 1

The formation of new friendships in the new environment is beneficial for international students' adjustment (Hendrickson, Rosen, & Aune, 2001), as well as an important marker of social participation in that environment. This study examines the prospective role of mainstream cultural orientations in that process. Social participation in the mainstream cultural group hinges on the ability to communicate in the local language, and language proficiency is an important predictor of psychosocial adjustment among international students (Zhang & Goodson, 2011; Smith & Kharawa, 2011). It is possible that perceived ease in using the language and positive feelings toward speakers of that language share some variance. Thus, we control for proficiency in the mainstream language both in terms of design and analysis: to minimize the confounding factors of shared linguistic background, we selected only individuals whose native language was different from that of the mainstream cultural group and we statistically controlled for proficiency in the mainstream language. In addition, past research has shown that shyness, a stable individual difference in social withdrawal, negatively and prospectively predicts friendship formation (Asendorp & Wilpers, 1998). Therefore, in order to further test the unique predictive ability of cultural orientations, shyness was also used included as a control.

Our first hypothesis is: *(H1) after controlling for shyness and proficiency in the mainstream language, there will be a positive and statistically significant relation between*

*baseline cultural orientation toward the mainstream cultural group and number of cross-linguistic friendships in the new cultural environment.* In line with the expected temporal precedence of cultural orientations, our second hypothesis is that *(H2) while more positive baseline cultural orientations to the mainstream cultural group prospectively should predict a greater number of cross-linguistic friendships in the new cultural environment, more numerous initial friendships in that environment will not prospectively predict increases in cultural orientations to the mainstream cultural group.*

## **Methods**

**Participants and procedure.** Our sample comprised 98 newly arrived international students at universities in Montreal, Quebec, Canada (23 attending a French-speaking university and 75 attending an English-speaking university), a linguistically and culturally diverse city that includes Francophones and Anglophones as the two mainstream ethnolinguistic groups. In very broad cultural terms, Canada can be characterized as an individualistic cultural context (Hofstede, 2001). To ensure a valid measurement of baseline cultural orientations, participants were eligible only if they had arrived less than three months prior to the first assessment. In order to minimize the confounding impact of shared linguistic backgrounds, the present sample – drawn from a larger sample of new international students – included only people whose native language was different from the mainstream language of their university (i.e., different from French for participants attending a French-speaking university and different from English for those attending an English-speaking university). This inclusion criterion ensured that friendships reported in this study would be formed across a linguistic divide for all participants. This criterion eliminated for example English-speaking American students forming new friendships in English at an English-speaking university, which is likely a qualitatively different phenomenon than friendship formation for students from e.g., China or Venezuela.

Participants (51 females,  $M_{age} = 23.08$  years,  $SD_{age} = 4.55$ ) came from a variety of world regions: 35 from Europe, 13 from Africa, 15 from South America, 14 from South Asia, 10 from South-East Asia, 5 from the Middle East, and one from North America. Five participants did not provide information about their country of origin.

Our longitudinal design included four time points. The first assessment (T1) took place on average 27 days ( $SD=18$ ) after arrival. The second (T2), third (T3), and fourth (T4) measures occurred three, five, and seven months post-baseline, respectively. At each time point, participants were contacted via email and completed the surveys online. Participants received financial compensation for their time and the local Institutional Review Board of both universities approved the study. The total attrition rate was 29.59% ( $n_{T1}=98$ ,  $n_{T2}=95$ ,  $n_{T3}=67$ ,  $n_{T4}=69$ ).

### **Measures.**

***Social participation.*** Participants reported the number of friends with whom they interact in the mainstream language of their university (e.g., friendships in French if they attend a francophone university). This question (“How many friends do you have with whom you usually speak English/French”) was administered at each time point and yielded our measure of social participation.

***Cultural Orientations.*** The Quebec-specific version of the Vancouver Index of Acculturation (VIA, Ryder, Alden, & Paulhus, 2000) is a 30-item questionnaire with three parallel subscales that assess orientations toward the heritage group (VIA-H), the mainstream French-Canadian group (VIA-FC), and the mainstream English-Canadian group (VIA-EC). Participants rated their agreement to items such as, “I am comfortable working with typical English-Canadian people,” on a 9-point rating scale, with higher scores indicating more agreement. A single mainstream cultural orientation score (VIA-M) is obtained by computing the higher value between VIA-FC and VIA-EC scores for each

participant. Past research has shown that the VIA is a valid and reliable cultural orientation questionnaire (Huynh, Howell, & Benet-Martínez, 2009; Ryder et al., 2000). Internal consistency in this sample was good for both mainstream (Cronbach's  $\alpha_{T1} = .77$  for VIA-FC and  $\alpha_{T1} = .76$  for VIA-EC) and heritage (Cronbach's  $\alpha_{T1} = 0.91$ ) subscales. For the present purposes, baseline VIA-M and VIA-H scores were used as predictors. Time-varying VIA-M scores were used only for testing reverse temporal precedence in H2.

***Mainstream language proficiency.*** Four items (adapted from Segalowitz, 2009) assessed participants perceived ability to read, understand, write, and speak English (for students attending an Anglophone university) or French (for students attending a Francophone university) on a 7-point rating scale ranging from “(1) Very poor” to “(7) Native-like.” Internal consistency in this sample was very good (Cronbach's  $\alpha = .92$  for French and  $\alpha = .93$  for English).

***Shyness.*** The Revised Cheek and Buss Shyness Scale (Cheek & Briggs, 1990) is a 14-item questionnaire that assesses shyness on a 5-point rating scale with higher scores indicating more agreement. A sample item is “I am socially somewhat awkward.” Communicating and forming new friendships across cultural and linguistic divides can be challenging for international students (Williams & Johnson, 2011), which may lead them to re-interpret how shy they are. Consequently, we used baseline perceptions of shyness in the heritage cultural group (participants were asked to rate the items with heritage social contexts in mind) as a measure of trait shyness. Internal consistency in this sample was good (Cronbach's  $\alpha_{T1} = 0.84$ ).

***Analytic approach.*** The logarithmic transformation of our social participation variable was used in the analysis in order to normalize the distribution of residuals, which departed significantly from normality when using the raw variable. We used longitudinal mixed effects modeling to examine the role of cultural orientations in predicting social

participation. To test H1, variables were entered hierarchically: time since arrival in Canada was entered first. Mainstream language proficiency and shyness were entered second, followed by heritage cultural orientations. Mainstream cultural orientations were entered last. All models specified a random effect for the intercept only and were fitted with restricted maximum likelihood (REML; Pinheiro & Bates, 2000). Pseudo  $R^2$  values were derived by comparing variance components (residual and intercept) of substantial models to the null model (Singer & Willett, 2003). We also report Nakagawa and Schielzeth's  $R^2$  values for fixed effects (Nakagawa & Schielzeth, 2013). The  $t$  values used in the computation of  $p$  values were based on the Kenward-Roger approximation of degrees of freedom (Kenward & Roger, 1997). Likelihood ratio tests (LRT) used to compare model fit and confidence intervals were obtained using parametric bootstrapping (1000 samples). Given that the results of a priori power analysis to determine sample size are very sensitive to assumptions made and often impractical (Simonsohn, 2014), and given that post hoc power analysis has been described as fallacious (Hoenig & Heisey, 2001; Kline, 2004), we rely preferentially on confidence intervals and effect sizes. Analyses were conducted with the lme4 and pbkrtest packages in R version 3.1.1. Missing data were handled by using restricted maximum likelihood estimation in all models. In terms of data preparation, univariate outliers were winsorized to three median absolute deviations around the median (Leys, Klein, Bernard, & Licata, 2013). One participant was identified as a multivariate outlier (based on Mahalanobis distances evaluated at  $p < 001$ ) and was therefore removed from the analysis (Myers, Gamst & Guarino, 2013).

## Results and Discussion

**Descriptive results.** Upon arrival in the new cultural context (i.e., baseline assessment), participants reported positive orientations toward their heritage cultural group, as measured by the VIA-H ( $M=6.64$ ,  $SD=1.41$ ), and fairly positive orientations



toward the mainstream cultural group, as measured by the VIA-M ( $M=5.78$ ,  $SD=0.97$ ). Overall, they reported high levels of mainstream language proficiency ( $M=5.65$ ,  $SD=1.02$ ) – i.e., French for students attending a Francophone university and English for students attending an Anglophone university – indicating very good language proficiency for participants overall. As shown in Table 1 (model 1), social participation, as measured by the number of friends in the mainstream language, increased over time ( $\beta(SE) = 0.13$  (0.03),  $t(226.2) = 4.46$ ,  $p < .001$ , 95% CI = [0.07; 0.19]).

**Hypothesis Testing.** Table 1 presents results of the mixed-effects modeling of friendships in the mainstream language over time. Controlling for self-reported mainstream language proficiency and baseline shyness, the positive association between mainstream cultural orientations and social participation (model 4) was statistically significant ( $\beta(SE) = 0.26$  (0.12),  $t(87.01) = 2.23$ ,  $p = .03$ , 95% CI = [0.04; 0.50]), thus supporting H1. Moreover, VIA-M scores were the strongest predictor of social participation in the mainstream ethnolinguistic group in the final model ( $\beta=.26$ , compared to  $-.17$  for shyness and  $.11$  for language proficiency). The introduction of VIA-M scores (model 4) accounted for an additional 3% in intercept variance and increased  $R^2$  for fixed effects from  $.06$  to  $.10$ . In addition, providing some evidence of the cultural specificity of the relation between cultural orientations and social participation, the heritage orientation, as measured by VIA-H scores, did not predict friendships in the mainstream language ( $\beta(SE) = -0.13$  (0.11),  $t(84.73) = -1.20$ ,  $p = .23$ , 95% CI = [-0.33; 0.09]), and introducing VIA-H as a predictor (model 3) did not account for any additional variance. Supporting H2, the test of reverse temporal order revealed that initial friendships in the mainstream language did not predict statistically significant changes in mainstream cultural orientations over time ( $\beta(SE) = 0.12$  (0.08),  $t(90.46) = 1.45$ ,  $p = .15$ , 95% CI = [-0.04; 0.28], in a model with only time and initial mainstream friendships as predictors). Thus, the results support both

hypotheses: controlling for mainstream language proficiency and baseline shyness, a more positive cultural orientation toward the mainstream cultural group prospectively predicts more numerous friendships in that group over time, but the reverse temporal relationship was not statistically significant.

Table 1

*Modelling Changes in Number of Friends in the Mainstream Language*

	Model 1	Model 2	Model 3	Model 4
Intercept	1.99 (0.09)***	2.11 (0.60)***	2.16 (0.73)**	1.64 (0.76)*
Time <sup>a</sup>	0.02 (0.00)***	0.02 (0.00)***	0.02 (0.00)***	0.02 (0.00)***
Baseline shyness		-0.30 (0.17) <sup>†</sup>	-0.30 (0.17) <sup>†</sup>	-0.35 (0.17)*
Language proficiency		0.12 (0.06) <sup>†</sup>	0.12 (0.06) <sup>†</sup>	0.10 (0.06)
Baseline VIA-H			-0.01 (0.06)	-0.08 (0.07)
Baseline VIA-M				0.22 (0.10)*
Residual pseudo- $R^2$	.07	.04	.04	.05
Intercept pseudo- $R^2$	.02	.12	.11	.14
$R^2$ fixed effects	.02	.06	.06	.10
AIC <sup>b</sup>	626.08	610.37	612.36	609.28
BIC	641.09	632.73	638.45	639.09
LRT(df)	17.18(1)***	6.46(2)*	0.00(1)	5.05(2)*

*Note.* Entries represent unstandardized coefficients (SE). <sup>†</sup> $p < .10$ , \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$  <sup>a</sup>The time unit used corresponds to 10 days. <sup>b</sup>Models were refitted using maximum likelihood to compute AIC and BIC values.

## Study 2

Study 2 replicates and expands on Study 1 by addressing several limitations. First, the measure used in study assessed “friendship”. However, the meaning of friendship can vary widely not only between individuals, but also between cultural contexts (Baumgarte, 2013), which may bias the number of friends reported. Therefore Study 2 relies on a more objective measure of social participation: namely, the number of interlocutors with whom participants interact on a regular basis. Second, social participation was defined here in language terms – friends with whom they interact in English or in French – and this definition raises the issue of the cultural specificity of the relation between cultural orientations, which are defined in cultural terms, and social participation. For example, a participant at a Francophone university may use French to interact not only with French-Canadians, but also with other international students. Critics of self-reported acculturation attitudinal scales have argued that high scores on these scales may reflect a general preference for multiculturalism (Boski, 2008), and therefore it is important to show that a positive orientation toward a cultural group is associated with social participation in that group specifically, and not in others. To address this issue, social participation in Study 2 is defined in cultural terms and social participation in three different groups is considered: the mainstream cultural group, the heritage cultural group, and other international students from a different cultural background.

Finally, although we controlled for individual differences in baseline shyness, it is possible that the changes in social participation observed in Study 1 largely reflect a physiological proneness to form social relationships. To help rule out this alternative, Study 2 includes extraversion and respiratory sinus arrhythmia (RSA), a physiological index of social engagement capacity (Porges, 2007), as a more stringent control. The Polyvagal Theory suggests that through mammalian evolution, RSA became an index of a

neurophysiological system enabling individuals to flexibly and rapidly regulate their physiology to facilitate activation of the social engagement system, which comprises a suite of behaviors related to navigating one's social environment (Porges, 2007). Indeed, the brain stem nuclei regulating RSA are sites of integration of information from the viscera and higher brain structures that modulate both cardiac activity and a collection of facial muscles implicated in emotional expression and social behavior. In accordance with the Polyvagal Theory, a number of studies have established an association between RSA and various facets of social functioning (e.g., Geisler, Kubiak, Siewert, & Weber, 2013; Gyurak & Ayduk, 2008; Smith et al., 2011). Upon settlement, international students face the important task of forming social relationships, complicated by the necessity to cross a cultural divide. Indeed, past research has highlighted the difficulties of forming cross-cultural friendships (Williams & Johnson, 2011). As such, efficient recruitment and regulation of one's social engagement system, indexed by higher RSA, is likely to facilitate social participation in the new cultural group. This role of RSA in predicting social participation affords a further test of the specificity of the association between cultural orientations and social participation.

The first two hypotheses for Study 2 replicate those from Study 1 (with H1 reflecting changes in the controls included in this study). A third hypothesis targets the issue of cultural specificity, as follows: *(H3a) Baseline cultural orientations to the mainstream cultural group do not predict social participation in the heritage cultural group or among international students from a different cultural background.* Conversely: *(H3b) Baseline cultural orientations to the heritage cultural group do not predict social participation in the mainstream cultural group or among international students from a different cultural background.* We form no specific hypothesis regarding the relation between heritage cultural orientation and participation in the heritage cultural group because participation

in that group is largely constrained by the demographic concentration of co-nationals in the settlement area. For example, a Chinese immigrant to Vancouver would have access to a larger heritage cultural group than a Gabonese immigrant. As such, social participation in that group is likely to reflect factors mostly outside of migrants' heritage cultural orientation.

## Methods

**Participants and procedure.** Our sample comprised 60 newly arrived international students at an English-speaking university in Montreal, Quebec, Canada (29 females,  $M_{age} = 23.8$  years,  $SD_{age} = 3.49$ ). Participants came from a variety of ethnocultural backgrounds: 12 (20%) self-identified as Caucasians (e.g., American, Italian), 19 (32%) as East/South East Asians (e.g., Chinese, Korean), 13 (22%) as South Asians (e.g., Indian), 6 (10%) as Middle Easterners (e.g., Iranian), 5 (8%) as Latinos (e.g., Venezuelan), and one (2%) as Black (e.g., Nigerian). To ensure a valid measurement of baseline cultural orientations, participants were eligible only if they had arrived less than three weeks prior to the first assessment. In order to maximize homogeneity in terms of initial social functioning within the sample, the following inclusion criteria were applied: (1) having no friends or relatives residing in the new city prior to the participant's own arrival; (2) not being involved in a romantic relationship; (3) having migrated alone; (4) being committed to staying in the new country for at least two years; and (5) having received a score of at least 600 on the Test of English as Foreign Language (TOEFL). In addition, only people having no chronic health problems and not taking any prescribed medications regularly were included in the sample.

Our longitudinal design included three time points. The first assessment (T1) took place an average of 22 days ( $SD=9.4$ ) after arrival. The second (T2) and third (T3) visits occurred two and five months post-baseline, respectively. Each visit occurred between 9:30

am and 12:30 pm to limit the influence of diurnal variation on RSA (Bonnemeier et al., 2003). In addition, participants were asked to abstain from eating, consuming caffeine, smoking, and exercising for at least two hours prior to each assessment (Berntson et al., 1997). Participants received financial compensation for their time and the local Institutional Review Board approved the study. The total attrition rate was 8.33% ( $n_{T1}=60$ ,  $n_{T2}=57$ ,  $n_{T3}=55$ ); only one participant missed both T2 and T3.

### **Measures.**

***Social participation.*** Participants reported the number of (a) Canadians, (b) international students from a different cultural background, and (c) persons from the same cultural background that they talk to regularly, i.e., at least once a week, in the new city. Each number represented social participation in that specific group. These questions were adapted from Cohen, Doyle, Skoner, Rabin, and Gwaltney (1997), and Hendrickson, Rosen, and Aune (2011). They were administered at each time point.

***Cultural Orientations.*** Like in Study 1, the Vancouver Index of Acculturation (VIA, Ryder et al., 2000) was used. In Study 1, the correlation between VIA-FC and VIA-EC scores at T1 was very high ( $r=.73$ ), suggesting that the participants in this sample may not have yet realized the differences between these two groups at that point. Therefore, in this sample we used the heritage subscale (VIA-H) and a generic mainstream subscale assessing participants' orientations toward Canadians (VIA-M). Internal consistency in this sample was good for both mainstream (Cronbach's  $\alpha_{T1} = .76$ ) and heritage (Cronbach's  $\alpha_{T1} = 0.80$ ) subscales. Like in Study 1, baseline VIA-M and VIA-H scores were used as predictors. Time-varying VIA-M scores were used only for testing reverse temporal precedence in H2.

***Respiratory Sinus Arrhythmia (RSA).*** Participants were fitted with a chest band hardwired with a digital inter-beat interval recorder (Polar RS800CX). They were

instructed to sit alone in a quiet room and to breathe normally while relaxing as much as possible during the 15-minute recording. Cardiac inter-beat intervals were recorded continuously, using a sampling rate of 1000 samples per second. In order to minimize the impact of the novelty response to the laboratory environment, the first 5 minutes of the recording periods were excluded from analysis. Recording artifacts were manually identified and corrected using the CardioEdit software (2007). Fewer than 2% of the data points were edited across the three visits. RSA was computed with the Cardiobatch (2007) software using the Porges and Bohrer's (1990) moving polynomial approach.

***English proficiency.*** We used the same items than in Study 1. Internal consistency in this sample was very good (Cronbach's  $\alpha = .94$ ).

***Extraversion.*** We used extraversion instead of shyness as an alternative measure of sociability. The extraversion subscale of the Eysenck Personality Questionnaire Brief Version (EPQ-BV; Sato, 2005) is a 12-item questionnaire that assesses extraversion on a 5-point rating scale. A sample item is: "Do you usually take the initiative in making new friends?" Total scores can range from 1 to 5. Internal consistency in this sample was good (Cronbach's  $\alpha = 0.74$ ).

***Analytic approach.*** We used the same analytic approach than in Study 1, with one difference: we used multivariate longitudinal mixed effects modeling in order to examine the covariation of social participation in the three cultural groups within a single model.

## **Results and Discussion**

***Descriptive results.*** On average, across the three time points, participants interacted weekly with six persons from the same cultural heritage ( $M=5.96$ ,  $SD=3.47$ ), six international students with different cultural origins ( $M=5.50$ ,  $SD=3.57$ ), and four Canadians ( $M=4.48$ ,  $SD=3.47$ ). As shown in Table 2 (model 1), social participation increased over time in all groups (Canadian group:  $\beta(SE) = 0.12 (0.05)$ ,  $t(339.26) = 2.43$ ,



$p = .03$ , 95% CI = [0.02; 0.22]; International students group:  $\beta(SE) = 0.12 (0.05)$ ,  $t(339.64) = 2.36$ ,  $p = .02$ , 95% CI = [0.02; 0.21]; Heritage group:  $\beta(SE) = 0.16 (0.05)$ ,  $t(339.93) = 3.16$ ,  $p = .002$ , 95% CI = [0.06; 0.26]).

Upon arrival in the new cultural context (i.e., baseline assessment), participants reported positive orientations toward the heritage cultural group, as measured by the VIA-H ( $M=6.54$ ,  $SD=0.99$ ), and fairly positive orientations toward Canadians, as measured by the VIA-M ( $M=5.73$ ,  $SD=0.91$ ). Overall, they reported high levels of English proficiency ( $M=5.44$ ,  $SD=1.11$ ), indicating very good English proficiency for participants overall.

As expected, higher overall time-varying RSA was associated with greater social participation in the mainstream cultural group (in model 2,  $\beta(SE) = 0.20 (0.08)$ ,  $t(215.69) = 2.52$ ,  $p = .01$ , 95% CI = [0.04; 0.36]) and greater social participation among international students from different cultural origins ( $\beta(SE) = 0.15 (0.08)$ ,  $t(200.16) = 1.96$ ,  $p = .05$ , 95% CI = [0.00; 0.33]). However, RSA did not predict social participation with members of participants' own cultural group ( $\beta(SE) = -0.02 (0.08)$ ,  $t(226.84) = -0.25$ ,  $p = .80$ , 95% CI = [-0.18; 0.14]).

**Hypothesis testing.** Table 2 presents results of the multivariate multilevel modeling of number of interlocutors over time. Controlling for RSA, self-reported English proficiency, extraversion, and heritage orientations, the positive association between mainstream cultural orientations and social participation among Canadians was statistically significant (model 5  $\beta(SE) = 0.25 (0.11)$ ,  $t(54.30) = 2.28$ ,  $p = .03$ , 95% CI = [0.04; 0.46]), thus supporting H1. In addition, the introduction of VIA-M scores accounted for an additional 8% in intercept variance in participation among Canadians. To test the reverse temporal order, we modeled mainstream cultural orientation over time as a function of social participation variables. Consistent with H2, baseline numbers of Canadian interlocutors did not predict mainstream cultural orientation, controlling for

baseline number of interlocutors among international students and among people with the same cultural background ( $\beta(SE) = 0.09 (0.13)$ ,  $t(56.85) = 0.73$ ,  $p = .47$ , 95% CI = [-0.16; 0.33]).

Table 2

*Multivariate Modelling of Changes in Number of Regular Interlocutors in the Different Cultural Groups*

	Model 1	Model 2	Model 3	Model 4	Model 5
Intercepts					
International students	4.77(0.55)***	-6.97(3.29)*	-8.61(4.17)*	-7.65(4.30) <sup>†</sup>	-7.65(4.30) <sup>†</sup>
Heritage group	5.05(0.53)***	6.39(3.45) <sup>†</sup>	2.70(4.35)	2.85(4.52)	2.85(4.52)
Canadians	3.76(0.53)***	-6.77(3.25)*	-9.77(4.07)*	-9.77(4.07)*	-12.08(4.04)**
<i>Time<sup>a</sup></i>					
International students	0.09(0.04)*	0.10(0.04)*	0.10(0.04)*	0.10(0.04)*	0.10(0.04)*
Heritage group	0.12(0.04)**	0.11(0.04)**	0.11(0.04)**	0.11(0.04)**	0.11(0.04)**
Canadians	0.09(0.04)*	0.10(0.04)*	0.10(0.04)*	0.10(0.04)*	0.10(0.04)*
RSA					
International students		0.64(0.32)*	0.63(0.32) <sup>†</sup>	0.64(0.32)*	0.64(0.32)*
Heritage group		-0.08(0.33)	-0.09(0.33)	-0.09(0.33)	-0.09(0.33)
Canadians		0.81(0.32)*	0.81(0.32)*	0.81(0.32)*	0.81(0.31)*
Extraversion					
International students		-0.01(0.62)	-0.05(0.62)	0.07(0.63)	0.07(0.63)
Heritage group		1.01(0.64)	0.93(0.64)	0.95(0.66)	0.95(0.66)
Canadians		0.21(0.61)	0.15(0.61)	0.15(0.61)	-0.15(0.61)
English proficiency					
International students		1.37(0.38)**	1.37(0.38)**	1.44(0.39)***	1.44(0.39)***
Heritage group		-0.74(0.40) <sup>†</sup>	-0.73(0.40) <sup>†</sup>	-0.72(0.41) <sup>†</sup>	-0.72(0.41) <sup>†</sup>
Canadians		0.80(0.37)*	0.80(0.37)*	0.80(0.37)*	0.64(0.36) <sup>†</sup>
Baseline VIA-H					
International students			0.27(0.42)	0.41(0.44)	0.41(0.44)
Heritage group			0.60(0.44)	0.63(0.47)	0.63(0.47)
Canadians			0.49(0.41)	0.49(0.41)	0.17(0.41)
Baseline VIA-M					
International students				-0.46(0.50)	-0.46(0.50)
Heritage group				-0.08(0.53)	-0.08(0.53)

Canadians					1.08(0.47)*
Residual pseudo- $R^2$	.04	.04	.04	.04	.04
Intercept pseudo- $R^2$					
International students	.00	.28	.26	.27	.27
Heritage group	.02	.07	.06	.06	.07
Canadians	.01	.24	.25	.25	.33
AIC <sup>b</sup>	2757.3	2738.0	2740.0	2743.0	2739.5
BIC	2799.8	28183.7	2833.4	2844.9	2845.7
LRT(df)	21.05(3)***	37.28(9)***	3.91(3)	0.87(2)	

*Note.* Entries represent unstandardized coefficients (SE). <sup>†</sup> $p < .10$ , \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$  <sup>a</sup>The time unit used corresponds to 10 days. <sup>b</sup>Models were refitted using maximum likelihood to compute AIC and BIC values.

**Cultural specificity.** Table 2 also presents results pertaining to cultural specificity. In line with hypothesis H3a, baseline VIA-M scores predicted social participation neither among other international students (model 5  $\beta(SE) = -0.10 (0.11)$ ,  $t(57.60) = -0.93$ ,  $p = .36$  (95% CI = [-0.30; 0.10]), nor in the heritage cultural group ( $\beta(SE) = -0.02 (0.12)$ ,  $t(57.60) = -0.14$ ,  $p = .89$ , 95% CI = [-0.24; 0.21]). Likewise, supporting hypothesis H3b, baseline VIA-H scores, reflecting the heritage cultural orientation, predicted the number of regular interlocutors neither in the mainstream cultural group (model 5  $\beta(SE) = 0.04 (0.10)$ ,  $t(53.30) = 0.42$ ,  $p = .67$  (95% CI = [-0.15; 0.24]), nor among international students from a different cultural background (model 5  $\beta(SE) = 0.09 (0.10)$ ,  $t(56.60) = 0.92$ ,  $p = .36$  (95% CI = [-0.10; 0.29]). Notably, VIA-H scores did not predict the number of interlocutors in participants' own cultural group (model 5  $\beta(SE) = 0.15 (0.11)$ ,  $t(56.40) = 1.34$ ,  $p = .19$  (95% CI = [-0.06; 0.36]). Taken together, these results fully support our hypothesis regarding the cultural specificity of the relation between baseline cultural orientations to the mainstream cultural group and social participation in that group, as well as our other hypotheses.

## General Discussion

Critics of self-reported cultural orientations contend that these orientations are limited in furthering our understanding of migrants' adaptation processes (e.g., Chirkov, 2009). In response to this contention, this article proposed that cultural orientations are an important antecedent of actual social participation, a key mechanism underlying acculturation processes. The results from two longitudinal studies reported here do support the contention that migrants' more positive orientations toward the mainstream cultural group upon arrival are related to greater initial social participation in that group. The hypotheses were fully supported. Specifically, the association between mainstream cultural orientation and mainstream social participation (1) meets temporal precedence

criteria, (2) holds after controlling for important alternative predictors and is of appreciable magnitude, (3) shows cultural specificity, and (4) is replicated across two different measures of social participation. We do not claim that a positive mainstream cultural orientation causes social participation in that group, but collectively these results support the plausibility of this direction of causation between these variables.

Future work should examine which factors moderate this relation as well as what boundary conditions constrain it. Research on acculturation has yielded a wealth of results that could be brought to bear on these questions. For example, it is likely that orientations of the receiving society toward migrants, as well as the larger sociopolitical climate, constrain how much social participation is possible in the mainstream community (see Bourhis, Moïse, Perreault, & Senécal, 1997 for a discussion of the interplay between migrants' and mainstream members' orientations). Similarly, perceived discrimination in migrants' local context may moderate the influence of mainstream cultural orientations on social participation. Baysu, Phalet, and Brown (2011) describe dual identity as a two-edged sword: dual identifiers are more vulnerable to discrimination because they care about both mainstream and heritage communities. Thus, high identification with the mainstream cultural group may represent a liability in conditions of identity threat. This mechanism is likely to play a similar role among adults and across a broad range of social participation measures.

Language proficiency is another important factor that might influence the relation between cultural orientations and social participation. Social interactions hinge on migrants' ability to communicate in the mainstream language. Language skills afford or prevent social participation in a way that is partly independent from cultural orientations. Past research has established some connections between language proficiency and community engagement among migrants (Chiswick & Miller, 1996). Hence, the relation

between cultural orientations and social participation may be subject to a minimum threshold of language proficiency. A strength of the present work was that our samples included only individuals with a functional level of English or French proficiency (participants attended university in English or French and reported high levels of proficiency in that language overall). As well, the sample in study 1 excluded native speakers of the mainstream language, thus addressing threshold (or ceiling) issues and allowing us to test the specific impact of cultural orientations on social participation. However, in future research it would be worthwhile to further explore the role of language as a gate keeping mechanism.

The results of Study 2 suggest that RSA might also play an important role in migration processes. Higher RSA at the first assessment was associated with greater social participation with members of the mainstream culture and with other international students, but not with members of participants' own cultural group. These findings not only provide further evidence of RSA as a physiological index of social functioning (Porges, 2007) but also suggest that individual differences in RSA predict adaptive social behaviours in a new cultural environment among recently migrated individuals. One possibility is that greater RSA is associated with greater social participation through the mediator of cultural orientations. Another possibility is that greater RSA is associated with greater ability to meet the sociopragmatic demands of cross-cultural communication. Successful communication between two interlocutors depends not only on linguistic skills (i.e., the proper use of pronunciation, syntax and vocabulary), but also on cultural scripts guiding people's behaviours and expectations (Schank & Abelson, 1977) as well as sociopragmatic aspects of communication (Ranney, 1992). In the case of newly arrived migrants, the absence of these cultural scripts renders cross-cultural communication difficult (Thomas, 1983; Nishida, 1999). However, it is plausible that higher social

engagement capacities, indexed by higher RSA, may promote greater attunement to socio-pragmatic demands of cross-cultural communication, thus compensating for underdeveloped cultural scripts. This mechanism would explain the finding that RSA was not associated with social participation within participants' own cultural group, where they can rely on cultural scripts to guide social interactions. In line with this idea, Porter (2003) reported a positive relation between infants' RSA and the symmetrical coregulation of communication in the mother-infant dyad. In a related vein, lower RSA was associated with greater pragmatic language impairment among children with Autism Syndrome Disorder (Klusek, Martin, & Losh, 2013). Future research could explore further the possible relation between RSA and pragmatic communication abilities, a potentially important antecedent of social participation.

At a conceptual level, we can envision the relation between cultural orientations and social participation more broadly and consider the mechanisms that underlie it. Three different perspectives that correspond to different levels of analysis and time scales are plausible – not only a motivational meso-level traditionally considered by acculturation researchers', but also an interactional micro-level, and a developmental macro-level. At the meso-level, cultural orientations have a strong motivational component: they are likely to direct migrants' attention and efforts in certain directions, thus influencing the likelihood of specific types of social interactions. For example, a Chinese migrant to Canada holding very positive attitudes toward Canadians might decide to do his groceries in a mainstream supermarket rather than an ethnic shop, or to choose an apartment in a mainly English-speaking neighborhood rather than a Cantonese enclave. This aggregation of small decisions increases the probability of daily interaction with Canadians. In this view, cultural orientations do not play a deterministic role; rather, reflecting individual differences in the degree of openness toward intercultural contact, they motivate a pattern



of preferential choices that accumulate to influence the likelihood of social participation in the mainstream community. In other words, cultural orientations have the potential to shape the local cultural ecology within which interactions will take place (see Segalowitz, Gatbonton, & Trofimovich, 2009 for a similar argument related to L2 proficiency).

The micro-level perspective takes place on a very short time scale and considers the local, momentary interaction as a unit of analysis: how orientations shape interactions between a migrant and a member of the mainstream cultural group in the moment. For example, orientations may influence the extent to which migrants are motivated to work on establishing a common ground with their mainstream interlocutor in spite of potential cross-cultural difficulties, or the extent to which they will persist in the interaction in spite of perceived discrimination. More precisely, cultural orientations might influence interactions in the moment through the adoption of specific sociolinguistic markers that index their social position (Myers-Scotton, 2000; Pavlenko, 2004). Similarly, cultural orientations may influence how migrants subjectively experience the interaction. In previous work, we have shown that migrants' general cultural orientations, as well as characteristics of the social context, influence not only how people affiliate culturally in the moment, but also their emotional reaction to the interaction (Doucerain, Dere, Chentsova-Dutton, & Ryder, 2014; Doucerain, Dere, & Ryder, 2013). This subjective reaction to the interaction, aggregated over time and across multiple interactions, contributes to adjust migrants' cultural orientations, updating in turn the likelihood and terms of future engagement.

This feedback process, frequently reiterated over many years, constitutes the macro-level third perspective. The present study only offers a snapshot of the beginning of the process, but the parallel unfolding of cultural orientations and social participation is likely to continue over time. Social participation with members of the mainstream cultural group

did not predict changes in mainstream cultural orientations in this study, but this relation might emerge in later follow-ups, as migrants adjust their orientation in response to more long-term patterns of social interactions with members of the mainstream cultural group. Accurately studying the development of this long-term reciprocal influence presents methodological difficulties as it would involve a high frequency of measurement over a very long time. A computational approach would address this issue. Agent-based computational models are increasingly used to examine cultural processes that do not lend themselves to field or laboratory studies (e.g., Dignum & Dignum, 2013). For example, Pfau, Kirley, and Kashima (2013) developed a computational implementation of Kashima's (2014) grounding model of cultural transmission. Such an approach would be ideally suited to investigate the reciprocal influence between mainstream cultural orientations and social participation in that group in the long term. It would also allow us to examine how the development of cultural knowledge ties into that dynamic.

This conceptual framing of the relation between cultural orientations and social participation is very tentative, but it allows us to consider (1) the significance of this association in the broader context of migrants' adaptation and (2) how to best push its exploration further. The present study documents one facet of this conceptual framing by establishing that cultural orientations toward the Canadian mainstream group prospectively predict social participation in that group, above and beyond important alternative predictors. Two of its strengths further our confidence in the results. First, the longitudinal design allowed us to test the hypothesized temporal direction of effects and its reverse. Second, in Study 2 great care was taken to recruit a sample with relatively homogeneous social functioning at baseline, with participants having no local social connections prior to migrating to the host country. Therefore, our results cannot be attributed to differential social integration at baseline.

However, reliance on a student sample limits the generalizability of results and introduces potential pressures on social participation. Students are more forced to interact with members of the mainstream cultural group and have more interaction opportunities in general compared to migrants in the community. Nonetheless, within these structural constraints, students make choices in navigating this social environment. It is also important to note that our sample is culturally heterogeneous and that aspects of participants' cultural background may influence their social participation in the new environment. For example, a greater distance between the cultural heritage and the mainstream Canadian cultural tradition (itself a concept fraught with difficulties) or heritage cultural norms favoring more avoidance-oriented approaches in interpersonal relations, may make it more difficult or less desirable to socially participate in the new cultural environment. In future research, it would be important to examine how cultural characteristics of migrants' background play a role in the relation between cultural orientations and social participation. Using objective measures of language proficiency would also represent an improvement over the self-report one used in the present research. Indeed, subtle aspects of participants' sociolinguistic and pragmatic abilities may influence their ability to form relationships in their second language. Meanwhile, the present studies address critiques that cultural orientations mostly reflect a general preference for multiculturalism and supports the idea that migrants' social engagement in the new community lies at the core of acculturation. We believe that this conceptual framing of acculturation is a promising direction for research on migrants' cultural adaptation.

## Transition

In showing that baseline mainstream cultural orientation prospectively predicts more numerous frequent interlocutors and friendships in the mainstream cultural group, *Manuscript 2* established a link between cultural orientations and actual behaviours. As such, these two studies address the critique that cultural orientations may just reflect a general preference for biculturalism (Boski, 2008) by demonstrating the behavioural predictive ability of cultural orientations. This work also contributes to the limited number of longitudinal studies in acculturation, an issue raised in *Manuscript 1*.

In addition, *Manuscript 2* supports the conceptual model guiding this dissertation (*path a* of Figure 1, specifically). Two longitudinal studies show that mainstream cultural orientation is related to how much migrants' socially participate in the mainstream cultural group. In addition to this quantitative link, it is likely that mainstream cultural orientation also influences how instances of social participation are experienced in the moment. Accordingly, *Manuscript 3* uses a daily diary approach to investigate more qualitative aspects of the link between mainstream cultural orientation and social participation. Specifically, this manuscript examines how migrants' subjective sense of cultural affiliation during social interactions may be linked to their mainstream cultural orientation.

**Manuscript 3** – Travels in Hyper-Diversity: Multiculturalism and the Contextual  
Assessment of Acculturation

Marina M. Doucerain, Jessica Dere, Andrew G. Ryder

## Abstract

We argue that current acculturation research offers an incomplete picture of the psychological changes taking place in contemporary multicultural societies. Several characteristics of the Canadian multicultural context highlight the limitations in current acculturation research: namely, themes of hyper-diversity, hybridity, dimensionality and the importance of local context. Canada is a case in point, but these themes are generalizable to other contemporary multicultural contexts. To address the limitations of the traditional psychological acculturation paradigm, we propose an innovative research approach to study acculturation: the Cultural Day Reconstruction Method (C-DRM). We report on two studies that implemented this diary method, to demonstrate that this research tool (1) addresses theoretical critiques of current acculturation research and (2) captures some of the complexity of acculturation in contemporary multicultural contexts. The C-DRM was constructed in response to the local research environment but we hope it will become part of a new generation of tools for the contextual assessment of acculturation.

*Keywords:* multiculturalism, acculturation, methods, Day Reconstruction Method, diary

## Introduction

When our research group started conducting acculturation research in Montreal, we began with the now-standard bidimensional model of orthogonal heritage and mainstream dimensions (e.g., Berry, 2005; Ryder, Alden, & Paulhus, 2000). Clearly defining the mainstream cultural group turned out to be a thorny issue: both French- and English-Canadian identities could qualify. We temporarily resolved this problem by including two mainstream dimensions, thus creating three-dimensional versions of acculturation instruments (see also Downie, Koestner, ElGaledi, & Cree, 2004). This seemingly clever solution was short-lived, however, as identifying a single coherent heritage group proved to be just as difficult. “Which one should I use?” was a question we often heard from participants. Picture a migrant born to a Chinese mother and a Spanish father but raised in the Philippines – or a French-speaking, Australian-educated, multilingual Tunisian Jewish migrant. At a certain point, one cannot keep adding more subscales to the standard instruments.

Moreover, interpreting the lived experiences of such people through a bidimensional acculturation lens threatens a considerable loss of important information – and we were living our own lives in a multicultural context that reminded us daily that our research methods were insufficient. Montreal’s particular complexity urged us to this conclusion, but we came to appreciate that a bidimensional approach to acculturation could only be a beginning for us to properly engage with the complexity of the contemporary multicultural experience. In this paper, we first consider characteristics of the local multicultural context that highlight limitations in current acculturation research. We then propose an innovative method of studying acculturation that was explicitly designed to help address these limitations. Our objective is not to reinvent theories of acculturation; indeed, other acculturation researchers acknowledge many of these same issues in their theoretical work.

We hope rather to promote an empirical approach that could help acculturation researchers get closer both to the theoretical possibilities inherent in this theoretical work and the actual lived experience of acculturation.

### **Multiculturalism in Societies and Minds**

Multiculturalism generally reflects a political ideology supportive of cultural minorities, whereby these groups and their members are not only recognized but also positively accommodated. Multiculturalism is at the heart of a body of political and philosophical work (see e.g., Kymlicka's, 1995, concept of 'group-differentiated rights'), but in practice countries adapt it loosely to fit their own needs. Multiculturalism became official Canadian federal policy in 1971 and part of the Canadian constitution in 1982 (section 27 of the Canadian Charter of Rights and Freedoms). It is based on four core ideas: (1) recognition and maintenance of minorities' cultural heritage; (2) promotion of intergroup communication; and (3) fostering of full participation in Canadian society; with all three points resting to a large extent on (4) the acquisition of at least one of Canada's official languages. Points (2), (3), and (4) reflect Canada's pluralist ideology (Bourhis, 2001) and promote a synthetic, unified society, formed from equally valued and differentiated pieces.

The extent to which these ideals 'work' in Canadian society is beyond the scope of this article. We are instead describing a set of ideals. These ideals nonetheless set Canada's multicultural policy apart from many countries' versions – especially that of most European nations – by rejecting the view that, “society should be divided into separate and disconnected ethnic groups, each with its own territorial spaces, political values and cultural traditions” (Banting & Kymlicka, 2010, p. 45). Critics such as Banting and Kymlicka (2010) have linked this latter approach to ghettoization of immigrants, increased discrimination, and political radicalism in many European countries.



This account of multiculturalism at the societal, macro-level is interesting to us inasmuch as it permeates and shapes ‘micro-level multiculturalism’—the multicultural mind. Indeed, state integration policies provide a social climate that influences individual attitudes and behaviours (Bourhis, Moïse, Perreault, & Senécal, 1997). More broadly, our theoretical stance toward interactions between macro- and micro-levels is one of mutual constitution between culture, mind, and brain (Ryder, Ban, & Chentsova-Dutton, 2011; see also Shweder, 1990). We are interested here in the psychological consequences of living in a sociopolitical context such as Canada, especially in the local context of Montreal. Specifically, we focus on the development of the multicultural mind: what are the changes in cognitions, behaviours, motivations, emotions, and identities that take place when a person lives in a complex multicultural environment?

These questions are almost isomorphic with the definition of psychological acculturation (hereafter simply ‘acculturation’) when applied to a multicultural context. Indeed, acculturation has been defined as:

...a process that is executed by an agentic individual ... after meeting and entering a cultural community that is different from the cultural community where he or she was initially socialized. Acculturation involves a deliberate, reflective, and, for the most part, comparative cognitive activity of understanding the frame of references and meanings with regard to the world, others, and self that exist in one’s ‘home’ cultural community and which one has discovered in a new cultural community. This process emerges within the context of interactions, both physical and symbolic, with the members of the ‘home’ and new cultural communities. Acculturation is an open-ended, continuous process that includes progresses, relapses, and turns (Chirkov, 2009a, p. 94).

Consequently, we would expect the acculturation literature to be the ideal source of answers to questions about the multicultural mind. We will argue, however, that research that fully engages with the ideological and practical consequences of multiculturalism must proceed differently than much of the research found in the existing acculturation literature.

To that end, we will first briefly review the dominant paradigm in contemporary acculturation research, and then discuss critiques of this paradigm that are informed by multiculturalism in Canada.

### **Acculturation and the Contemporary Multicultural Critique**

For the last few decades, acculturation research has been dominated by the framework developed by Berry and colleagues (Ward & Kus, 2012) and the concept of ‘acculturation strategies’ (e.g., Berry, 2005). Berry posits two dimensions that define how people go about negotiating the acculturation process: (1) people’s attitudes toward cultural heritage maintenance; and (2) people’s attitudes toward contact with and participation in the mainstream cultural group. Crossing these orthogonal cultural dimensions yields four acculturation strategies: integration (a relative preference for both heritage maintenance and mainstream contact); separation (a preference for heritage maintenance and no involvement with the mainstream group); assimilation (positive attitudes toward contact with and participation in the mainstream group and a lack of interest in heritage maintenance); and marginalization (a disengagement from both heritage and mainstream cultural concerns). In an expansion of this model, developed in the Quebec context, Bourhis and colleagues identify a fifth possible strategy: individualism, or a rejection of group categories and a preference for treating people as individuals (Bourhis et al., 1997).

An important contribution of this framework is the decisive move away from a unidimensional approach in the international acculturation literature. Indeed, many specific bidimensional approaches to acculturation have been developed and used, including within our research group (e.g., Dere, Ryder, & Kirmayer, 2010; Ryder et al., 2000; Ryder, Alden, Paulhus, & Dere, 2013). Even though these approaches do not necessarily use Berry’s specific labels and measurement tools, they posit two key

dimensions, measure them in a trait-like way using self-report measures, and use them to predict variables of interest—particularly psychosocial adjustment (Arends-Tóth & van de Vijver, 2006; Chirkov, 2009b). This research tends to emphasize ‘acculturative stress’ within a general stress-coping perspective (Cabassa, 2003). At least when Berry’s four strategies are used, a large number of studies find integration to be the most adaptive strategy (Berry & Sam, 1997).

### **Multiculturalism: Challenges to Existing Acculturation Research**

In recent years, this dominant paradigm has faced an increasing number of critiques (e.g., the introduction to a special issue on the topic in this journal; Chirkov, 2009b). A comprehensive review of these critiques is beyond the scope of this paper. Instead, we will focus first on three challenges to acculturation research that stem from characteristics of multiculturalism in Canada. We will then present an innovative approach to the study of acculturation – the Cultural Day Reconstruction Method – that was inspired by our multicultural context and that seeks to address some of the difficulties of acculturation research in complex multicultural contexts.

**1. Dimensionality: Beyond the traditional heritage-mainstream Dichotomy.** ‘Hyper-diversity’ (Kirmayer, 2013) or ‘super-diversity’ (Vertovec, 2007) are apt descriptors of the cultural make up of Montreal and Toronto in Canada, and certain large cities in other multicultural countries. Distinct cultural groups are numerous, and diversity arises not only in terms of countries of origin, but also according to language, religion, migration channel, immigration status, gender, age, and level of transnationalism. As a result, the traditional heritage-mainstream dichotomy characteristic of acculturation research is rendered obsolete.

Our own local context in Montreal serves as one striking example. In addition to the diversity typical of larger Canadian cities, language considerations mean that both French-

and English-speaking Canadians are effectively mainstream groups. Whereas the former group is a minority in Canada, the latter group is a minority in the province of Quebec. The focus of Canada's multiculturalism policy on intergroup sharing and communication compounds challenges to heritage/mainstream dichotomies by cultivating hybridization between cultural groups. Hybridity includes within-generation instances of cultural syncretism, such as Latino rock or Mandarin pop music, as well as intergenerational mixing of cultural heritages through intermarriages, leading to the emergence of a large number of people for whom hybridity is an experiential, embodied reality.

Scholars have started to contest acculturation bidimensionality by positing what could be called fusion models (Arends-Tóth & Van de Vijver, 2004). From this perspective, people need not be confined to neat heritage versus mainstream distinctions and are likely to idiosyncratically create altogether new cultural affiliations that mix and combine aspects of relevant cultural groups. Unfortunately, this process of cultural recombination, which Hermans and Kempen (1998) call 'hybridization', is largely absent from empirical examinations of acculturation (Arends-Tóth & Van de Vijver, 2004). The method proposed here takes a step in correcting this situation by allowing various forms of hybridity.

## **2. Situatedness: Domain specificity and the importance of local context.**

Several scholars have underscored the important role that contextual factors such as the socio-political orientation of the mainstream ('host') community (Bourhis et al., 1997), or colonial histories and diasporic communities (Bhatia & Ram, 2009), play in shaping the multicultural mind. These authors are mostly concerned with the 'macro-context' of acculturating individuals, but we argue that acculturation research should also consider the 'micro-context': namely, the immediate, concrete, local conditions of daily life. People experience macro-influences such as language ideologies and political orientations toward immigrants through daily social interactions. In other words, macro-contextual influences

permeate, are enacted in, and are experienced in the micro-context. This theoretical emphasis on ‘dailiness’ has been emphasized by scholars in cultural studies, such as Certeau (1988) and Lefebvre (2002; see also Highmore, 2002; Moran, 2005). Vertovec (2007) echoes the importance of this perspective by arguing that understanding what he calls ‘super-diversity’ requires the study of highly local contexts.

In addition, the four requirements of Canadian multiculturalism – heritage maintenance, intergroup communication, full participation in society, and knowledge of at least one official language – form an ambitious cultural program for any person. It is unlikely that all four are salient in all contexts and at all times. Certain cultural components may be salient in specific contexts according to systematic patterns. This aspect of multiculturalism highlights the issue of domain specificity (Dere et al., 2010). In recent years, an increasing number of scholars have demonstrated that acculturation is domain-specific and that a person’s preferences and attitudes with respect to cultural groups can vary across life domains. For example, Arends-Tóth and van de Vijver (2004) found that Turkish immigrants in the Netherlands favoured different acculturation strategies across public and private life domains. Similarly, Lechuga (2008) showed that acculturation scores were susceptible to cultural priming effects. This superordinate level of specificity can be extended to variation across specific situations. For instance, Clément and Noels’ (1992) work on situated identity revealed that the expression of ethnolinguistic identity displayed important inter-situational variation. In a related vein, Hong and colleagues (Hong, Morris, Chiu, & Benet-Martínez, 2000) showed that biculturals switched between different cultural frames in response to cultural icons and Yip (2005) found that ethnic salience varied among Chinese Americans depending on the local context. More work on domain- and context-specific aspects of acculturation is needed to understand how multicultural people navigate their complex cultural environments.

Both considerations of context and of domain-specificity underscore the situated nature of acculturation and emphasize the important role that the environment plays in shaping and modulating the acculturation process. The method proposed here allows researchers to take into account the environment that acculturating individuals navigate and thus to focus on the concrete nature of their lived experience.

**3. Behaviour: Attitudes are not actions.** The core ideas of multiculturalism in Canada described earlier are prescriptive: they define a set of ideals thought to foster a just, peaceful, and tolerant society. This prescriptive side of multiculturalism, however, begs examination of its descriptive facet. How do these principles trickle down to the level of daily behaviours and interactions? Do multicultural people actually use an official language in their daily lives? Do they make choices that maintain their cultural heritage? What do their social networks look like? In other words, how do multicultural principles translate into multicultural realities?

These fundamental questions are not fully addressed by existing acculturation research, and we question whether current methods could ever provide satisfactory answers. The emphasis on acculturation strategies and related self-report questionnaires represents an emphasis on ideals at the personal level, but not on actual behaviours. In their Relative Acculturation Extended Model, which is an expansion of the dominant bidimensional model, Navas and colleagues (Navas et al., 2005) stress the need to distinguish between ideal or preferred acculturation strategies and those adopted in reality. Similarly, a number of critics have called for measures that characterize multiculturalists' behaviours, arguing that, "the uniformly high scores of integration ... are research artifacts, based on a high appreciation of biculturalism and bilingualism, which correspond neither with measures of bicultural/bilingual knowledge nor with practices" (Boski, 2008, p. 145). We could not agree more with this position. Indeed, Ward and Kus (2012)

recently showed that an integration strategy is more likely to be endorsed when research instruments are based on attitudes as compared to self-reported behaviours. It is time acculturation research embraced the study of actual behaviours. The method proposed here, which includes a diary instrument, represents a step in this direction by examining participants' lived experiences. It is to this method that we now turn.

### **The Cultural Day Reconstruction Method (C-DRM)**

We have argued that our Canadian multicultural context foregrounds three areas of relative neglect in traditional acculturation research - dimensionality/hybridity, situatedness, and concrete behaviours. Our goal is now to present a cultural adaptation of the Day Reconstruction Method (C-DRM; Kahneman, Krueger, Schkade, Schwarz, & Stone, 2004), a method designed to address these weaknesses. We will then present data from two studies that have used this method. Initial work on the C-DRM (Watanabe & Ryder, 2007) was driven by a desire to address the marked disconnect between the complexity of the acculturation process and the simplicity of most measurement tools in this field. The goal was to develop an instrument that would be more clearly grounded in the lived reality of respondents, that would be easily adaptable for multiple cultural reference groups and a range of acculturation experiences, and that could yield both quantitative and qualitative data.

The C-DRM was inspired by the work of Kahneman and colleagues (Kahneman et al., 2004), who developed the original DRM, a well-validated assessment of daily activities in which the preceding day is divided into episodes that are each rated in terms of activity, social interaction, and emotional valence. This method was designed to provide data that are similar to those collected using experience sampling methodologies, but in a more efficient and less costly manner (Kahneman et al., 2004). To date, the DRM has primarily been used in well-being research (e.g., Knabe, Rätzel, Schöb, & Weimann, 2010; Kopperud

& Vittersø, 2008), with no particular attention paid to cultural identity or cultural change. In its assessment of everyday experiences in context, this method provided an intriguing possibility for acculturation research.

The C-DRM involves modifications to the original DRM that allow for the assessment of a number of factors relevant to cultural identification and acculturation. To begin, participants list the cultural groups with which they identify. This first page in the C-DRM is known as the ‘culture sheet’, and is not part of the original DRM. In addition to ‘mainstream’ (e.g., English-Canadian, French-Canadian) and ‘heritage’ (e.g., Chinese, Haitian) groups – with room for more than one group per category – participants are also encouraged to include ‘hybrid’ cultural groups (e.g., Chinese-Canadian), religious or spiritual affiliations, and any other salient cultural identities. Working definitions are provided to assist participants. For example, for hybrid cultural groups: “People may endorse attitudes, values, and practices that incorporate elements of two or more cultures and which result in a new and unique hybrid culture, reflective of the prolonged contact between the groups in question”. This initial step already places the C-DRM apart from the majority of current acculturation measures, by allowing for the inclusion of numerous and varied cultural reference groups.

Participants next divide up their previous day into a series of episodes, similar to a sequence of scenes in a film, using the ‘episode sheets’. Once the episodes have been listed, participants respond to a series of questions for each one. The key modification to the original DRM is the inclusion of several questions regarding cultural identification. For each episode, participants are asked to indicate their cultural affiliation(s), by drawing on their completed culture sheet, along with language(s) used and the cultural backgrounds of people with whom they were interacting, if applicable. See Figure 2 for an example of a completed episode sheet. Finally, participants report their feelings during the episode, by



indicating the extent to which they experienced a series of affect descriptors (e.g., happy, competent/capable, worried/anxious).

To our knowledge, the present work represents the first attempt at using the DRM in the domain of acculturation and multiculturalism. Conceptually, this work is in line with Noels, Clément, and colleagues research on situated ethnic identity (e.g., Clément & Noels, 1992) and with Yip's experience sampling and daily diary research on various aspects of daily variation in ethnic identity (e.g., Yip, 2005; Kiang, Yip, Gonzales-Backen, Witkow & Fuligni, 2006), although we adopt a slightly different angle by focusing on cultural orientations rather on ethnic identity. Methodologically, the C-DRM may provide an interesting approach to expand on the work just cited. Indeed, the C-DRM is less costly and less intrusive in the life of participants than experience sampling methods. At the same time, it allows researchers to characterize local contextual variation in a way that is typically not the case in traditional daily diary methods where participants often provide daily aggregates. It may also provide more objective data than when using a situated ethnic identity questionnaire where participants provide information on their typical response to a given situation: e.g., “when I listen to music I feel...” (Clément & Noels, 1992). In contrast, the C-DRM asks participants to reflect on a specific moment when they were listening to music the day before, which may limit biases. As such, the C-DRM may represent a promising methodological direction for researchers interested in contextual variation in acculturation. The present research examines this potential.

**First Morning Episode**

Please look at your Diary and select the earliest episode you noted in the Morning.

This is episode number 14, which began at 7:32 and ended at 8:15.

1. What were you doing? (check all that apply)

- commuting
- studying
- doing housework
- eating
- socializing
- nap / resting / relaxing
- computer / internet / e-mail
- intimate relations
- shopping
- working
- preparing food: what kind? Canadian
- taking care of your children
- praying / worshipping / meditating
- watching television (TV)
- reading newspaper / book / magazine
- on the phone
- exercising
- other; please specify: \_\_\_\_\_

1a. If applicable, what was the main language used during the activity? (e.g. watching TV in Spanish, online chat in Chinese)

English

2. Where were you?  
 at school  at home  at work  somewhere else

3. Were you interacting with anyone?

(e.g. in person, on the phone, internet chat – text and/or video, etc.)  
 Yes  No *if no one, skip to Question 4.*

3a. If you were interacting with someone (please check all that apply)

- spouse / significant other  my child / children
- parent(s) / relative (s)  friend(s)
- classmate(s)  co-worker(s)
- other: roommates

Their cultural background

- English-Canadian  French-Canadian
- Someone / people from my heritage culture
- Other: \_\_\_\_\_

3b. In what language were you primarily interacting?

- My heritage language  English  French
- Other (please specify): \_\_\_\_\_

4. During this episode, what was your cultural affiliation / orientation?

Please refer to Packet 2 (your Culture Sheet) and enter a cultural affiliation/orientation (and corresponding number) for this episode.  
(e.g., Number: 4 Affiliation/orientation: Chinese-Canadian)

Number: 1 Affiliation/orientation: English-Canadian

Figure 2. A sample episode of the DRM, with fictional answers.

## Study 1

The goal of this preliminary study was to determine whether or not the Culture-DRM yields data that cannot be captured by traditional acculturation measures. Because of its exploratory nature, we did not formulate specific research questions or hypotheses. We simply examined the diversity of cultural groups with which participants affiliated and how these affiliations were used throughout the day.

### Methods

One hundred and nineteen undergraduate students at Concordia University, an English-language university in Montreal, were recruited through flyers posted in culturally-defined or international student associations (e.g., Chinese Students' Association, International Students' Association, etc.). In this study, only migrants were used: participants were included in the final sample if they had arrived in Canada less than ten years prior to the study date. The final sample included 29 women and 27 men with an average age around 24 years ( $M$  age = 24.12,  $SD$  = 5.63), who had lived in Canada for an average of around three years ( $M$  = 3.13,  $SD$  = 2.12). The sample represented a variety of cultural origins, especially Arabic-heritage (40%) and Chinese-heritage (27%). After providing written informed consent, participants filled out a paper-and-pencil version of the C-DRM.

### Results & Discussion

As this study marked the initial examination of the C-DRM, the statistical analyses were largely descriptive. The first set of results involved the number of cultural identities listed by participants. They reported an average of nearly five identities in total ( $M$  = 4.50,  $SD$  = 1.32). On average, participants reported more than one heritage identity ( $M$  = 1.21,  $SD$  = .41) and more than one hybrid identity ( $M$  = 1.39,  $SD$  = .91). In addition, 25% of the hybrid identities listed by participants did not involve the combination of a

heritage and a mainstream identity, but rather various other two-identity combinations. Furthermore, 69% of the sample reported at least one religious/spiritual identity.

We then examined how participants described their day in order to see whether the identities listed on the culture sheet were actually used on the episode sheets. On average, participants reported ten episodes ( $M = 10.15$ ,  $SD = 3.19$ ), and they used nearly three distinct identities in describing the course of their day ( $M = 2.76$ ,  $SD = 1.08$ ). Moreover, we found that on average participants switched between different cultural identities four times during the day ( $M = 4.00$ ,  $SD = 2.87$ ).

The results presented here should be seen as largely preliminary, illustrating the potential utility of the C-DRM for acculturation research. They suggest that the C-DRM can account for cultural identities that traditional instruments generally cannot, highlighting the limitations of bidimensional measures that pose questions about only two (or perhaps three) pre-specified cultural groups. Our results also revealed that the C-DRM taps into the notion of hybrid identities in ways that are impossible for most acculturation measures. The finding that a fair proportion of hybrid identities did not involve a mainstream-heritage combination stands in contrast to the often implicit assumption in the acculturation literature that hybrid identities represent the merger of a mainstream identification (e.g., Canadian) and a heritage one (e.g., Lebanese). This finding fits with the earlier discussion regarding hybridity and emphasizes the importance of remaining grounded in participants' lived experiences.

The finding that participants switched cultural affiliations several times during the day is consistent with the work of Hong, Benet-Martínez and others (e.g., Benet-Martínez, Leu, Lee, & Morris, 2002; Hong et al., 2000), and supports the notion that local contextual factors play a crucial role in scaffolding momentary cultural experiences. Which factors are implicated remains an open question, however. Also unresolved is the relation between

these fluctuating, momentary, context-bound cultural affiliations and people's more general, stable acculturation preferences as measured by traditional acculturation self-report questionnaires. We believe that the C-DRM is able to provide answers to both of these questions, as we demonstrate in Study 2.

## Study 2

This study built on the results found in Study 1 by focusing on the relations between local context and cultural affiliation; by examining how general acculturation preferences (as measured by traditional acculturation tools) influence these relations; and by taking into account hybrid affiliations. Specifically, we sought to answer the following questions:

- (1) What contextual elements in the daily life of multicultural individuals predict momentary cultural affiliation?
- (2) What is the influence of general acculturation attitudes (toward heritage and mainstream cultural groups) on momentary cultural affiliation?

These questions were informed by our stance toward mainstream acculturation research. Note that while our work attempts to distance itself from the dominant acculturation paradigm, it aims to complement rather than reject it. We believe that general attitudes toward one's cultural groups do play a role and influence the acculturation process as it is enacted in daily life. In other words, macro-preferences are likely to permeate micro-choices. Because of the exploratory nature of the research presented here, we did not formulate specific hypotheses. We simply expected that some contextual aspects of the immediate environment would predict momentary cultural affiliation and that general acculturation-related attitudes would influence momentary cultural affiliation.

## Methods

**Participants and procedure.** One hundred and eleven multicultural students at Concordia University, an English-speaking university in Montreal, took part in the study. Participants were recruited in classes and through flyers posted in culturally-defined or international student associations (e.g., Chinese Students' Association, International Students' Association, etc.). We screened the participants for inclusion in the final analysis on the basis of their cultural background. Specifically, only participants who reported at least one cultural identity in addition to Canadian, English-Canadian, French-Canadian, and/or Quebecois in their culture sheet were included. This procedure eliminated ten participants. The final sample comprised 69 women and 32 men with an average age around 24 years ( $M = 24.09$ ,  $SD = 6.10$ ). The majority of participants were first generation immigrants (73%) who had lived in Canada for an average of around four-and-a-half years ( $M = 4.52$ ,  $SD = 7.23$ ). The sample represented a variety of cultural origins, especially Arabic-heritage (13%) and Chinese-heritage (24%). For example, 24% of participants were of Chinese descent and 13% were of Arabic-speaking heritage. After giving written informed consent, participants filled out paper-and-pencil versions of the C-DRM (see earlier section for a description and Figure 2 for a sample episode) and of a Quebec-specific version of the Vancouver Index of Acculturation (VIA; Ryder, Alden, & Paulhus, 2000).

The Quebec-specific version of the VIA is a 30-item self-report measure with three parallel subscales assessing cultural orientation towards the heritage group (VIA-H), cultural orientation towards the French-Canadian mainstream group (VIA-FC), and cultural orientation towards the English-Canadian mainstream group (VIA-EC). These last two subscales reflect the complex nature of the mainstream cultural context in Montreal. A sample item is, “I would be willing to marry a person from my heritage culture”. The cultural referent changes to “an English-Canadian person” and to “a French-

Canadian person” for the VIA-EC and VIA-FC subscales, respectively. Participants rate their agreement to items on a 9-point Likert-type scale, with higher scores indicating more agreement. Internal consistencies were adequate to high in our sample (VIA-H:  $\alpha=.86$ ; VIA-EC:  $\alpha=.77$ ; VIA-FC:  $\alpha=.87$ ). A single ‘cultural orientation toward the mainstream group’ subscore (VIA-M) was obtained by computing the higher value between scores on the VIA-EC and the VIA-FC for each participant.

**Coding.** Several variables characterizing the episodes had to be recoded to be amenable to analysis. “Language used” was recoded into four categories: Mainstream (i.e., English or French), heritage (e.g., Spanish or Chinese), bilingual (use of more than one language during the episode), and no interaction. “Cultural background of interlocutor” was also recoded into four categories: mainstream (e.g., Canadian or Quebecois), heritage (e.g., Egyptian), hybrid (e.g. Italian-Canadian), and no interaction. In terms of activities carried out during the episode, we focused on whether or not that activity was related to food (e.g., eating or cooking). Two considerations motivated this choice: (1) many acculturation scales include food and cuisine as a culturally relevant domain; and (2) food has been identified as a central cultural symbol (Cleveland, Laroche, Pons, & Kastoun, 2009). “Activity” was therefore recoded into two categories, food-related and not food-related. Note that future researchers could choose other types of activities listed in the episode sheets for similar attention. Cultural affiliation, as our criterion variable, was recoded into only three categories: Mainstream, hybrid, and heritage. Instances that listed religious groups were recoded as heritage affiliations.

**Analysis.** Because each participant yielded a cluster of data points (episodes nested within individuals), we used multilevel modelling to analyze the data. This procedure accounts for interdependence among observations within each participant and allows us to model between-person variability in the relationships between micro-variables and

momentary cultural affiliation. In addition, this analysis strategy is in keeping with recent theoretical developments that advocate multilevel analyses in cross-cultural psychology (van de Vijver, van Hemert, & Poortinga, 2008).

Our analysis predicted momentary cultural affiliation from two levels of predictors. First level predictors, or micro-variables, characterized the local, momentary context. These values changed from episode to episode. Second level predictors, or macro-variables, characterized participants' cultural orientations. These values were invariant across episodes for a given participant.

Specifically, given our binary dependent variables (affiliation to one group vs. the other) we fitted two generalized linear mixed models (logistic) models to the data. The first model contrasted mainstream affiliation vs. hybrid and heritage affiliations grouped together by estimating the probability of reporting hybrid/heritage affiliation for each episode. The second model contrasted hybrid vs. heritage affiliations by estimating the probability of reporting heritage affiliation for each episode<sup>5</sup>. For both models, we first tested the null hypothesis that random effects equal zero through 3000 bootstrapped estimations of the null model. Rejecting the null hypothesis confirms that observations within a person are interdependent and justifies using multilevel modeling over a simple logistic regression approach. The null model also allows us to estimate within- and between-person variance and it serves as a baseline against which we will compare more complex models.

We entered predictors in three sequential steps: (1) micro-variables characterizing structural aspects of the context (presence of food-related activity and location); (2)

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5 We used this nested approach rather than a multinomial logit random effects model because these latter models are much more complex to evaluate, as they require evaluation of multidimensional integrals (Malchow-Møller & Svarer, 2003). For that reason, they are still the source of active research (Hartzel, Agresti, & Caffo, 2001). The two models were fitted to the data by Laplace approximation, using the `lme4` package in R version 2.12.1 (Bates, 2011).



micro-variables characterizing social aspects of the context (language used with interlocutor and cultural background of interlocutor); and (3) macro-variables characterizing individuals' cultural orientation toward mainstream and heritage groups (scores on VIA-H and VIA-M). All models included only random intercepts<sup>6</sup>. Fixed effects coefficients will be presented only for the full model. Ninety-five percent confidence intervals were obtained for these coefficients based on 1000 bootstrapped estimates.

At each step, change in model fit was assessed in several ways. First, we computed the Somer's *D* statistic (Somers, 1962) for each model as a measure of ordinal association. Second, we computed the reduction in variance of intercept random effect (relevant for macro-variables only) (Singer, 1998, p. 332), which provides an  $R^2$ -type measure of improvement in model fit and is typically used in multilevel analysis (Singer & Willett, 2003). This measure indicates the extent to which person-level variables explain random variation around the intercept. Third, we compared changes in information criteria using the Akaike Information Criterion (AIC) and Bayesian Information Criterion (BIC), and computed likelihood ratio tests.

## Results & Discussion

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6 At the episode level, the probability  $p_{ij}$  of affiliating to the heritage cultural group for person  $j$  during episode  $i$  was modeled according to the following level 1 equation:

$$\ln\left(\frac{p_{ij}}{1-p_{ij}}\right) = \beta_{0j} + \beta_{1j} \text{food}_{ij} + \beta_{2j} \text{location}_{ij} + \beta_{3j} \text{language}_{ij} + \beta_{3j} \text{culture.interlocutor}_{ij} + r_{ij} \quad \text{where } r_{ij} \sim N(0, \sigma^2)$$

and where  $\beta_{0j}$  represents the expected log-odds of affiliating to the heritage group when all predictors are set to their reference level,  $\beta_{xj}X_{ij}$  represents the change in log-odds of affiliating to the heritage group as a function of scores on micro-predictor  $X$ , and  $r_{ij}$  represents the error term associated with episode  $i$  for person  $j$ .

At the person level, the episode-level intercept and slopes were modeled according to the following level 2 equations:

$$\ln\left(\frac{p_{ij}}{1-p_{ij}}\right) = \gamma_{00} + \gamma_{0x}X_{ij} + u_{0j} + r_{ij} \quad \text{where } r_{ij} \sim N(0, \sigma^2)$$

and where  $\gamma_{00}$  is the overall intercept,  $\gamma_{0x}X$  is the effect of macro-predictor  $X$ , and  $u_{0j}$  represents the unique effect of person  $j$  on the intercept.

Results are presented in three sections: (1) general descriptive results for the DRM; (2) results from the first model, predicting mainstream vs. heritage and hybrid together affiliations; and (3) results from the second model, predicting hybrid vs. heritage affiliations.

**Descriptive results.** On average, participants listed almost five different cultural identities ( $M = 4.93$ ,  $SD = 1.52$ ) on the culture sheet. They mentioned more than one cultural identity for the mainstream, heritage, and hybrid categories ( $M = 1.59$ ,  $M = 1.43$ , and  $M = 1.14$ , respectively). Of these, more than two ( $M = 2.24$ ,  $SD = 1.07$ ) were actually used during the day, as reported in the episodes that had a particular cultural affiliation. Participants reported an average of more than five-and-a-half episodes ( $M = 5.54$ ,  $SD = 1.52$ ) that had a particular cultural affiliation. The average duration of an episode was 78.51 minutes. In total, 551 episodes were analyzed. Among these, 194 referred to a mainstream affiliation, 252 to a heritage affiliation, and 105 to a hybrid affiliation.

**Predicting mainstream vs. heritage/hybrid affiliation.** Incremental changes in model fit as a result of hierarchical entry of predictors are presented in Table 3. Each step produced both a decrease in information criteria values and a statistically significant chi-square value for likelihood ratio tests, indicating that the introduction of each block of variables increased model fit. The high Somers'  $D$  final value also showed that the model was effective in accurately predicting cultural affiliation. In other words, characterizing the structural context, the social context, and general cultural orientations contributed to this prediction. Moreover, the introduction of macro-variables accounted for an appreciable proportion of intercept variance among individual participants. These results converge to show that the selected variables were successful in predicting mainstream versus heritage/hybrid cultural affiliation in this sample, supporting the hypothesis that contextual aspects of the immediate environment predict momentary cultural affiliation

and that general cultural orientations also influence this affiliation.

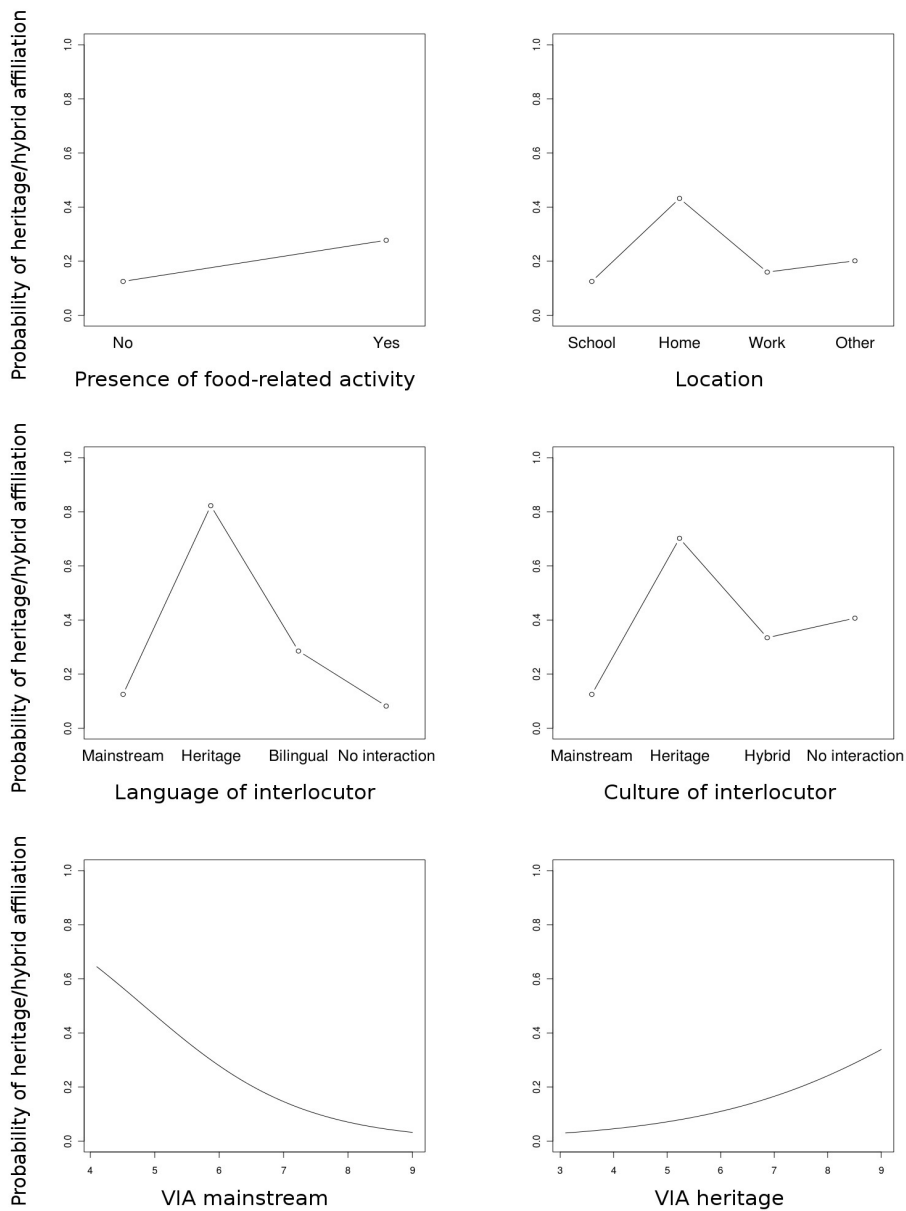
Table 3

*Model Fit in Predicting Mainstream vs. Heritage/Hybrid Affiliation*

Model	$\hat{\tau}_{00}$	Somers' <i>D</i>	AIC	BIC	loglik	$\chi^2_{\text{diff}}$ ( <i>df</i> )	<i>p</i>
Null model			658.6	667.2	-327.3		
1. Structural context	.80		616.8	642.6	-302.4		
Difference model 1 and null model						49.84(4)	<.001
2. Social context	3.15	.88	531.0	582.7	-253.5		
Difference model 2 and model 1						97.79(6)	<.001
3. Cultural orientations scores	2.78	.88	522.0	582.4	-247.0		
Difference model 3 and model 2						12.93(2)	.002

*Note.* AIC = Akaike Information Criterion; BIC = Bayesian Information Criterion; loglik = log likelihood. The introduction of macro-variables reduced intercept variance by 12%.

Table 4 reports the regression results for the full model. In accordance with measures of model fit, all variables significantly predicted cultural affiliation. For ease of interpretation, the relation between levels of each variable (including all reference levels) and cultural affiliation is shown in Figure 3. In this figure, regression coefficients have been transformed back to probabilities of reporting a mainstream cultural affiliation versus a heritage/hybrid cultural affiliation. In other words, smaller values indicate a greater probability of reporting affiliation to a mainstream cultural group, and a value of .5 indicates equal probability of reporting affiliation to either group.



*Figure 3.* Probability of affiliating to mainstream vs. heritage/hybrid cultural groups. The reference levels are: No food-related activity, home location, mainstream language of interaction, mainstream culture of interlocutor, mean VIA mainstream score ( $M=6.69$ ), and mean VIA heritage score ( $M=7.23$ ). For example, the top right figure represents the relation between location and affiliation for episodes involving no food-related activity, where a participant reporting average VIA scores is using the mainstream language with an interlocutor belonging to the mainstream cultural group.

Overall, Figure 3 shows that a higher probability of reporting a heritage/hybrid affiliation during an episode is associated with the presence of a food-related activity, home location, heritage language of interaction, heritage culture of interlocutor, lower VIA mainstream scores, and higher VIA heritage scores. Interestingly, bilingual interaction and interaction with a hybrid-culture interlocutor are associated with probabilities that fall in-between those associated with the mainstream and heritage poles. These results provide initial support for the idea that hybrid cultural elements are distinct from both mainstream and heritage components.

Table 4

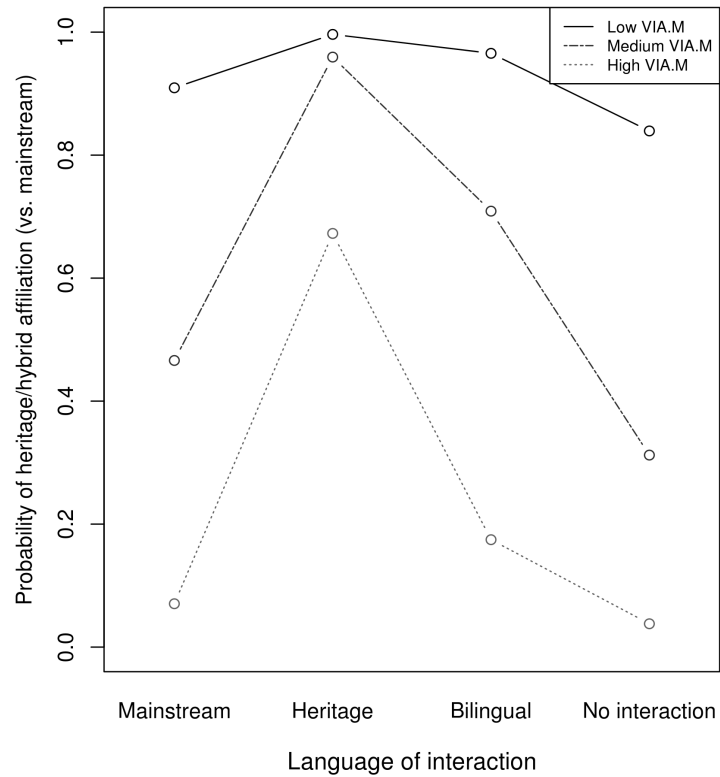
*Fixed Effects and Random Effects for the Full Model Predicting Mainstream vs. Heritage/Hybrid Affiliation*

Parameter	Adjusted OR	Coefficient	SE	95% CI	<i>z</i>	<i>p</i>
<i>Random effects</i>						
Intercept	7.42	2.01	1.64	[-0.66, 5.09]	1.21	.23
<i>Fixed effects</i>						
Level 1 (episode specific)						
Food-related activity yes	2.24	0.81	0.32	[0.23, 1.49]	2.53	.01
Location school	0.23	-1.49	0.40	[-2.15, -0.89]	-3.71	<.001
Location work	0.30	-1.21	0.78	[-2.72, 0.03]	-1.56	.12
Location other	0.33	-1.10	0.36	[-1.84, -0.41]	-3.07	.002
Language heritage	27.09	3.30	0.93	[2.30, 17.27]	3.55	<.001
Language bilingual	2.79	1.03	0.58	[0.26, 2.28]	1.77	.08
Language no interaction	0.52	-0.65	0.59	[-1.79, 0.35]	-1.12	.26
Culture int. heritage	13.74	2.62	0.50	[1.79, 3.65]	5.23	<.001
Culture int. hybrid	3.51	1.26	0.44	[0.64, 1.98]	2.80	.005
Culture int. no interaction	4.00	1.39	0.60	[0.51, 2.47]	2.31	.02
Level 2 (individual)						
VIA-M	0.44	-0.81	0.24	[-1.28, -0.46]	-3.42	<.001
VIA-H	1.61	0.47	0.19	[0.16, 0.86]	2.48	.01

*Note.* OR = odds ratio; CI = confidence interval; culture int. = culture of interlocutor



The influence of person-level variables on the relation between momentary affiliation and episode-level variables is best shown through the visualization of the joint contribution of two levels. Figure 4 provides an example of such an interaction: the relation between language spoken and momentary affiliation during an episode, at different levels of VIA-M. This graph shows that language/affiliation patterns depend on the level of VIA-M. For people with a less positive orientation toward the mainstream group (as denoted by a low VIA-M score), the language of interaction has relatively little importance – such people are very likely to identify with a heritage/hybrid group in all circumstances. On the other end of the continuum, for people with a very positive orientation toward the mainstream group (as denoted by a high VIA-M score), different languages of interaction predict very different probabilities of affiliation. Heritage language is associated with a high probability of affiliating to a heritage/hybrid group, whereas mainstream language is associated with the converse. In other words, Figure 4 shows that the differential predictive power of language is greatest when overall cultural orientation toward the mainstream group is very positive. Of course, other interactions between variables could have been chosen; Figure 4 only serves as an illustrative example of the influence of macro-variables on the relation between momentary affiliation and micro-variables. This finding strongly suggests that both levels are important in predicting cultural affiliation during an episode.



*Figure 4.* Joint contribution of language of interaction and VIA mainstream scores in predicting heritage/hybrid vs. mainstream cultural affiliation. The reference levels are: No food-related activity, home location, mainstream culture of interlocutor, and mean VIA heritage score ( $M=7.23$ ).

**Predicting heritage vs. hybrid affiliation.** Incremental changes in model fit as a result of hierarchical entry of predictors in our second model are presented in Table 5. Only the first two steps produced a decrease in information criteria values and a statistically significant chi-square value for likelihood ratio tests, indicating that the introduction of macro-variables did not increase model fit. Moreover, their introduction did not account for any intercept variance among individual people. However, the very high Somers'  $D$  final value showed that the model as a whole was effective in accurately predicting cultural affiliation. These results converge to show that general cultural orientations do not explain variation in affiliation to heritage versus hybrid groups, but that variables characterizing the local context of an episode successfully do so by making accurate differential predictions.

Table 5

*Model Fit in Predicting Hybrid vs. Heritage Affiliation*

Model	$\hat{\tau}_{00}$	Somers' <i>D</i>	AIC	BIC	loglik	$\chi^2_{\text{diff}} (df)$	p
Null model			370.4	378.1	-183.2		
1. Structural context		.80	359.9	383.2	-174.0		
Difference model 1 and null model						18.49 (4)	.001
2. Social context	16.90	.88	310.8	357.3	-143.4		
Difference model 2 and model 1						61.15 (6)	<.001
3. Cultural orientation scores	16.77	.88	314.6	368.9	-143.3		
Difference model 3 and model 2						0.19	.91

*Note.* AIC = Akaike Information Criterion; BIC = Bayesian Information Criterion; loglik = log likelihood. The introduction of macro-variables reduced intercept variance by 0.01%.

Table 6 reports the regression results for the full model. In accord with measures of model fit, both VIA variables have an adjusted odds ratio (OR) close to 1 and fail to reach statistical significance. Food-related activity and location are also not statistically significant in the full model, although they were at step 2. This change from statistical significance to non-significance upon introduction of language and culture of interlocutor suggest that the variance accounted for by this characterization of structural aspects of the episode context is subsumed by social aspects of the episode. Indeed, both language and culture of interlocutor yielded statistically significant log-odds. In other words, these two variables allow for differential predictions regarding identification with heritage versus hybrid groups.

Table 6

*Fixed Effects and Random Effects for the Full Model Predicting Hybrid vs. Heritage Affiliation*

Parameter	Adjusted OR	Coefficient	SE	95% CI	z	p
<i>Random effects</i>						
Intercept	1.03	.03	4.15	[-6.14, 9.19]	0.01	.99
<i>Fixed effects</i>						
Level 1 (episode specific)						
Food-related activity yes	0.62	-0.48	0.55	[-1.79, 0.49]	-0.87	.38
Location school	0.31	-1.17	0.84	[-3.13, 0.36]	-1.40	.16
Location work	0.10	-2.28	1.47	[-10.02, 15.79]	-1.55	.12
Location other	0.36	-1.02	0.73	[-1.89, 0.95]	-1.40	.16
Language heritage	106.08	4.66	1.00	[2.68, 9.52]	4.66	<.001
Language bilingual	2.55	0.94	0.85	[-0.68, 3.35]	1.11	.27
Language no interaction	1.83	0.60	1.29	[-2.27, 2.49]	0.47	.64
Culture int. heritage	1.70	0.53	0.93	[-1.21, 3.41]	0.57	.57
Culture int. hybrid	0.18	-1.71	0.99	[-5.01, 0.57]	-1.73	.08
Culture int. no interaction	20.76	3.03	1.29	[1.63, 12.58]	2.34	.02
Level 2 (individual)						
VIA-M	1.19	0.17	0.55	[-1.00, 1.11]	0.31	.76
VIA-H	1.08	0.07	0.46	[-0.80, 0.88]	0.16	.87

*Note.* OR = odds ratio; CI = confidence interval; culture int. = culture of interlocutor.

In terms of language of interaction, speaking a heritage language during an episode was associated with a higher probability of affiliating to a heritage group, while there was little variation for other language levels. The cultural group label of interlocutor, as attributed by the participant, displayed a very different pattern – a hybrid cultural group label for the interlocutor predicts a markedly higher probability of activating a salient hybrid identity in the participant. These results indicate that hybrid versus heritage momentary identity can be differentially predicted from variables characterizing the local social context of an episode.

### **General Discussion**

Conducting acculturation research in the context of Canada's multiculturalism has forced us to reconsider central tenets of the traditional acculturation research paradigm, and has thereby compelled us to consider innovative ways to study this multifaceted phenomenon. The C-DRM is a concrete result of this process. It aims to capture some of the complexity in the lives of multicultural people, inhabiting two or more cultural worlds, by taking local context into account and by focusing on hybrid cultural identities. The studies reported here show that the C-DRM successfully fulfills these requirements, yielding novel and nuanced results.

The finding that characteristics of the local context of an episode, combined with an assessment of general cultural orientations, allowed us to accurately predict momentary cultural affiliation is particularly noteworthy. It underscores the fluid nature of acculturation and suggests that a systematic portrayal of the local context can at least partly account for variability in affiliation. In other words, it seems plausible that momentary cultural affiliation is the product of a complex interplay between and micro and macro factors. A corollary to this view is that subtle changes in the local environment,

be they changes of location or changes in the language spoken, are associated with changes in the subjective experience of cultural identification. These results echo Hong and colleagues' (Hong et al., 2000) work on cultural frame switching, which shows that priming biculturals through the use of iconic cultural images induces changes in "culturally based interpretative lenses", as Benet-Martínez and colleagues describe it (2002, p. 492). Although the methods used in the current study did not permit us to assess momentary intrapersonal cultural changes beyond self-identification, it seems plausible that changes in cultural affiliation would be paired with other culturally relevant characteristics, such as cultural values or culturally based interpretative lenses. In this sense, the results reported here might be evidence of naturalistic frame switching, possibly induced by contextual cues such as location, language, or activity.

These results also suggest, however, that although cultural identification is fluid, general cultural orientations may impose boundaries on the extent of this malleability. Based on the pattern displayed in Figure 4, we propose that general attitudes may delineate the space in which micro-variation plays out. Conversely, it seems plausible that repeated micro-variation in one direction would push back these boundaries and thus longitudinally expand the space of possible micro-variation in cultural affiliation. In other words, repeated identification with a specific cultural group over time might eventually solidify into stable positive attitudes toward this group. This dynamic developmental interplay between micro-variation and long-term shifts in stable macro-level attitudes is only theoretical speculation at this point, but we believe it could constitute a key starting point for future empirical investigation. With that goal in mind, we might be able to draw inspiration from the developmental literature on micro-development, which specifically examines such interactions (see e.g., Granott & Parziale, 2002).

This proposal on the interplay between micro-variation and macro-stability can



potentially broaden our understanding of the concept of ‘integration’ by enriching Boski’s (2008) five meanings of integration in acculturation psychology. The view suggested by the present results is one where integration represents an expanded field of cultural space, within which multicultural individuals fluidly shift cultural identification – and possibly cultural frames – by drawing on cultural affordances to meet the demands of specific local contexts. This view is different from attitudinal preferences for biculturalism (Boski’s first meaning) and from bicultural frame switching (Boski’s fourth meaning); essentially, it emerges from the dynamic interplay between these two stances.

A second set of interesting findings yielded by the C-DRM concerns the importance of hybrid identification. The results clearly show that the hybridization of culture is a real phenomenon in multiculturals’ acculturation experiences, at least in our samples. Multicultural respondents report experiencing one or more hybrid cultural identifications during a typical day. Moreover, hybrid versus heritage identification can be differentially predicted by characterizing social dimensions of the local context. In our sample, hybrid identification was particularly likely when the interlocutor was perceived as also culturally hybrid. This finding suggests that hybrid cultural identification is distinct from heritage or mainstream identifications and that it might represent a qualitatively different phenomenon, rather than a mere mid-point between heritage and mainstream poles.

The scant examination of cultural hybridity in the acculturation literature precludes interpretation of our results in light of existing theory; indeed, the results reported here raise even more questions. For example, what are the attributes that lead one to perceive an interlocutor as culturally hybrid? The studies presented here cannot answer this question, but they do emphasize that hybridity matters in the life of multicultural people and they underscore the need for further theoretical and empirical examination of cultural hybridity.

So far, we have discussed the results of these studies and their potential importance for acculturation research. In this section, we want to reflect more generally on acculturation methods, and on the use of acculturation scales specifically. We mentioned in the introduction that mainstream acculturation research predominantly uses self-report questionnaires as research tools. Our critiques of the dominant paradigm constituted an important motivation to explore alternatives such as the C-DRM. At the same time, it is worth reiterating that our position does not represent a radical rejection of traditional acculturation instruments. A concise summary of our position is that acculturation questionnaires are necessary but not sufficient to appropriately study acculturation.

Our results corroborate this contention in several ways. First, the culture sheet showed that the average participant across both studies reported more than four self-relevant cultural groups, a number that goes beyond the capacities of any published acculturation questionnaire of which we are aware. Second, standard questionnaires on their own cannot capture the shifts in cultural affiliation that are captured by the C-DRM, nor the role of contextual factors in these shifts. Third, questionnaire scores from the VIA failed to predict hybrid versus heritage affiliation<sup>7</sup>. On the other hand, our results showed that general cultural orientation scores influenced the relation between local context and cultural affiliation; without information from the VIA, the picture would have been incomplete. In other words, acculturation scales have an important role to play but are inadequate on their own. We instead advocate a multi-method approach that triangulates information about stable attitudes and preferences with more malleable, context-specific, dynamic aspects of acculturation.

The C-DRM is an example of such an approach. A particular strength of this method

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<sup>7</sup> One could question the choice of the actual acculturation scale we used, but the Vancouver Index of Acculturation is a widely-used instrument that has consistently demonstrated good validity and reliability (see Huynh, Howell, & Benet-Martínez, 2009 for a relevant meta-analysis).

is its potential for customization. It can easily be adapted to fit the purposes of different researchers and research questions. For instance, we mentioned the importance of domain specificity in acculturation and alluded to the work of other researchers (e.g., Arends-Toth & van de Vijver, 2004) who share this concern. The C-DRM is an ideal tool to contribute to this body of work: episodes can easily be examined in terms of life domains with varying degrees of generality, from broader public-private distinctions to finer-grained differentiations.

The current studies should therefore be seen primarily as establishing feasibility, rather than as providing a definitive version of the C-DRM. As such, the results reported here should be interpreted with several limitations in mind. It would be advisable for future studies to examine more culturally homogeneous samples and to administer the C-DRM over several days, for two reasons. First, completing the C-DRM is a demanding task for participants. Collecting data over several days and then discarding data from the first day would circumvent the impact of a potential learning curve in completing this tool. Second, a single day may be a poor representation of the cultural life of multicultural people. In the current studies, not all cultural groups listed in participants' culture sheets were subsequently referenced during the episodes. A possible reason for this is that some of the cultural affiliations may only be enacted in special circumstances or more rarely. As such, collecting C-DRM data over several days would allow researchers to draw a finer-grained picture of the cultural aspects of participants' lived experience.

Beyond these DRM-specific considerations, it is worth reiterating that the C-DRM is only one example of a more general approach that seeks to address the challenges that acculturation research faces in hyper-diverse contexts. While we believe that this is a promising example, it is important to engage in a more fundamental discussion about what elements might characterize methods that do justice to the complexity and richness

of acculturation. In other words, what ingredients would allow us to develop methods that have the potential to generate new research questions and to spur theoretical developments? In dissecting the C-DRM with these more fundamental considerations in mind, we wish to highlight three features: (1) customization to participants' idiosyncratic, personally relevant elements, (2) a focus on behaviours, and (3) an attempt to model between- as well as within-person variability. In our opinion, these elements are worth exploring further and are likely to make important contributions to a conversation about methods in acculturation research. We believe that such a discussion could prompt the development of a range of new approaches, which, in return, might help advance the field of acculturation.

## Transition

In using a daily diary method, *Manuscript 3* focused on more dynamic and contextual aspects of acculturation, thus addressing critiques that acculturation is often treated in a “trait-like” manner. Using this innovative method also yielded results that could not have been obtained by relying exclusively on typical acculturation scales. As such, this manuscript supports the idea, discussed in *Manuscript 1*, that a better understanding of acculturation processes necessitates the use of varied and complementary research tools.

The finding that migrants' subjective sense of cultural affiliation during social interactions is related not only to characteristics of the local context, such as location or type of language used, but also to participants' mainstream cultural orientation supports the hypothesized conceptual model illustrated in Figure 1 in the general introduction. In addition to a quantitative link between mainstream cultural orientation and mainstream social participation (documented in *Manuscript 2*), *Manuscript 3* shows the existence of a more qualitative relation. These results are in line with our conceptual perspective on this relation. Namely, migrants' mainstream cultural orientation likely shape their local ecology by guiding a pattern of choices that afford social interactions with members of the mainstream group and also influence of these social interactions are experienced in the moment. Together, *Manuscript 2* and *Manuscript 3* provide strong evidence for the first arm of the hypothesis that mainstream social participation mediates the relation between mainstream cultural orientation and language outcomes.

In the next step, *Manuscript 4* turns to the second arm of this hypothesized model, namely the relation between social participation and language outcomes (*path b* in Figure 1). This manuscript focuses on affective aspects of language outcomes, namely migrants' stress reaction in response to chronic difficulties in using the mainstream language.

Affective aspects of language outcomes are less commonly examined than more competence-based indicators such as language proficiency, but the present emphasis is in line with the conceptualization of language outcomes as “linguistic adjustment” adopted in this dissertation.

Studies reported so far have focused on the amount and quality of mainstream social participation (social interactions and friendships). In contrast, *Manuscript 4* uses an egocentric social network approach to address the idea central to social network theory that the structure of social ties matters beyond the number and quality of these ties.

**Manuscript 4** – Second Language Social Networks and Communication-Related  
Acculturative Stress: The Role of Interconnectedness

Marina M. Doucerain, Raheleh Shiri Varnaamkhaasti, Norman Segalowitz,  
and Andrew G. Ryder

## Abstract

Although a substantial amount of cross-cultural psychology research has investigated acculturative stress in general, little attention has been devoted specifically to communication-related acculturative stress. In line with the view that cross-cultural adaptation and second language (L2) learning are social and interpersonal phenomena, the present study examines the hypothesis that migrants' L2 social network size and interconnectedness predict communication-related acculturative stress. The main idea underlying this hypothesis is that L2 social networks play an important role in fostering social and cultural aspects of communicative competence. Specifically, higher interconnectedness may reflect greater access to unmodified natural cultural representations and L2 communication practices, thus fostering communicative competence through observational learning. As such, structural aspects of migrants' L2 social networks may be protective against acculturative stress arising from chronic communication difficulties. Results from a study of first generation migrant students ( $N=100$ ) support this idea by showing that both inclusiveness and density of the participants' L2 network account for unique variance in communication-related acculturative stress but not in general acculturative stress. These results support the idea that research on cross-cultural adaptation would benefit from disentangling the various facets of acculturative stress and that the structure of migrants' L2 network matters for language related outcomes. Finally, this study contributes to an emerging body of work that attempts to integrate cultural/cross-cultural research on acculturation and research on intercultural communication and second language learning.

Keywords: *social networks, acculturation, acculturative stress, intercultural communication, cultural adaptation.*



## Introduction

*Don tilted his beetle eyebrows and asked, 'Tell me, why did you leave that place?'*

*'My bawss was sacked, so we got laid all together.'*

*'You got what?' Don asked with a start. A young secretary at another desk tittered.*

*(Jin, 2009, p. 25)*

In this excerpt of Ha Jin's novel *A Free Life*, Nan, a Chinese immigrant in the US startled his interlocutor during a job interview by inadvertently omitting the preposition 'off' of the phrasal verb 'to lay off'. This kind of communication breakdown, as well as other types of difficulty arising from varying cultural norms surrounding communication practices, is a common experience for migrants. In the example above, Nan was able to repair the conversation and eventually obtained the job he was seeking; such happy outcomes are by no means guaranteed, however, and chronically experiencing communication difficulties can be stressful for migrants (Kang, 2006). Yet, although a substantial amount of cross-cultural psychology research has investigated acculturative stress in general, little attention has been devoted specifically to communication-related acculturative stress. This research gap is unfortunate, as communication-related stress may impact not only migrants' well-being but also important aspects of second language (L2) learning such as their willingness to communicate with L2 speakers (MacIntyre et al., 1998). As such, communication-related acculturative stress can have negative implications for migrants' social integration into the mainstream community.

In line with current perspectives that view intercultural communication as a key mechanism underlying cultural adaptation (Kim, 2001), the present study examines the hypothesis that the size and structure of migrants' L2 social networks are important predictors of communication-related acculturative stress. Given that migrants' ability to communicate in the dominant language of the new cultural environment (that is, in a second language or L2) is a core aspect of cross-cultural adaptation, a better

understanding of the antecedents of communication-related acculturative stress is essential. Despite Smith's (1999) argument that social networks are ideally suited to research on cross-cultural adaptation, this approach has received surprisingly little empirical attention in areas related to acculturation and intercultural communication. The present study seeks to address this gap, as well as to integrate cross-cultural research on acculturation and research on L2 learning and intercultural communication.

### **Acculturation, Language, and Stress**

**The role of language in acculturation.** Psychological acculturation refers to the changes experienced by a person as a result of continuous first-hand cross-cultural contact, as s/he strives to be functional in the cultural contexts relevant to her/him (Berry, 2005; Kim, 2001). In the case of migrants, these changes are typically far reaching and lead to an extensive reconfiguration of their lives – beyond acquiring a new language, understanding new cultural traditions, and learning new social norms, migrants need to form new social relationships, as well as create new and/or adjust old identities (Sam & Berry, 2010). To a large extent, these transformations occur through social interactions with the new environment. Migrants acquire knowledge of a new cultural tradition and negotiate their social position in the new environment through repeated communication activities, be it with members of the new cultural group or with cultural artifacts (e.g., television programs, advertisements, internet pages). As such, it is unsurprising that language and L2 competencies occupy a key position in most accounts of acculturation, both in the field of cross-cultural psychology (Masgoret & Ward 2006; Noels et al., 1996) and of intercultural communication (Gudykunst, 2005; Kim, 2001; Nishida, 1999). Thus, the theoretical perspective adopted here views processes of cross-cultural adaptation as occurring “in and through communication” (Kim, 2001, p.36). While successful communication serves migrants' goals and reflects an adaptive level of social functioning

(Gallagher, 2013), intercultural communication difficulties can potentially hinder cross-cultural adaptation.

**Acculturative stress.** Stemming from a stress and coping perspective (Lazarus & Folkman, 1984), most research on psychological acculturation has examined the well-being and adjustment consequences of acculturative changes. Supporting the importance of language in acculturation, a number of studies showed that L2 competencies are a key predictor of adjustment (e.g., Kang, 2006; Kim, 2005; Noels et al., 1996; Vedder & Virta, 2005). The construct of acculturative stress, referring to “a stress reaction in response to life events that are rooted in the experience of acculturation” (Sam & Berry 2010, p. 474), lies at the core of this research on migrants' well-being. Acculturative stress arises in situations where acculturative pressures exceed migrants' perceived ability to cope. Studies have found associations between acculturative stress and a range of negative outcomes, such as depression, suicide ideation, alcohol abuse, and self-reported physical health (Finch et al., 2001; Gil et al., 1994; Hovey & King, 1996).

There is little doubt that many aspects of cross-cultural adaptation can be stressful, but critics have suggested that acculturative stress has come to represent a “catch-all concept for every kind of problem that minorities might encounter,” thus resulting in “a history of confusion and confounds” (Rudmin, 2009, p. 116). Indeed, accounts of acculturative stress, as well as scales measuring the construct, typically encompass a variety of difficulties, ranging from discrimination issues to communication difficulties to cultural isolation (e.g., Benet-Martínez and Haritatos 2005 ; Rodriguez et al., 2002). We agree with Rudmin's critique here – acculturative stress is a “catch-all” concept – and believe that it might be important to examine classes of stressors separately. The antecedents and consequences of perceived cultural incompatibility may be quite different from those related to, say, work difficulties. To date, very little work has focused on

“unpacking” acculturative stress. As a notable exception, Benet-Martinez and Haritatos (2005) examined the personality antecedents of different aspects of acculturative stress as well as the differential ability of these aspects to predict bicultural identity integration.

In line with this view on the importance of unpacking acculturative stress, we focus specifically on communication-related acculturative stress. Conceptualizations of acculturative stress vary in the types of difficulties they encompass, but they consistently include L2 and intercultural communication issues. In fact, most commonly used acculturative stress scales contain items addressing language and communication difficulties (e.g., Social Attitudinal Familial and Environmental Acculturative Stress Scale: Padilla et al., 1985; Acculturative Stress Scale for International Students: Sandhu & Asrabadi, 1994; Multidimensional Acculturative Stress Inventory: Rodriguez et al., 2002; Riverside Acculturative Stress Index: Benet-Martínez & Haritatos, 2005).

**Communication-related acculturative stress.** Communication-related acculturative stress is defined here as migrants' subjective stress reaction in response to chronic difficulties in L2-mediated communication with members of the mainstream cultural group. Both limited linguistic knowledge (i.e., knowledge of syntax, morphology, lexicon and phonology of a language) and limited competence in sociocultural or pragmatic aspects of communication can lead to intercultural communication breakdowns (Thomas, 1983) and thus result in feelings of incomprehension and frustration, both in native and non-native interlocutors.

We conceptualize communication-related acculturative stress as migrants' reaction to the regular occurrence of such situations. In turn, this stress reaction may impact not only migrants' well-being but also L2 learning variables such as willingness to communicate (MacIntyre et al., 1998) or anxiety and uncertainty in the face of intercultural communication events (Gudykunst, 2005). As such, communication-related acculturative

stress may provide a link for integrating research in cross-cultural psychology on culture acquisition and adjustment with research on intercultural communication and on second language acquisition. With this work, we seek to contribute to a growing body of work (e.g., Gallagher, 2013; Noels et al., 1996) that aims to integrate these relatively separate strands of research. Our main goal is to examine the role of migrants' L2 social network size and structure in predicting communication-related acculturative stress.

### **Communication-Related Acculturative Stress and L2 Social Networks**

The re-creation of a social architecture in a new cultural environment is a central task of acculturation (Kuo & Tsai, 1986). It allows migrants to re-establish an adequate support system and to gain access to resources that will facilitate cross-cultural adaptation. In particular, migrants' L2 social networks, referring to social relationships mediated through the L2, are critical for acquiring knowledge of the new cultural tradition (Smith, 1999) and for fostering communicative competence in the L2 (Ceñoz & Valencia, 1993; Smith, 2002). Similarly, Kim (2001) argues that through engagement in their L2 social network, migrants can, “confirm or reject presumed meanings and motives in natives' communication behaviors” (p. 123). Furthermore, migrants' L2 social networks “exert social control by determining the language [migrants] must use and by conveying messages of cultural values and social approval or disapproval” (p. 123). This argument not only underscores the potential importance of L2 social networks in cross-cultural adaptation but also points to their specific role in facilitating socio-cultural and pragmatic aspects of intercultural communication.

Past research (reviewed extensively in Gallagher, 2012) has examined the relation between competence in L2 and L2 social networks. Ceñoz and Valencia (1993) found that among Spanish first language (L1) participants, proficiency in Basque L2 was associated with the proportion of Basque speakers in their social network. Likewise, among minority

Francophones, the proportion of Francophones in participants' network was positively associated with French competence (Landry & Allard, 1997). In a study of immigrant students to Sweden, Wiklund (2002) detected a similar relation between L2 Swedish proficiency and more Swedish-oriented social networks, although her results were limited to a description of proportions. Similarly, in a case study, Smith (2002) found a positive association between communicative competence and proportion of members of the mainstream cultural group in the social network of migrants. In a related vein, Gaudet & Clément (2009) showed that minority francophone Canadians who had a more developed anglophone communication network reported greater use of English, which in turn was associated with greater English proficiency. In parallel, several studies have examined the relation between social networks and adjustment. Kuo and Tsai (1986) found that higher interconnectedness among closest friends of Asian migrants to the US was related to less depression. Similarly, Garcí a, Ramí rez and Jariego (2002) showed that migrant women in Spain who included more Spaniards in their social networks experienced less depression. Taken together, these sets of results support the general hypothesis that characteristics of migrants' L2 social networks may predict communication-related acculturative stress. More specifically, we expect a negative relation between L2 social network size and communication-related acculturative stress.

These studies have focused primarily on the role of the number of social ties (or characterized the extensiveness of the network using a multi-item scale as in Clément & Gaudet, 2009) in predicting outcomes of interest. Conceptually, however, social network theory emphasizes that people are embedded in webs of social relations (Borgatti et al., 2009) and that the structure of the system influences and place constraints on individual actors within it. In line with this perspective, egocentric network analysis (analyzing an individual's personal network in contrast to analyzing a complete bounded network such as

a school class or a department in a corporation) is primarily concerned with how characteristics of the social structure within which a person is embedded are associated with outcomes of interest for that person (Carolan, 2014) – here communication-related acculturative stress. The interconnectedness of a network – how tightly woven it is – is a commonly examined structural feature. It is positively associated with social support, and more interconnected networks facilitate the transmission of information and resources (Kadushin, 2012). Translated in language terms for the present case, this suggests that greater interconnectedness in migrants' L2 social network may facilitate the transmission of normative language forms and communicative practices, and therefore be associated with lower communication-related acculturative stress. In a similar vein, Coleman (1988) argues that a tightly connected network fosters norm conformity. This is likely to be beneficial for migrants, as such networks afford greater exposure to a unified representation of cultural norms and L2 communication practices and promotes reinforcement of those norms and practices through various interconnected channels. As such, a tighter L2 social network has the potential to scaffold and regulate intercultural communication more closely. Furthermore, interconnectedness fosters trust and beneficial interdependence among network members (Coleman, 1988; Kadushin, 2012), which may also have positive consequences for intercultural communication. Indeed, Gudykunst (2005) argues that reduced anxiety/uncertainty is key to successful intercultural communication, and a network structure that favours trust would likely contribute to reducing communication anxiety and stress within that network.

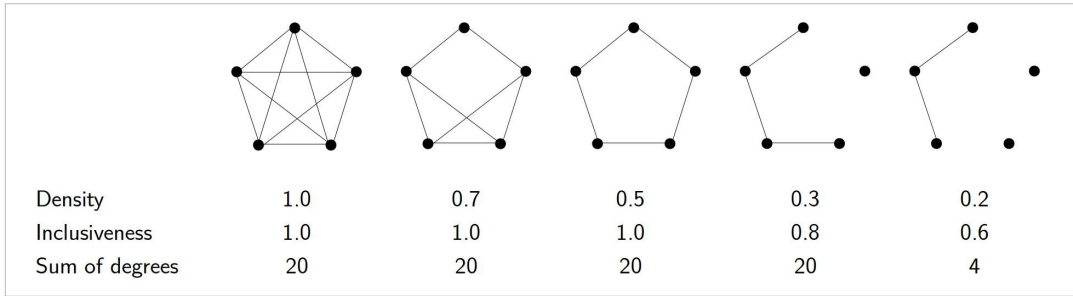
In addition, greater interconnectedness among network members indexes a higher likelihood of taking part in triadic communication (since more network members know one another) and therefore of observing L2-mediated interactions between two members of the mainstream group. Thus, greater within-network interconnectedness would reflect greater

access to natural cultural representations and L2 communication practices. That is, mainstream members could be expected to avoid adjusting or modifying their interactions with one another given their assumed shared cultural reality and their shared language. By contrast, during one-on-one interactions between a migrant and a mainstream member, the mainstream member might consciously or unconsciously tailor/adapt his or her discourse and communication practices to accommodate the migrant's assumed cultural and communicative competence level. This effect, whereby the native speaker makes conversational adjustments to compensate for the interlocutor's (perceived) linguistic deficits, has been well-documented in the SLA literature (see Wagner, 1996, for a review). In triadic interactions involving the migrant and two or more native speakers – which are more likely in more interconnected L2 networks – conversational adjustments by well-meaning native speakers are much less likely to occur. In short, cultural transmission and sociolinguistic competence might be facilitated in more interconnected networks through observational learning. In line with this hypothesis, recent work has shown that norms emerged within a network through observational rather than direct learning (Kashima et al., 2013).

The above discussion underscores the positive potential of interconnected networks. In contrast, Burt (1995) contends that a tight network structure limits members' access to new information and constrains their social roles and opportunities to explore new ideas. He proposes that the ability to bridge holes in the social structure (weaker connections between densely connected clusters) creates a competitive advantage and gives access to diversified information and resources. Burt's formulation, however, makes no specific reference to the particularities of immigration and L2 communication contexts, which are typically characterized by social isolation (see, e.g., Williams & Johnson, 2011). In the present case, we would expect the benefits of an interconnected L2 social network to



outweigh the detrimental constraints described by Burt (1995). Therefore, we expect a greater L2 network interconnectedness to be associated with lower communication-related acculturative stress.



*Figure 5.* Relation between density and inclusiveness of social networks (adapted from Scott, 2012, p. 71).

Density is the most commonly used index of network interconnectedness (Scott, 2012). It is defined as the ratio between the number of existing connections among network members and the total number of potential connections within the network. Density is a function of two other structural parameters of a network (Scott, 2012): (1) the sum of the degrees of network members (the degree of a member is the number of connections the member has to other members) and (2) inclusiveness, or the proportion of network members who know at least one other person in the network. As such, both inclusiveness and density index the level of interrelatedness within a network but at different levels of granularity. As can be seen in Figure 5, higher inclusiveness entails a lower threshold of interrelatedness (knowing only one or ten other network members contributes equally to inclusiveness) than does density, where the extent to which each person is him/herself interconnected is taken into account. We expect both indices to be associated with communication-related acculturative stress, but we form no specific hypothesis regarding the relative strength of both associations.

### **Specificity Considerations**

In order to show that L2 social network size and structure uniquely predict variance in communication-related acculturative stress, we consider several alternative predictors. In addition to including sex and number of years lived in the country of settlement as demographic controls, we control for cultural orientations, self-reported language proficiency, and overall intimacy in the L2 social network.

**Cultural orientations.** Defined here as migrants' motivation for cultural engagement and appreciation of a cultural tradition, cultural orientations are arguably the most investigated antecedent of cross-cultural adaptation outcomes, with the general finding that more positive orientations toward both mainstream and heritage cultural groups are associated with better adjustment (see Nguyen & Benet-Martínez, 2013, for a

meta-analysis). Past research also established a positive link between ethnolinguistic affiliation, language attitudes, and culture attitudes on one side, and L2 competence and use on the other side (Gatbonton et al., 2011; Moyer, 2007; Segalowitz et al., 2009). Similarly, intergroup attitudes and intergroup motivation are considered to be an important antecedent of willingness to communicate, which plays a key role in L2 learning and intercultural communication. Cultural orientations are undergirded by a suite of behavioural, cognitive, and affective mechanisms that facilitate an approach-oriented stance toward a given culture. As such, they are conceptually very close to variables such as ethnolinguistic affiliation or intergroup attitudes and motivation. For this reason, and for the sake of parsimony, we use cultural orientation toward the mainstream cultural group as a proxy for the intra-individual affective-cognitive context motivating migrants' L2 communication and engagement in the new cultural group, and cultural orientation toward the heritage group as a proxy for affiliation with the heritage ethnolinguistic group.

**Self-reported L2 proficiency.** The main idea underlying the hypothesized positive relation between social network characteristics and communication-related acculturative stress is that more numerous and more interconnected social ties foster social and cultural aspects of communicative competence especially, thus protecting migrants' against the negative effects of intercultural communication difficulties. To support this idea, it is important to show that L2 social network size and structure can predict communication-related acculturative stress above and beyond linguistic knowledge, indexed by self-reported language proficiency.

**Overall intimacy in the L2 social network.** The nature of the relation between strength of L2 social ties and L2 communication is unclear. Kim (2001) argues that while strong ties (especially marital relationships) are particularly important for cross-cultural adaptation, all ties (including weak ones) are sources of information helping migrants learn

L2 cultural communication patterns. However, measures of the overall strength of migrants' L2 social ties may be important for understanding acculturative stress in general, because such measures may serve as a proxy for the level of emotional support they can expect from their L2 network. A number of studies have established a positive relation between emotional support and adjustment among migrants (e.g., Crockett et al., 2007; Schneider & Ward, 2003). Therefore, it is important to control for this variable.

**Communication-related acculturative stress vs. general acculturative stress.** To further support a case for the role of L2 social networks in promoting social and cultural aspects of communicative competence in the L2, it is important to show its association with communication-related acculturative stress above and beyond any association with general acculturative stress. To do so, communication-related acculturative stress scores will be residualized on general acculturative stress scores, thus eliminating shared variance between the two. To further investigate the specificity of the relation between L2 social network characteristics and communication-related acculturative stress, we will probe whether the association between L2 characteristics and communicative aspects of acculturative stress is stronger than with other aspects of acculturative stress. Past research has established a positive connection between social ties and mental health (Kawachi & Berkman, 2001), suggesting a possible negative relation between L2 network size and general acculturative stress. However, we would expect measures of L2 network interconnectedness, because of the fundamental role communication plays in establishing network interconnections, to be primarily related to communicative aspects over and above other aspects of acculturative stress. This test is also in line with our earlier proposal that it is important to examine the various facets of acculturative stress independently.

## **Present Study**

This study examines the specificity of the association between L2 social network characteristics and communication-related acculturative stress. In line with this goal, we focus on linguistically-defined social ties instead of social ties in general. We have two research hypotheses:

H1: Greater L2 social network size (the number of members) and interconnectedness (inclusiveness and density within the L2 network) will be associated with lower communication-related acculturative stress residualized on general acculturative stress, after controlling for years in the new country, sex, cultural orientations, self-reported language proficiency, average intimacy level in the L2 network.

The main idea underlying this hypothesis is that L2 social networks play an important role in fostering social and cultural aspects of communicative competence, and therefore in protecting migrants' against intercultural communication difficulties. To further investigate the degree of specificity of the relation hypothesized above, namely that the relationship is specific to communication-related acculturative stress and not general acculturative stress, we formulate the following secondary hypothesis:

H2: The association between interconnectedness measures (inclusiveness and density) in the L2 social network and residualized communication-related acculturative stress will be stronger than the association between interconnectedness measures and general acculturative stress residualized on communication-related acculturative stress.

H2 is in fact almost exactly the obverse of H1 (namely that the residualization is the exact reverse of that specified in H1) and so can be coherently interpreted in light of the outcome of the analyses regarding H1.

## **Methods**

### **Participants and Procedure**

Multicultural students were recruited at an English-speaking university in Montreal, QC, Canada for a study on culture, identity, and language competence. The present sample included 100 participants ( $M_{\text{age}} = 24.18$  years,  $SD_{\text{age}} = 4.20$ ; 86 women) who were born outside of Canada and did not report English as their native language. Participants came from 46 different countries. On average, they had lived in Canada for 11.06 years ( $SD = 9.24$ ). A student sample from an English-speaking university was chosen to ensure that all participants would have sufficient linguistic knowledge to be able to communicate and form new relationships in their L2 (English). Given their attendance at an English-speaking university located in a strongly English-speaking neighbourhood of Montreal, we used English-speaking Canadians as the mainstream cultural reference group.

Participants were recruited using the local participant pool and received course credit as compensation for their time and the local Institutional Review Board approved the study. The study was administered online and took approximately 45 minutes to complete. After giving informed consent, participants provided demographic information and completed a number of measures.

## Measures

**Communication-related acculturative stress and general acculturative stress.** The Riverside Acculturation Stress Inventory (RASI; Benet-Martínez & Haritatos, 2005) is a 15-item questionnaire assessing culture-related difficulties in different life domains (communication difficulties, work, intercultural relations, discrimination, and social isolation) on a 5-point rating scale. The mean score on 3 items assessing communication difficulties (e.g., I often feel misunderstood or limited in daily situations because of my English skills) constituted our measure of communication-related acculturative stress (CRAS, Cronbach  $\alpha = 0.65$ ). The mean score on the remaining 12 items (e.g., I feel the pressure that what “I” do is representative of my ethnic/cultural

group's abilities.) constituted our measure of general acculturative stress (GAS, Cronbach  $\alpha = 0.80$ ). Total scores can range from 1 to 5. A recent psychometric study showed the RASI is a valid and reliable acculturative stress questionnaire (Miller et al., 2011).

**Social network characteristics.** Using an egocentric network survey, participants nominated up to 15 friends who are native English-speakers and with whom they typically interact in English. They rated their level of intimacy with each friend on a 4-point rating scale. They also indicated whether each pair of friends knew one another. Four indices were derived: L2 network size (number of L2 friends nominated); L2 intimacy (average intimacy rating across all friends nominated); L2 inclusiveness (number of non-isolated friends / total number of friends); and L2 density (number of existing links among nominated friends / number of possible links).

**Cultural orientations.** The Vancouver Index of Acculturation (VIA; Ryder et al., 2000) is a 20-item questionnaire that assesses orientations toward the mainstream (VIA-M subscale) and heritage (VIA-H subscale) cultural groups on a 9-point rating scale. Both subscales consist of 10 items with parallel wording. A sample item is: 'I am comfortable working with typical English-Canadian people/people of the same heritage culture as myself.' Total scores can range from 1 to 9. Past research has shown that the VIA is a valid and reliable cultural orientation questionnaire (Huynh et al., 2009; Ryder et al. 2000). Internal consistency in this sample was good for both mainstream (Cronbach's  $\alpha = .82$ ) and heritage (Cronbach's  $\alpha = 0.88$ ) subscales. A Quebec version of the VIA distinguishes between English-Canadians and French-Canadians as possible mainstream groups. As noted earlier, English-speaking Canadians served as the mainstream reference group.

**Self-reported L2 proficiency.** Four in-house items assessed participants perceived ability to understand, speak, read, and write English on a 5-point rating scale. Total scores



can range from 1 to 5. Internal consistency was very good (Cronbach's  $\alpha = 0.92$ ).

**Analytic approach.** In line with our hypotheses, outcome variables were residualized: communication-related acculturative stress scores were residualized on general acculturative stress and vice-versa. We used multiple regression to test the study hypotheses. Variables were entered hierarchically to examine the unique predictive ability of social network size and structure. In terms of data preparation and screening, univariate outliers were winsorized to three median absolute deviations around the median (Leys et al., 2013). Two multivariate outliers were excluded from the analysis based on their robust Mahalanobis distance (Filzmoser et al., 2005) at a stringent level of  $p < .001$ , leaving 98 participants for the analysis. Unsurprisingly, density and inclusiveness were collinear and were therefore examined in separate models. We verified that statistical assumptions of the linear model were met through model diagnostics. Self-reported L2 proficiency suffered from serious range restriction (participants reported near perfect proficiency) and winsorizing the variable eliminated all residual variation. To retain some variation, we created two categories: participants with average L2 proficiency scores of 5 (ceiling L2 proficiency group) and participants with average L2 proficiency scores lower than 5 (non-ceiling L2 proficiency group). Finally, one observation was removed from analysis based on an overly large Cook's distance (Fox & Weisberg, 2011) in regression diagnostics, leaving a total sample size of  $N = 97$ . All analyses were conducting using R version 3.1.2 (package igraph 0.7.1 for network analyses).

## Results

### Descriptive results

Table 7 shows the correlations of the continuous study variables. On average, participants reported low levels of communication-related ( $M = 2.00$ ,  $SD = 0.96$ ) and general ( $M = 2.56$ ,  $SD = 0.76$ ) acculturative stress, as measured by the RASI. Just over

half the participants (52, or 54%) were in the ceiling L2 proficiency group, indicating native-like self-rated linguistic knowledge of English and 46 (46%) indicating less than native-like self-rated linguistic knowledge of English. Participants nominated 5.79 L2 friends on average ( $SD = 3.47$ ) and their L2 social network was moderately inclusive ( $M = 0.53$ ,  $SD = 0.39$ ) and not very dense ( $M = 0.21$ ,  $SD = 0.27$ ). Participants reported a moderate level of intimacy with their L2 friends on average ( $M = 2.88$ ,  $SD = 0.68$ ). Participants' cultural orientations, measured by the VIA, were more positive toward their heritage group ( $M = 7.29$ ,  $SD = 1.33$ ) than toward the mainstream (English-speaking) cultural group ( $M = 6.82$ ,  $SD = 1.23$ ), but they were fairly positive in both cases.

Table 7

*Zero-order Intercorrelations of Continuous Study Variables*

Variable	2	3	4	5	6	7	8	9
1. CRAS	.30**	-.25*	-.32**	-.21*	-.09	-.14	-.08	-.33***
2. GAS	—	.02	-.04	-.01	-.06	.13	.18 <sup>†</sup>	-.03
3. L2 network size		—	.44***	-.05	-.07	-.01	-.02	-.02
4. L2 inclusiveness			—	.71***	-.01	.02	.11	.07
5. L2 density				—	.12	.08	.15	.12
6. L2 intimacy					—	.33**	.03	.05
7. VIA-M						—	.18 <sup>†</sup>	.18 <sup>†</sup>
8. VIA-H							—	.06
9. Years in Canada								—

*Note.* <sup>†</sup>  $p < .10$ , \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$ . CRAS = Communication-related acculturative stress; GAS = General acculturative stress; VIA-M = Vancouver Index of Acculturation – Mainstream subscale; VIA-H = Vancouver Index of Acculturation – Heritage subscale.

Zero-order correlations provide initial support for H1. L2 network size,  $r = -.25$ ,  $p = .01$ ,  $95\%CI = [-.43;-.05]$ , and both interconnectedness measures – L2 inclusiveness,  $r = -.32$ ,  $p < .001$ ,  $95\%CI = [-.49;-.13]$ , and L2 density,  $r = -.21$ ,  $p = .04$ ,  $95\%CI = [-.39;-.01]$  – are significantly correlated with communication-related acculturative stress. As initial support for H2, neither L2 inclusiveness,  $r = -.04$ ,  $p = .70$ ,  $95\%CI = [-.24;.16]$ , nor L2 density,  $r = -.01$ ,  $p = .92$ ,  $95\%CI = [-.21;.19]$ , are associated with general acculturative stress scores in a statistically significant way.

### **Hypothesis 1: Predicting residualized communication-related acculturative stress (CRAS)**

The left panel of Table 8 presents results of the regression predicting CRAS (residualized on general acculturative stress), as measured by the RASI, using L2 network inclusiveness as a measure of interconnectedness. Longer time lived in Canada is associated with lower CRAS, ( $\beta(SE)=-0.27(0.09)$ ,  $p=.004$ ,  $95\%CI=[-0.44;-0.09]$ ), and greater L2 proficiency – a categorical variable (ceiling versus non-ceiling self-reported L2 proficiency) – is associated with lower CRAS,  $\beta(SE) = -0.87(0.16)$ ,  $p < .001$ ,  $95\%CI = [-1.19;-0.55]$ , indicating that, on average, CRAS scores for participants in the ceiling proficiency group are almost a full standard deviation lower than for participants in the non-ceiling group. Moreover, a simple Welch's t-test revealed that CRAS scores in the ceiling proficiency group are significantly lower than in the non-ceiling proficiency group,  $t' = -6.54$ ,  $df = 70.09$ ,  $p < .001$ ). Also, being a male is associated with higher levels of CRAS,  $\beta(SE) = 0.49(0.23)$ ,  $p = .03$ ,  $95\%CI = [0.04;0.93]$ . Neither of the cultural orientations, nor L2 intimacy, was significantly related to CRAS.

In support of H1, introducing social network characteristics (L2 network size and L2 inclusiveness) into the model resulted in a statistically significant 9% increase in explained variance,  $F(2, 88) = 7.18$ ,  $p = .001$ ) and in higher inclusiveness being associated with

lower CRAS,  $\beta(SE) = -0.30(0.09)$ ,  $p < .001$ ,  $95\%CI = [-0.46;-0.13]$ . Contrary to H1, however, a larger social network alone did not predict lower CRAS in the final model,  $\beta(SE) = 0.02(0.09)$ ,  $p = .85$ ,  $95\%CI = [-0.16;0.19]$ . Given the statistically significant zero-order correlation between L2 network size and CRAS ( $r = -.25$ ,  $p = .01$ ), we examined the role of L2 network size further. Supplementary analyses revealed that – after controlling for sex, age, cultural orientations and L2 intimacy – L2 network size was a significant predictor of CRAS,  $\beta(SE) = -0.26(0.09)$ ,  $p = .004$ ,  $95\%CI = [-0.44;-0.08]$ ). Introducing L2 proficiency and L2 inclusiveness into the model eliminated the effect of L2 network size, reducing the strength of the association from  $\beta = -0.26$  to  $\beta = 0.02$ . This indicates that the variable L2 network size shares most of its variance with L2 proficiency and L2 inclusiveness.

Table 8.

*Multiple Regression of Communication-Related Acculturative Stress (CRAS) and General Acculturative Stress (GAS) with Inclusiveness as a Measure of Interconnectedness.*

	CRAS as outcome		GAS as outcome	
	Model 1 <i>B</i> (SE)	Model 2 <i>B</i> (SE)	Model 1 <i>B</i> (SE)	Model 2 <i>B</i> (SE)
Intercept	0.10 (0.60)	0.29 (0.60)	-1.72 (0.59)**	-1.73 (0.60)**
Sex (male)	0.36 (0.22)	0.44 (0.21)*	0.23 (0.20)	0.24 (0.21)
Years in Canada	-0.03 (0.01)**	-0.02 (0.01)**	0.01 (0.01)	0.01 (0.01)
VIA-M	0.04 (0.07)	0.04 (0.06)	0.17 (0.06)**	0.17 (0.06)*
VIA-H	-0.09 (0.06)	-0.07 (0.05)	0.07 (0.05)	0.07 (0.05)
L2 proficiency	-0.86 (0.15)***	-0.79 (0.15)***	-0.26 (0.15) <sup>†</sup>	-0.26 (0.15) <sup>†</sup>
L2 intimacy	0.03 (0.11)	0.03 (0.11)	-0.13 (0.11)	-0.13 (0.11)
L2 network size		0.00 (0.02)	0.03 (0.02)	0.04 (0.02)
L2 inclusiveness		-0.69 (0.20)***		-0.4 (0.20)
$R^2$ total	.386	.473	.143	.143
Adjusted $R^2$	.345	.425	.075	.065
$F$ total	9.44 (6, 90)***	9.85 (8, 88)***	2.12 (7, 89)*	1.84 (8, 88) <sup>†</sup>
$\Delta R^2$		.09***		.00

*Note.* <sup>†</sup>  $p < .10$ , \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$ . *B*(SE) = unstandardized regression coefficients (standard error). The coefficient for the variable “L2 proficiency” indicates the contrast between the “ceiling group” and “non-ceiling group”.

The left panel of Table 9 presents results of the regression predicting CRAS using density as a measure of interconnectedness. In this model, also supporting H1, the introduction of social network characteristics (L2 network size and L2 density) results in a statistically significant 6% increase in explained variance,  $F(2, 88) = 4.26$ ,  $p = .02$ . In line with H1, higher density is also associated with lower CRAS,  $\beta(SE) = -0.19(0.08)$ ,  $p = .01$ , 95%  $CI = [-0.35;-0.04]$ . Comparing association strengths for inclusiveness and density with CRAS shows that inclusiveness is a better predictor of CRAS than density,  $\beta = -0.30$  vs.  $\beta = -0.19$ . In addition, inclusiveness accounts for more unique variance in CRAS than density,  $\Delta R^2 = .07$  with inclusiveness entered at the last step, versus  $\Delta R^2 = .04$  for entering density at the last step.

Table 9.

*Multiple regression of Communication-Related Acculturative Stress (CRAS) and General Acculturative Stress (GAS) with Density as a Measure of Interconnectedness.*

	CRAS as outcome		GAS as outcome	
	Model 1 <i>B</i> (SE)	Model 2 <i>B</i> (SE)	Model 1 <i>B</i> (SE)	Model 2 <i>B</i> (SE)
Intercept	0.10 (0.60)	0.29 (0.62)	-1.72 (0.59)**	-1.71 (0.60)*
Sex (male)	0.36 (0.22)	0.38 (0.21)	0.23 (0.20)	0.23 (0.21)
Years in Canada	-0.03 (0.01)**	-0.03 (0.01)**	0.01 (0.01)	0.01 (0.01)
VIA-M	0.04 (0.07)	0.04 (0.07)	0.17 (0.06)**	0.17 (0.06)*
VIA-H	-0.09 (0.06)	-0.07 (0.05)	0.07 (0.05) <sup>†</sup>	0.07 (0.05)
L2 proficiency	-0.86 (0.15)***	-0.79 (0.15)***	-0.26 (0.15) <sup>†</sup>	-0.26 (0.15) <sup>†</sup>
L2 intimacy	0.03 (0.11)	0.05 (0.11)	-0.13 (0.11)	-0.13 (0.11)
L2 network size		-0.03 (0.02)	.03 (.02)	0.03 (0.02)
L2 density		-0.67 (0.27)*		0.09 (0.26)
<i>R</i> <sup>2</sup> total	.386	.441	.143	.144
Adjusted <i>R</i> <sup>2</sup>	.345	.390	.075	.066
<i>F</i> total	9.44 (6, 90)***	8.66 (8, 88)***	2.12 (7, 89)*	1.85 (8, 88) <sup>†</sup>
$\Delta R^2$		.06		.00

*Note.* <sup>†</sup>  $p < .10$ , \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$ . *B*(SE) = unstandardized regression coefficients (standard error). The coefficient for the variable “L2 proficiency” indicates the contrast between the “ceiling group” and “non-ceiling group”.



## Hypothesis 2: Predicting residualized general acculturative stress (GAS)

The right panel of Table 8 presents results of the regression predicting GAS (residualized on communication-related acculturative stress), as measured by the RASI, using L2 inclusiveness as a measure of interconnectedness. More positive mainstream cultural orientation, as measured by the VIA-M, are associated with higher levels of GAS,  $\beta(\text{SE}) = 0.30(0.11)$ ,  $p = .01$ ,  $95\%CI = [0.07;0.52]$ . None of the other predictors was significantly related to GAS. Supporting H2, the confidence interval of the inclusiveness coefficient in the regression of CRAS scores ( $\beta_{\text{inclusiveness-CRAS}} CI = [-0.46;-0.13]$ , reported in the previous section) did not include the inclusiveness coefficient in the present regression predicting GAS ( $\beta_{\text{inclusiveness-GAS}} = -0.02$ ). Further supporting the possibility that L2 interconnectedness is associated primarily with communicative aspects of acculturative stress, L2 inclusiveness did not predict residualized GAS scores significantly,  $\beta(\text{SE}) = -.02(0.11)$ ,  $p = .85$ ,  $95\%CI = [-0.23;0.19]$ . In addition, introducing inclusiveness in the model did not explain any additional variance,  $F(1,88)=0.04$ ,  $p=.85$ , compared to 7% additional explained variance when introducing this variable in the regression of CRAS scores. Collectively, these results fully support our second hypothesis for inclusiveness.

The right panel of Table 9 presents results of the regression predicting residualized GAS using L2 network density as a measure of interconnectedness. As in the case of inclusiveness, introducing L2 density did not explain any additional variance in GAS scores,  $F(1, 88) = .12$ ,  $p = .73$ , compared to 4% additional explained variance when introducing this variable in the regression of CRAS scores. In further support of H2, the confidence interval of the density coefficient in the regression of CRAS scores ( $\beta_{\text{density-CRAS}} CI = [-0.35;-0.04]$ , reported in the previous section) did not include the density coefficient in the present regression predicting GAS scores ( $\beta_{\text{density-GAS}} = 0.03$ ). Accordingly, the coefficient for L2 density was not statistically significant,  $\beta(\text{SE}) =$

0.03(0.09),  $p = .73$ ,  $95\%CI = [-0.16;0.22]$ . These results show that interconnectedness measures are associated with communication-related acculturative stress, above and beyond any association with general acculturative stress, and that this relation is stronger than between interconnectedness and residualized general acculturative stress. Taken together, the results support the idea that L2 social network interconnectedness is associated with communicative aspects of acculturative stress but not with other aspects.

### **Discussion**

For migrants, the process of adapting to a new cultural environment occurs largely through L2-mediated communication with members of the new mainstream cultural group (Kim 2001). In this study, we focused on migrants' subjective stress reaction in response to chronic difficulties in this type of intercultural communication. Our first hypothesis that migrants' L2 social network size and interconnectedness would predict communication-related acculturative stress was mostly supported. Larger L2 network size, higher L2 inclusiveness, and higher L2 density were all statistically significantly associated with lower communication-related acculturative stress scores. In addition, both interconnectedness measures uniquely accounted for a significant proportion of variance in the outcome variable after controlling for important covariates. These results support the idea that more interconnected L2 social networks can to some extent protect migrants against the negative psychological effects of intercultural communication difficulties.

However, contrary to our hypothesis, L2 network size did not uniquely predict communication-related acculturative stress. A closer look at the results indicated that the positive and significant relation between these variables disappeared once self-reported L2 proficiency was entered into the model. A possible explanation for this finding is that L2 proficiency mediates the relation between L2 network size and communication-related acculturative stress. Having more L2 friends means more occasions to use the L2. This

may help migrants develop their linguistic knowledge of the L2, thus resulting in higher self-reported L2 proficiency scores. In turn, better L2 proficiency facilitates L2 communication in general. This is consistent with past research showing that greater L2 use is associated with greater L2 proficiency (Gatbonton & Trofimovich, 2008).

The finding that interconnectedness, but not L2 network size, accounted for unique variance in communication-related acculturative stress underscores the notion that the structure of L2 social networks matters. This idea, widely accepted in the social network literature (Butts, 2008; Borgatti et al., 2009), has received limited empirical attention in cross-cultural psychology research. Studies using social network variables to predict L2 or acculturation related phenomena typically focus on social network size or extensiveness rather than on structural variables (e.g., Ceñoz & Valencia, 1993; García et al., 2002; Hendrickson et al., 2011; Wiklund, 2002; Gaudet & Clément, 2009; Landry & Allard, 1997). More recently, researchers have started taking structural aspects of social networks into consideration (e.g., Gallagher, 2013; Mok et al., 2007). The present study contributes to this limited body of work by showing that while the size of migrants' L2 friendship networks is not sufficient to predict communication-related acculturative stress, the configuration of these friendship networks has unique predictive ability. More broadly, these results suggest that not all types of social contact and language use may equally facilitate migrants' communicative competence and relieve associated stress. An interesting direction for future research therefore might be to identify the characteristics of social contact and L2 use situations that might moderate this relation.

Similarly, future research should examine the role of L2 social networks in communication-related acculturative stress in other cultural environments. Montreal is a very specific setting, characterized by two mainstream cultural groups: Francophone Canadians, and Anglophone Canadians. Although English is the dominant local language

in the neighborhood where the study was conducted, Francophone Canadians represent the overall numerical majority in Montreal and in the rest of the province. This complexity in the cultural and linguistic composition of the wider study context renders a clear definition of “L2 social networks” difficult. Thus, it would be interesting to extend the current investigation to other cultural settings where the immigrants' L2 community is also the only mainstream cultural group (e.g., Turkish immigrants and Germans in Germany)

As mentioned in the introduction, a potential mechanism underlying the relation between interconnectedness of the L2 social network and communication-related acculturative stress is that more interconnected networks facilitate observational learning of normative language forms and communicative competence by increasing the likelihood of triadic interactions involving two or more native speakers of the L2, thus providing greater access to unmodified communication practices. Thus, interconnected L2 social networks may foster the learning of both cultural representations and L2 communication practices, which are closely intertwined. In future research, it would be important to further unpack how exactly greater interconnectedness helps learning. Cultural schemata for social interactions (Nishida, 1999) may provide a useful starting point for such an exploration. Cultural schemata for social interactions are, “cognitive structures that contain knowledge for face-to-face interactions in one's cultural environment,” (Nishida 2005, p. 403) and that guide communication in this environment. Like other cultural schemata (Casson, 1983; D'Andrade, 1992), they emerge out of repeated engagement with particular cultural contexts and become more organized, abstract, and compact through repeated use. In the process, they increasingly guide people's negotiation through their social environment. Cultural schemata for social interactions organize knowledge of cultural norms and preferences and as well as linguistic knowledge. In line with the above perspective on observational learning, more interconnected L2 social networks may

facilitate the acquisition and automatization of cultural schemata for social interactions, which may in turn lead to more successful L2 communication, thus acting as a mediator.

Perhaps this greater access to unmodified natural cultural representations and L2 communication practices serves as a mechanism underlying the relation between interconnectedness and communication-related acculturative stress and thus also helps to explain the finding that L2 network inclusiveness was a stronger predictor than density. These two indices measure different stages in the formation of an interconnected social network; low inclusiveness entails low density, whereas high inclusiveness (even at a ceiling value of 1) can be associated with either low or high density. Perhaps early stages of social tie formation lead more to greater inclusiveness than to greater internal density (that is, people first get to know more individuals who are themselves somewhat connected to each other (a few classmates, workmates, immediate neighbours, etc.) and this translates into opportunities for L2-mediated interactions with two or more members of the mainstream group (since these network members know one another). This in turn potentially results in greater observation learning. Once an inclusive mainstream network is achieved, however, increased interconnectedness within the network might accrue little additional advantage.

The results presented here also supported our primary and secondary hypotheses when viewed together that greater interconnectedness in the L2 social network would be associated primarily with communicative aspects of acculturative stress (residualized on general acculturative stress) but not general acculturative stress (residualized on communicative acculturative stress), reinforcing the idea that the role of L2 interconnectedness is specific to L2 communication aspects of stress and is not simply a stress reliever in general. Nevertheless, it would be important in future research to study the role of L2 network variables in predicting other facets of acculturative stress separately. For example, given the hypothesized role of sustained relationships with members of the

mainstream group in learning new cultural schema and minimizing intercultural strain, it would be interesting to examine the ability of these L2 network variables to predict acculturative stress arising from strained intercultural relations.

The ability of L2 interconnected to predict communication-related acculturative stress was in line with our hypothesis, but the finding that L2 network size did not predict general acculturative stress at all was somewhat surprising, given the existing literature on the salutary effects of social ties on mental health. One possible explanation of this null effect is the fact that we did not measure network size in general but the L2 network size specifically. Participants with few L2 friends may have a large social network in their L1 on which they rely for support and help meeting non-language-related acculturative hurdles. Another possibility lies in the fact that social ties have costs associated with them, expressed as social obligations and expectations of reciprocity (Kawachi & Berkman, 2001). Nevertheless, the differential pattern of results in predicting communication-related versus general acculturative stress lends some support to Rudmin's argument that acculturative stress may be a, "catch-all concept for every kind of problem that minorities might encounter." (Rudmin, 2009, p. 116) and is in line with past research documenting the multifaceted relation between various aspects of acculturative stress and bicultural identity integration (Benet-Martinez & Haritatos, 2005). We believe that research on cross-cultural adaptation would benefit from disentangling the various facets of acculturative stress and this study represents one step in that direction by showing that L2 social network interconnectedness is specifically related to communication-related acculturative stress and not to other facets of acculturative stress.

Despite this study's contribution, we want to discuss some limitations. First, reliance on a student sample, and the fact that most of the sample was female, limits the generalizability of the results and introduces potential pressures on social interactions and

the form of social relationships that are captured by the L2 network. By attending university in their L2, students are more forced to pursue intercultural communication everyday and may have more opportunities to form relationships with native speakers of their L2 than community members whose days are more tightly structured by work obligations. Related to this, the L2 network was defined in “friendship” terms, which may differ across sexes. Also, friendship is a more central concern for young adults – the typical student population – than for people with family responsibilities. It is quite possible that the L2 network would still play a role in alleviating communication-related acculturative stress in a community sample, but the network instrument would have to be adapted to reflect the lived experience of migrants who work and take care of a family. It could, for example, include work relations and acquaintances.

A second limitation concerns the range restriction in English proficiency we observed in our sample. Participants reported very high levels of English proficiency and relatively low levels of acculturative stress on average, indicating good functioning in the new cultural environment overall. It is important to note however, that we observed the same pattern of results when excluding participants in the “ceiling” L2 proficiency group from the analyses (the  $p$  value for density decreased to .06 in the prediction of communication-related acculturative stress, but this likely due to a loss of power resulting from shrinking our sample size to 46 participants). In a way, this limitation in terms of range restriction, which raises questions about the generalizability of the results to people facing more difficulties with cross-cultural adaptation, is closely tied to participants being students. By definition, attending daily classes at an English-speaking university assumes a good level of English proficiency. Nevertheless, even such a sample would be expected to exhibit variation in L2 fluency and in more subtle sociolinguistic aspects of language proficiency. Our self-report measure did not allow us to detect this variation, but in future research it

would be useful to use objective language measures assessing various aspects of linguistic knowledge.

A third limitation concerns the cross-sectional and correlational nature of the study, which prevents any inferences regarding the causality or temporal order in the relation between L2 interconnectedness and communication-related stress. For example, as an alternative to the observational learning mechanisms discussed earlier, people who experience more communication-related stress may feel more comfortable with L1 friends and not seek out or maintain L2 friendships. In the future, longitudinal studies could examine whether increases in L2 network size and interconnectedness prospectively predict decreased communication-related stress or whether the reverse temporal direction is supported. As a matter of fact, mutually reinforcing bidirectional effects – whereby more numerous and more interconnected L2 friends buffer against communication-related stress, which in turn facilitates L2 friendships formation – are likely. Better understanding these mechanisms could have important implications for interventions aimed at facilitating L2 learning and cross-cultural adaptation.

In spite of these limitations, the present study supports the idea that more interconnected L2 social networks can be protective against the negative psychological effects of L2 communication difficulties. In doing so, it shows that the structure of migrants' L2 network matters for language related outcomes. This study also contributes to the emerging body of work that attempts to integrate cultural/cross-cultural research on acculturation and applied linguistics research on communication and SLA. Of relevance to both strands of research, the present work provides support for the view that adapting to a new cultural environment and learning its normative communication practices are not only intertwined but also fundamentally social phenomena occurring through social interactions and relationships.



## Transition

In showing that L2 network interconnectedness was related to communication stress above and beyond any association with L2 network size and intimacy, *Manuscript 4* underscored the importance of considering multiple facets of mainstream social participation. These results directly supported the idea that the predictive ability of structural aspects of social ties is not redundant with the predictive ability of the number and quality of these ties, a central tenet of social network theory.

*Manuscript 1* argued that it is essential to use a range of complementary methods beyond self-report attitudinal scales such as the VIA in order to better understand acculturation processes, and *Manuscript 4* supports this argument. Using an egocentric social network approach, a method rarely employed in acculturation or SLA research, yielded results that typical acculturation scales could not have afforded. By social network standards, this study was fairly rudimentary, but it still highlighted the potential of social network approaches for research on migrants' cross-cultural adaptation.

*Manuscript 4* provided evidence for the second arm of the hypothesis that mainstream social participation mediates the relation between mainstream cultural orientation and language outcomes (specifically, *path b* of Figure 1 in the general introduction). In the final step, *Manuscript 5* considers this hypothesized model in its entirety in a path analysis. While *Manuscript 4* focused on affective aspects of language outcomes exclusively, the dependent variable in *Manuscript 5* includes both subjective proficiency and comfort (a more affective component) in using the mainstream language. This last study also addresses the need to unpack various aspects of social participation by considering the relative contribution of language use and social contact separately. In addition, this study revisits the importance of context put forward in *Manuscript 3* by considering the role of neighbourhood linguistic characteristics in the prediction of

language outcomes.

**Manuscript 5** – L2 Experience Mediates the Relation between Mainstream Cultural Orientation and Perceived L2 Competence among Migrants

Marina Doucerain

## Abstract

Understanding the mechanisms underlying the development of migrants' L2 competence in naturalistic settings is a pressing concern for receiving societies. Several studies have established a positive relation between people's self-positioning with respect to the L2 ethnolinguistic group and their competence in the L2, but the mechanisms underlying this relation are still relatively unexplored. This study uses path analysis to investigate the overarching hypothesis that migrants' experience with the L2 mediates the positive association between mainstream cultural orientation and subjective (i.e., self-rated) L2 competence in a sample of 123 multicultural recent immigrant students to Montreal, Quebec. This study also unpacks L2 experience by examining L2 use and L2 social contact separately. Specifically, the present research focuses on friendships in the mainstream ethnolinguistic group as a form of social contact that is particularly relevant for migrants. More numerous L2 friends were expected to be positively associated with subjective L2 competence both directly and indirectly through their effect on L2 use. In addition, this study takes into account the important role of the social context by selecting a setting that maximizes the centrality of individual differences in cultural orientations and by controlling for the perceived linguistic composition of the neighbourhood. The hypotheses were fully supported: the results show excellent model fit for the hypothesized model and better fit than for alternative models, including one close to Clément's (1980) social context model. This study contributes to the literature on naturalistic L2 learning among adult migrants, a context severely understudied in the field of SLA in spite of its societal importance for receiving societies. Given that L2 achievement is also a key component of migrants' cultural adaptation, this study is also relevant to researchers in cross-cultural psychology interested in understanding the mechanisms underlying migrants' acculturation.

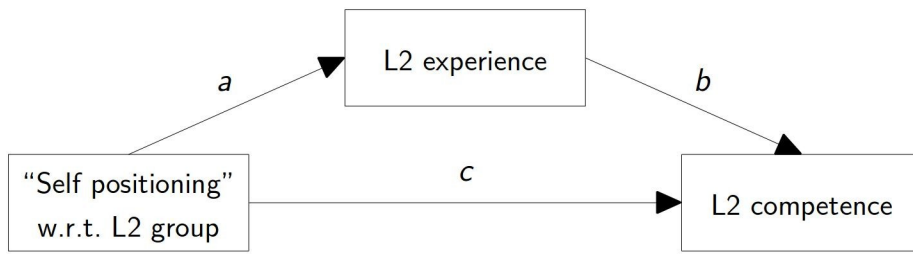
## Introduction

Many migrants settling in a new country face the important task of learning a new language (L2). Competence in the L2 is a critical predictor of adjustment outcomes in the new mainstream society, such as economic success (Chiswick & Miller, 1999) or physical and mental health (Kang, 2006; Ng, Pottie, & Spitzer, 2011). Thus, given increasing levels of international migration, understanding how migrants' develop L2 competence is a pressing concern. While many receiving countries provide some form of formal language instruction to migrants, becoming a competent L2 speaker occurs to a large extent “on the street” or “on the job” for many adult migrants. This article focuses on antecedents of this type of naturalistic adult language learning, which is understudied in spite of its societal significance (Norton, 2013).

Recent perspectives on second language acquisition (SLA) underscore the importance of social factors in the development of L2 competence (Firth & Wagner, 1997, 2007), be it in the classroom or in naturalistic settings. In line with this “social turn”, a number of studies have established a positive relation between people's self positioning with respect to the L2 ethnolinguistic group and their competence in the L2 (e.g., Coupland, Bishop, Williams, Evans, & Garrett, 2005; Noels, Pon, Clément, 1996; Segalowitz, Gatbonton, & Trofimovich, 2009). However, the mechanisms underlying this relation are still relatively unexplored. Researchers have suggested that language experience in the L2 speech community mediates the relation between people's outlook on the L2 ethnolinguistic group and L2 competence (Segalowitz et al., 2009), as illustrated in Figure 6. This hypothesis is consistent with research showing that social contact is positively associated with language learning outcomes (e.g., Noels & Clément, 1996), although it is still unclear what specific aspects of social contact are beneficial.

The present research targets these issues by examining the mediating role of

migrants' L2 experience in the mainstream ethnolinguistic group in the link between migrants' orientation toward this group and their subjective competence in the L2, using path analysis. In addition, this study unpacks the role of language experience further by distinguishing between social relationships (here, friendships) and general language use.



*Figure 6.* Mediation of the “self-positioning”-L2 competence link by L2 experience. w.r.t. = “with respect to”.

## Language and migration

Upon settling in a new country, migrants experience extensive changes in their lives, including for example learning new cultural traditions and norms, forming new social relationships, or creating/re negotiating social identities. To a large extent, this change process – referred to as “acculturation” – takes place in the language of the mainstream cultural group, an L2 for a majority of migrants<sup>8</sup>. L2 competence is critical for migrants' successful adjustment in the new mainstream society. Indeed, L2 competence is a key predictor of economic success, with greater language skills being associated with higher earnings and greater employment probability (Chiswick & Miller, 1999; Dustmann & Fabbri, 2003). Similarly, lower L2 skills predict poorer psychological adjustment (Kang, 2006) and more pronounced decreases in migrants' physical health over time (Ng, Pottie, & Spitzer, 2011), possibly because of linguistic barriers to healthcare access. Because of the centrality of language in acculturation processes, it is crucial to better understand how migrants become competent speakers of the mainstream language.

Many receiving societies offer basic language courses to new migrants (e.g., “*cours de francisation*” in Quebec, or “*Inburgering Vlaanderen*” in Flanders). However, even if migrants receive some formal L2 instruction initially, the development of language skills beyond initial proficiency usually takes place in naturalistic settings, e.g., “on the job” or “on the street”. Unfortunately, the majority of SLA theoretical and empirical work has focused on formal settings, even among adults. As pointed out by Norton (2013), there is a dearth of research on second language learning among adult migrants in naturalistic settings, the focus of this work.

L2 learning outcomes are multifaceted and comprise a variety of related constructs,

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8 Hereafter, “L2 ethnolinguistic group”, “mainstream cultural group”, and “mainstream ethnolinguistic group” are used interchangeably with the understanding that they represent convenience labels for the majority of situations where cultural and linguistic communities largely overlap and that they would not adequately characterize more complex culturally hybrid and multilingual cases.



including for example L2 fluency, accent, grammaticality, or confidence. The present study examines migrants' subjective L2 competence, defined here as a combination of one's self-reported ability to use the language (proficiency) and sense of ease in using it (comfort), in particular in more demanding situations. Thus defined, L2 competence bears some resemblance to L2 confidence (a combination of L2 skills self-assessment and language anxiety; Clément, 1980), because of the inclusion of a more affective component. However, this affective aspect explicitly differs from anxiety, a construct with psychological ramifications beyond the scope of the present work. Subjective L2 competence was chosen here for two reasons. First, self-reported language proficiency is highly correlated with objective language measures (Marian, Blumenfeld, & Kaushanskaya, 2007). Second, as argued by Clément and colleagues (Clément, Baker, & MacIntyre, 2003), subjective L2 competence exerts more leverage on their language behaviours and communication attempts than actual competence.

### **Self Positioning and L2 Competence**

Recent theories in SLA have underscored that second language learning is fundamentally a socially mediated process (Lantolf, 2000) that is intricately linked to the social and cultural contexts within which it takes place (Pavlenko & Blackledge, 2004). Accordingly, studies have shown that L2 learning is tied to a cluster of variables including identification with, attitudes toward, motivation for engagement in, and orientation toward the L2 ethnolinguistic group (path *c* in Figure 6). These variables reflect a range of theoretical leanings in SLA and are non-identical, but they all partake of a learner's positioning of the self with respect to the L2 ethnolinguistic group.

Of these “self positioning” variables – a loose label adopted here for convenience – identity is the most studied. Past research has shown that stronger identification with the L2 ethnolinguistic group is associated with better L2 outcomes in a wide variety of

contexts, including Francophones in Quebec (Gatbonton & Trofimovich, 2008, 2011), adolescents of Finnish origin in Sweden (Henning-Lindblom & Liebkind, 2007), Welsh learners in Wales (Coupland et al., 2005), Kurds in Turkey (Polat & Schallert, 2003), and learners of Korean as a heritage language in the United States (Kang & Kim, 2012). In a related vein, building on the seminal work of Gardner and Lambert (1959) in Canada, studies have shown repeatedly that an integrative motivation was predictive of L2 learning, an association confirmed in a meta-analysis (Masgoret & Gardner, 2003). The influential construct of “integrative motivation” includes integrativeness, or “a positive affective predisposition towards the second language community” (Clément & Kruidenier, 1985, p.24), the willingness to identify with the L2 ethnolinguistic group, as well as the related motivation to learn the L2 (Gardner, 2001). As such, it is conceptually close to identification with the L2 group. In addition, this interplay between identification and motivation aspects is directly in line with recent perspectives on motivation in SLA that underscore the intricate links between self, identity, and motivation (e.g., Dörnyei & Ushioda, 2009).

Among self positioning variables, the present study focuses on migrants' mainstream cultural orientation. Defined as migrants' motivation for engagement in the mainstream cultural group and appreciation of that culture, cultural orientations are at the core of research on migrants' acculturation in cross-cultural psychological (Berry, 2005). Cultural orientations include identity, motivation, and attitudinal elements. As such, they provide a good coverage of self positioning variables, and overlap with constructs such as integrativeness. In addition, given their relevance in the context of migrants' L2 learning, cultural orientations will be of interest not only to SLA researchers, but also to cross-cultural psychologists. In agreement with studies on ethnolinguistic affiliation and on integrative motivation, past work has shown that a more positive mainstream cultural

orientation predicts better L2 proficiency (Jiang, Green, Henley, & Masten, 2009; Masgoret & Gardner, 1999; Pisarenko, 2006).

In summary, existing research provides clear evidence that positioning oneself in a way that is favourably disposed toward the L2 ethnolinguistic group – be it by identifying with the group or by harbouring positive attitudes toward its members – is associated with positive L2 learning outcomes. Less is known, however, about the mechanisms underlying this well-documented link.

### **Exposure to the L2 as a Mechanism?**

In a recent review of the research on the link between ethnic identity and second language learning, Trofimovich and Turuševa (2015) suggest that learners' experience with the L2 might mediate this identity-L2 learning association, where “L2 experience” refers to a loose cluster of variables encompassing e.g., amount of L2 use, frequency of contact with L2 speakers, size of L2 social network, etc. Supporting this idea, Gatbonton and colleagues (Gatbonton & Trofimovich, 2008; Gatbonton et al., 2011; Segalowitz et al., 2009) found that among French speakers of L2 English in Quebec, the relation between ethnolinguistic affiliation and various aspects L2 performance disappeared after controlling for L2 use. They propose that “a sense of ethnolinguistic affiliation shapes the social niche one inhabits and this in turn determines the type and range of experiences a person might have in hearing and using the target language” (Segalowitz et al., 2009, p.174) as a possible rationale for the implied mediating role of L2 use. Similarly, Clément & Kruidenier (1985) found that the frequency and quality of social contact mediated the relation between integrativeness and L2 confidence. Although this research focused on self-positioning variables in long-term linguistic minorities rather than in an immigration context, a similar mechanism is just as plausible among migrants and with other self-positioning variables, as illustrated in Figure 6. For example, a migrant with a positive

outlook on the mainstream cultural group may choose not to live in an ethnic enclave and look for opportunities to form social relationships with native speakers of the mainstream language. Collectively, these choices afford greater L2 exposure overall, which in turn is likely to have a positive impact on L2 competence.

Accordingly, the main goal of the present study is to test the hypothesis that *experience with the L2 mediates the relation between migrants' mainstream cultural orientation and subjective L2 competence*, using a more formal mediation test than the simple partialling out approach adopted by Gatbonton and colleagues (Gatbonton & Trofimovich, 2008; Gatbonton et al., 2011; Segalowitz et al., 2009). Little empirical work has directly investigated the mediating role of L2 experience in the relation between self positioning variables and L2 learning, but a number of studies documenting individual components of the mediation model (namely, paths *a* and *b* in Figure 6) support this overarching hypothesis.

**Self positioning and L2 experience (path *a*).** Past research has established that a favourable disposition toward the L2 ethnolinguistic group is predictive of greater L2 use and contact with native speakers of the L2. Indeed, among English speakers of L2 French in Canada, greater integrative motivation (more positive attitudes toward the L2 group and motivation for L2 learning; MacIntyre & Charos, 1996), and stronger identification with Francophone Canadians (Clément et al., 2003) were each related to more frequent L2 communication, a relation that was replicated in a study-abroad context in Spain (Hernández, 2010). Similarly, in a large sample of more than 13,000 learners in Hungary, Dörnyei, Csizér, and Németh (2006) showed that a positive outlook toward L2 ethnolinguistic groups (5 target languages were assessed) predicted participants' choice to use the L2. Further, in a longitudinal investigation of diaspora adolescent immigrants to Germany, greater identification with and cultural orientations toward Germans

prospectively predicted more frequent use of German and a greater share of native Germans in participants' peer network (Stoessel, Titzmann, & Silbereisen, 2012; Michel, Titzmann, & Silbereisen, 2012). In line with these results, *a positive relation between migrants' mainstream cultural orientation and their experience with the mainstream language is expected.*

**L2 experience and L2 competence (path *b*).** Across several contexts, studies have shown that more extensive experience with the L2 – variously defined and measured – is associated with a range of positive L2 learning outcomes. In the context of study-abroad programs, more numerous social ties with members of the receiving country's mainstream ethnolinguistic group (Isabelli-García, 2006) and greater use of the mainstream language (Dewey, Bown, & Eggett, 2012; Hernández, 2010) were associated with greater L2 oral proficiency. Likewise, among L1 Francophone and L1 Anglophone bilingual Canadians, more frequent and positive contact with members of the L2 group (Anglophones and Francophones, respectively) and greater exposure to L2 media were associated with greater L2 confidence, which includes both subjective L2 competence and lack of anxiety when using the L2 (Clément et al., 2003; Clément, Baker, Josephson, & Noels, 2005; Noels and Clément, 1996). Of interest for the purposes of this study, Noels and colleagues (Noels et al., 1996) replicated these findings in an immigration context by providing evidence for a positive relation between contact with mainstream Anglophone Canadians and English confidence in a sample of Chinese migrant students to Canada. Similarly, in qualitative study of American immigrants to Norway, Lybeck (2002) found that participants who reported a greater share of native Norwegians in their social network showed better pronunciation in Norwegian. Taken together, these data support the hypothesis that *migrants' greater experience with the mainstream language is associated with greater subjective competence in that language.*

## Unpacking L2 Experience

The literature reviews thus far not only grounds the potential role of L2 experience as a mediator of the relation between self positioning and L2 learning outcomes, but it also highlights the heterogeneity in how “L2 experience” is conceptualized and measured. In order to better understand the mechanisms underlying L2 learning among migrants, it is important to unpack the relative contribution of various aspects of L2 experience in accounting for L2 competence. Broadly speaking, characterizations of L2 experience seem to fall into two categories: amount of language use (e.g., number of hours per day) and nature of social contact (e.g., number of friends who are native speakers of the L2), although the distinction between the two is often blurred. For example, “frequency of L2 contact” merges into a single variable amount of language use and existence of social ties with members of the L2 community. In line with a goal of “unpacking” L2 experience, the present study keeps language use and social contact separate in order to assess their relative contribution to subjective L2 competence. While language use can easily be operationalized as the percentage of the time one uses the L2 each day, the category of “social contact” demands closer attention, as conceptualizations of social contact are highly heterogeneous across studies (Harwood, 2010; Sampasivam & Clément, 2014).

**Characterizing social contact: The case of friendship.** Intuitively, the idea that not all social contacts are created equal makes a lot of sense. For example, most people would agree that migrants' daily interactions with the bus driver or the cashier at the grocery may not be as beneficial to develop competence in the mainstream language than forming close friendships with members of the mainstream community. In more formal terms, “significant exposure” (Muñoz, 2008; or “serious exposure”, MacWhinney, 2006) is critical for L2 learning, where significant exposure refers to situations when learners are “able to carry out a variety of speech acts over a wide range of situations and

topics, and to participate in social settings effectively dominated by the L2” (Muñoz, 2008, p. 585). As such, forming friendships with native speakers of the L2 likely represents a particularly good source of L2 significant exposure for migrants. Indeed, as noted earlier, a number of studies have shown that having more numerous friends in the L2 community is associated with better L2 learning outcomes (Dewey et al., 2012; Hernández, 2010, Isabelli-García, 2006, Lybeck, 2002).

In the case of migrants, forming friendships in the mainstream cultural group can be beneficial not only for L2 competence, but also for psychological adjustment in general. Indeed, international students who reported more numerous social ties with members of the mainstream community reported more psychological well-being and less homesickness (Hendrickson, Rosen, & Aune, 2011; Kashima & Loh, 2005). For these reasons, the present study focuses on friendship as a form of social contact. The ease of friendship formation varies across the lifespan, with the school context being most conducive to friendship formation. Therefore, the number of friends migrants have in the mainstream group may be influenced by whether they immigrated during their school years or later as adults. To address this concern, age of immigration is included as a control variable.

**Relation between L2 use and L2 friendships.** Although it is important to examine facets of L2 experience separately, language use and number of L2 friendships are likely to be interrelated. Indeed, two longitudinal studies showed that more numerous social relationships in the mainstream culture prospectively predicted greater L2 use at later times (Jia & Aaronson, 2003; Michel et al., 2012), an association replicated cross-sectionally in a study-abroad context (Dewey, Bown, Baker, Martin, Gold, & Eggett, 2014). In line with these results, it is expected that *more numerous friendships in the L2 ethnolinguistic group will be associated with greater L2 use, which will in turn be related to greater subjective L2 competence.* At the same time, some aspects of friendship may

uniquely foster L2 competence, beyond its indirect effect through language use. For example, friendships typically provide a safe environment where migrants can experiment using the L2 and expect fewer negative consequences than with other types of social interactions, which may help reduce migrants' language anxiety, or “feeling of tension and apprehension specifically associated with second language contexts” (MacIntyre & Gardner, 1994; p.284). As a result, given that language anxiety negatively impacts language processing and performance (MacIntyre & Gardner, 1994), L2 friendships may cultivate L2 competence through the cumulative buffering effect of repeated instances of lower language anxiety. This possibility is also in line with theories placing anxiety reduction at the heart of migrants' intercultural adjustment (Gudykunst, 2005). Therefore, *a direct positive relation between migrants' friendships in the L2 ethnolinguistic group and subjective L2 competence is also expected.*

### **Importance of the Social Context**

Up to this point, all arguments and constructs discussed characterize the individual only – personal motivations and attitudes, or personal choices to make friends and use a language – reflecting an overarching goal of understanding individual differences in migrants' L2 competence. However, the social context within which this competence develops is important and should not be ignored. At the sociopolitical level, countries differ greatly in their dominant immigration policies and ideology, which influence migrants' daily experiences in the mainstream community and the kind of L2 experience to which they will have access. Indeed, ideologies characterized by more positive attitudes toward migrants facilitate social interactions and the formation of social ties between migrants and members of the mainstream ethnolinguistic group (Kalin, 1996). The present study was conducted in Canada, a country characterized by a pluralist ideology with fairly positive attitudes toward migrants and cultural diversity (Bloemraad, 2012). As such,



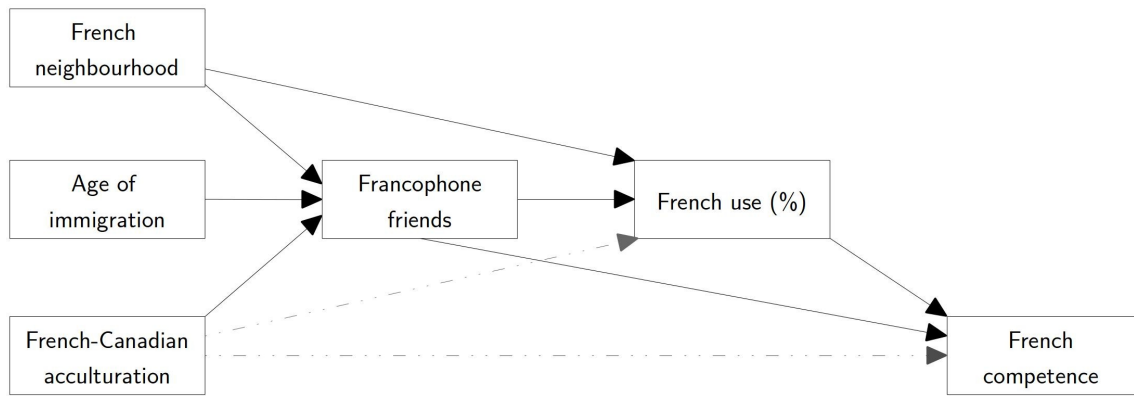
gaining L2 experience in the mainstream ethnolinguistic group, the key mechanism proposed here, may be relatively easy for migrants.

At a more local level, the social context provides or constrains opportunities for frequent L2 contact and interactions in important ways. For example, migrants living in neighbourhoods with a high concentration of heritage language speakers reported lower L2 proficiency (Chiswick & Miller, 1996), presumably because of a lack of opportunities to use the L2. Indeed, greater exposure to French at work and in the neighbourhood was associated with more frequent French communication among Anglophone speakers of L2 French in Canada (MacIntyre & Charos, 1996). Therefore, there is a need to disentangle the affordances and constraints of the social context, or social processes, from a person's self positioning, reflecting individual processes. In many cross-sectional acculturation studies, these effects are confounded. For instance, international students forming friendships in their host university may reflect not only their personal motivation for social engagement but also structural features of their social context, such as spending their entire days on campus, attending classes with local students, and working on class projects with them.

Interestingly, because of its cultural and linguistic characteristics, Montreal provides a unique opportunity to start disentangling social from individual processes in the relation between mainstream cultural orientation and social participation in the mainstream culture. Like many other metropolises, Montreal is a multicultural city, but it has the peculiar characteristic of being home to two mainstream cultural groups: Francophone Canadians, and Anglophone Canadians, with French and English being Canada's two official languages. Although in the province of Quebec (where Montreal is located) French is the only official language and Francophone Canadians represent the numerical majority, Montreal has kept a substantial Anglophone Canadian population. In addition, most of the

cities' neighbourhoods are still relatively clearly linguistically defined, such that it is possible for one's daily life to take place almost entirely in only one of the two mainstream languages. This configuration allows the recruitment of immigrants whose daily life takes place primarily in an Anglophone setting and to examine their cultural orientation and language experience among Francophone Canadians. In this case, observed social participation and L2 experience (the label "L2" is kept for the sake of convenience, but in reality French may represent an L3 or an L4 for some migrants) would reflect primarily individual processes, since the affordances and constraints of the social context would be tied to the Anglophone setting.

Therefore, I decided to focus on immigrant students attending an English-speaking university located in a neighbourhood that is generally speaking characterized by a multicultural, middle-class Anglophone community. Beyond ease of accessibility, focusing on a student population ensures a certain level of homogeneity in terms of L2 experience opportunities (due to shared lifestyle) and predominance of English in daily life. To further test the specificity of the relation between mainstream cultural orientation and social contact with Francophone Canadians, I also controlled for the dominant language of the neighbourhood where participants' dwelling is located. The hypothesized path model to be tested is illustrated in Figure 7.



*Figure 7.* Hypothesized path model. Solid lines represent paths hypothesized to be statistically significant, whereas dashed lines represent paths not hypothesized to be statistically significant.

## Alternative Models

The present study tests the overarching hypothesis that L2 experience mediates the relation between mainstream cultural orientation and subjective L2 competence. In this case, mainstream orientation, as a type of “self positioning” variable, is conceptualized as an antecedent of L2 learning outcomes, which is consistent with Clément's (1980) early formulations of the social context model, whereby integrativeness predicts L2 outcomes (Clément & Kruidenier, 1985). More recently, however, Clément and colleagues have also examined identity consequences of L2 outcomes, and found that L2 confidence predicts mainstream identity, with prior empirical support for this prediction (Clément et al., 2003; Noels & Clément, 1996; Noels et al., 1996). Given that cultural orientations overlap to some extent with group identification, and given that cultural orientations and cultural identity are often used interchangeably in the acculturation literature, this raises the possibility to consider mainstream cultural orientation as an endogenous rather than as an exogenous variable, as illustrated by Alternative model 1 in Figure 8.

However, group identity represents a stronger commitment of the self to a cultural group than cultural orientations. Indeed, past work has shown that migrants' positive outlook toward the mainstream culture is endorsed much less strongly when operationalized as identity rather than as motivation for cultural contact (Berry & Sabatier, 2011). In addition, because of a strong motivational component, mainstream

cultural orientation is conceptually closer to integrativeness than to ethnic identity and is therefore a likely antecedent of social contact in the L2 ethnolinguistic group.

Further, longitudinal work provides evidence for migrants' mainstream cultural orientation prospectively predicting language use at later time points (Michel et al., 2012), which supports the proposed conceptualization. For these reasons, it is more plausible to conceptualize mainstream cultural orientation as an antecedent, rather than as an outcome, of L2 competence. Nevertheless, in order to garner additional support for the hypothesized model, an alternative configuration of the study variables with mainstream orientation as outcome will also be tested (Alternative model 1 in Figure 8). Finally, a second alternative model is also considered. This second model simply exchanges the order of language use and number of friends (Alternative model 2 in Figure 8), reflecting the possibility that using the L2 more often on a daily basis leads to forming more friendships in the L2 ethnolinguistic group. It is expected that *model fit will be greater for the hypothesized model than for either alternative models*. It is important to note that terms such as “predict”, “lead”, “outcome”, or “antecedent” are used without any implication of causality, but as a descriptor of statistical relations between variables.

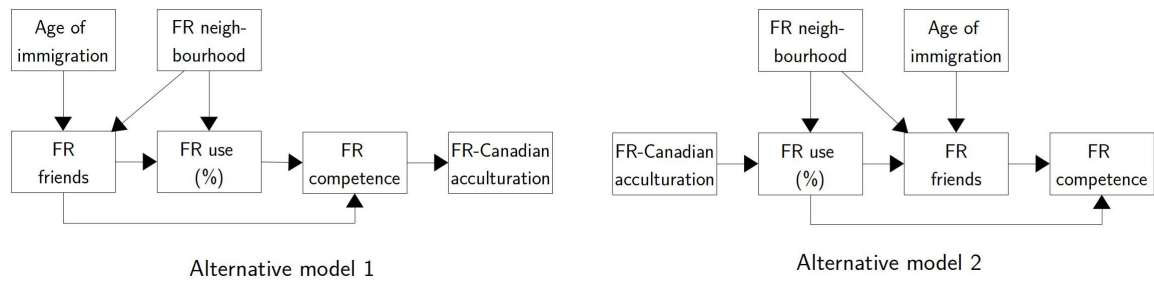


Figure 8. Alternative path configurations tested.

## Summary

This study investigates the overarching hypothesis that migrants' exposure to the L2 mediates the relation between mainstream cultural orientation and subjective L2 competence, using path analysis. A second goal of the study is to unpack L2 exposure by examining L2 use and L2 social contact separately. Specifically, this research focuses on friendships in the mainstream ethnolinguistic group as a form of social contact that is particularly relevant for migrants. It is expected that L2 experience will fully mediate the link between mainstream cultural orientation and subjective L2 competence. Therefore, as shown in the hypothesized model in Figure 7, the paths between mainstream orientation and L2 use and between mainstream orientation and L2 competence (dashed lines) are not hypothesized to be statistically significant. In addition, this study takes into account the important role of the social context by selecting a setting that maximizes the centrality of individual differences in cultural orientations and by controlling for the perceived linguistic composition of the neighbourhood.

## Methods

### Participants

Participants were 123 multicultural migrant students attending an English-speaking university in Montreal, Quebec, Canada (103 females,  $M_{\text{age}} = 24.81$   $SD_{\text{age}} = 7.14$ ). They represent a subset of a larger study on acculturation and adjustment and met the following inclusion criteria: (1) not having French as a native language; (2) not having French as a dominant language; and (3) having arrived in Canada after the age of 12 (which corresponds to entry into secondary school). These criteria aim at ensuring a relatively homogeneous sample in terms of language abilities in French, with the age criterion placing participants past the debated potential sensitive period for second language acquisition (Muñoz, 2008). Further, in the province of Quebec, language laws require that

new immigrants attend school in French. Non-Francophone school age immigrants are placed in special classes (“classes d'accueil”) that focus to a large extent on learning French until they reach a functional level of French proficiency, at which point they are integrated into regular classes. At the secondary level, students stay in “classe d'accueil” for two school years on average (Armand, 2011), so the third inclusion criteria limits the extent to which social contact with Francophone Canadians would be influenced by Francophone schooling.

Participants came from a large variety of countries (14 from North America, 27 from South and Central America, 37 from Europe, 8 from Africa, 18 from the Middle East, 7 from South East Asia, 10 from South Asia, and 2 from Oceania = 2). On average, they had lived in Canada for 5.59 years (SD = 5.98) and had arrived in the country at age 19.22 (SD = 5.33).

## **Procedure**

Participants were recruited through the psychology department participant pool. Upon giving informed consent they provided information for the study, which was administered online. The local ethics institutional review board approved the study and participants received course credit as compensation for their time.

## **Measures**

**Cultural orientation toward Francophone Canadians.** The Quebec version of the Vancouver Index of Acculturation (VIA; Ryder, Alden, & Paulhus, 2000) is a 30-item self-report measure that assesses cultural orientations on a Likert scale ranging from 1 (Disagree) to 9 (agree). Ten triplets of items with mirror wording form three subscales assessing orientations toward Anglophone Canadians (VIA-EC), Francophone Canadians (VIA-FC), and the heritage cultural group (VIA-H). In the present case, I used only the Francophone Canadian subscale. An example item is “I am comfortable working with



typical Francophone Canadian people.” Total scores can range from 1 to 9, with higher scores representing a more positive orientation toward Francophone Canadians. Internal consistency in this sample for VIA-FC was very good (Cronbach  $\alpha = .88$ ).

**Friendship with Francophones.** Participants reported the number of friends with whom they usually speak French in response to the question “How many friends do you have with whom you usually speak French?” The number provided was used as the indicator for social contact with Francophone Canadians.

**French use.** Participants reported the daily distribution of English, French, and their heritage language in response to the question (adapted from the Language Experience and Proficiency Questionnaire, LEAP-Q; Marian et al., 2007) “Estimate, in terms of percentages, how often you use your different languages per day (in all daily activities combined).” The percentage for French was used as the indicator of French use.

**Subjective French competence.** Four in-house items assessed participants perceived ability to read, understand, write, and speak French on a 7-point rating scale ranging from “(1) Very poor” to “(7) Native-like.” A total proficiency score was computed by taking the mean score of these four items. Total scores can range from 1 to 7, with higher scores representing higher French proficiency. Internal consistency in this sample was excellent (Cronbach's  $\alpha = .95$ ). In addition to this measure of self-reported proficiency, six in-house items assessed participants' comfort in using French in linguistically demanding situations on a 7-point rating scale ranging from “(1) Not comfortable at all” to “(7) As comfortable as a native speaker.” The situations were: “speaking on the phone”, “expressing one's deep feelings”, “explaining a difficult situation to an administrative officer”, “speaking at a party in a loud environment”, “telling jokes to a group of French speaking friends/colleagues”, and “adding/counting in one's head, doing simple arithmetic.” Total scores can range from 1 to 7, with higher scores representing higher

comfort in French. Internal consistency was excellent (Cronbach's  $\alpha = .97$ ). French proficiency and comfort in French were highly correlated ( $r = .83$ ). A single composite “perceived French competence” score was created by taking the mean of both measures.

**Dominant language of the neighbourhood.** A single item asked participants to indicate the dominant language of the neighbourhood where they live. It was recoded as a dichotomous variable, such that coefficients in the results section reflect the effect of living in a predominantly French-speaking neighbourhood compared to neighbourhoods with other linguistic characteristics.

## **Analysis**

The hypothesized path analysis model was tested using the R structural equation modelling package lavaan (version 0.5-17; Rosseel, 2012). Given that the results of a priori power analysis to determine sample size are very sensitive to assumptions made and often impractical (Simonsohn, 2014), and given that post hoc power analysis has been described as fallacious (Hoenig & Heisey, 2001; Kline, 2004), we rely preferentially on confidence intervals and effect sizes. In terms of data preparation and screening, univariate outliers were winsorized to three median absolute deviations around the median (Leys, Klein, Bernard, & Licata, 2013). One multivariate outlier was excluded from the analysis based on its robust Mahalanobis distance (Filzmoser, Garrett, & Reimann, 2005) at a stringent level of  $p < .001$ , leaving 122 participants for the analysis. The issue of missing data was minimal: data on age of arrival was missing for three participants and one participant did not provide information for French use. Little's (1988) test showed that the assumption that data are missing completely at random (MCAR) was reasonable ( $p = .80$ ), so full information maximum likelihood (FIML) was used to deal with missing data. Visual inspection and tests of multivariate normality revealed that the data were not multivariate normal, so I ran all path analyses using the MLR estimator, which addresses issues of non-

normality by computing standard errors based on the robust Huber-White approach (Kaplan, 2009).

## Results

### Descriptive Results

On average, participants reported a moderately positive cultural orientation toward Francophone Canadians ( $M = 5.53$ ,  $SD = 1.51$ ) and had 2.84 ( $SD = 3.26$ ) Francophone friends. Fifty participants (41%) lived in a predominantly French-speaking neighbourhood. Participants' percentage of French use averaged 8.88% ( $SD = 9.07$ ) of the time and their level of perceived French competence was fair ( $M = 3.45$ ,  $SD = 1.68$ ). Table 10 presents zero-order correlations and covariances of the study variables. The zero-order correlation between VIA-FC scores and L2 competence scores is positive and statistically significant ( $r = .18$ , 95% CI = [.003; .35]), suggesting that participants with a more positive outlook on Francophone Canadians also feel more proficient and comfortable in French. This relation is in line with the studies documenting a positive relation between self-positioning and L2 learning outcomes, although a statistically significant association is not a prerequisite when testing mediation effects (Hayes, 2013). Other correlations are also in line with the hypotheses. VIA-FC scores are positively and statistically significantly associated with number of Francophone friends ( $r = .38$ , 95% CI = [.22, .52]) and French use ( $r = .27$ , 95% CI = [.09, .43]), with moderate effect sizes. Similarly, number of Francophone friends and French use are positively associated with French competence scores ( $r = .49$ , 95% CI = [.35, .62], and  $r = .69$ , 95% CI = [.58, .77], respectively), with strong effect sizes.

Table 10.

*Descriptive Statistics for the Study Variables*

Variable	1	2	3	4	5
1. Age of arrival	28.36	-0.80	-3.85	-7.47	-2.18
2. Francophone Canadian orientation	-.10	<b>2.28</b>	1.93	3.67	0.46
3. Francophone friends	-.21*	.38***	<b>11.29</b>	16.46	2.79
4. French use (%)	-.15	.27**	.54***	<b>82.23</b>	10.53
5. French competence	-.24**	.18*	.49***	.69***	<b>2.84</b>

Note. The diagonal contains the variance of variables (boldfaced); the lower triangle contains correlations between variables; and the upper triangle contains covariances between variables.

## Testing the Hypothesized Path Model

The full hypothesized path model shown in Figure 7 was then fit using lavaan. Fit indices revealed an excellent fit of the model to the data (CFI = .997; TLI = .99; RMSEA = .04; SRMR = .03;  $\chi^2(df = 3) = 3.46, p = .33$ ). In addition, inspection of the residual correlation matrix revealed that overall, residual correlations were appreciably lower than .10 (12 out of the 15 residual correlations smaller than .00). The only exception was the residual correlation between age of arrival and perceived French competence scores ( $r = -.14$ ). Adding a link between these two variables decreased overall model fit and did not improve the residual correlation matrix. Therefore, given that the offending residual correlation is not very high and that age of arrival was only included as a covariate, no further modifications were attempted. The results reported next pertain to the original hypothesized model illustrated in Figure 7.

Table 11 shows the estimated path coefficients for the tested model and Figure 9 displays the standardized solution in a more visual form. Both demonstrate that all paths results were in accordance with the hypothesized model, with one exception: the control variable “language of neighbourhood” was not statistically associated with French use. Participants who arrived in Canada at a younger age and who lived in a predominantly Francophone neighbourhood (compared to a neighbourhood with other linguistic characteristics) reported significantly more Francophone friends. Controlling for age of arrival and language of the neighbourhood, a more positive orientation toward Francophone Canadians (as measured by the VIA-FC) was associated with significantly more Francophone friends, with a moderate effect size ( $\beta = .33$ ). Together, these variables accounted for about a quarter of the variance in Francophone friends. In addition, supporting the importance of the Francophone Canadian cultural orientation, the magnitude of the standardized coefficient for the path between VIA-FC scores and

Francophone friends ( $\beta = .33$ ) is 43% greater than between language of the neighbourhood and Francophone friends ( $\beta = .23$ ), and 83% greater than between age of arrival and Francophone friends ( $\beta = -.18$ ).

Table 11.

*Path Coefficients of the Hypothesized Path Model*

Path		<i>B</i>	SE	<i>p</i>	CI low	CI high	R <sup>2</sup>
FR friends	← VIA-FC	0.73	0.15	<.001	0.44	1.02	.23
FR friends	← Age at arrival	-0.12	0.04	.001	-0.19	-0.04	
FR friends	← FR neighbourhood	1.55	0.59	.01	0.41	2.70	
FR use	← FR friends	1.32	0.24	<.001	0.84	1.79	.30
FR use	← VIA-FC	0.42	0.47	.38	-0.51	1.35	
FR use	← FR neighbourhood	1.37	1.49	.36	-1.56	4.29	
FR competence	← FR use	0.11	0.01	<.001	0.08	0.14	.50
FR competence	← FR friends	0.10	0.04	.02	0.01	0.18	
FR competence	← VIA-FC	-0.06	0.07	.42	-0.20	0.08	

In turn, participants who reported more numerous Francophone friends used French a significantly greater percentage of the time, with a relatively large effect size ( $\beta = .49$ ). However, living in a French neighbourhood was not statistically related to the frequency of French use. Together, predictors of French use accounted for roughly a third of the variance in that variable. Finally, both French use and Francophone friends were positively and statistically significantly associated with perceived French competence (a combination of self-reported proficiency and comfort in using the language in demanding situations), showing that participants who used French more often and had more Francophone friends also had a better command of the French language. Notably, the magnitude of the standardized path coefficient for the path between French use and French competence, reflecting a large effect size ( $\beta = .60$ ), was more than three times larger than between Francophone friends and French competence ( $\beta = .19$ ), suggesting that language use may contribute more to perceived language competence than friendships in that language. Collectively, predictors of French competence accounted for half of the variance in that variable, a large effect size.



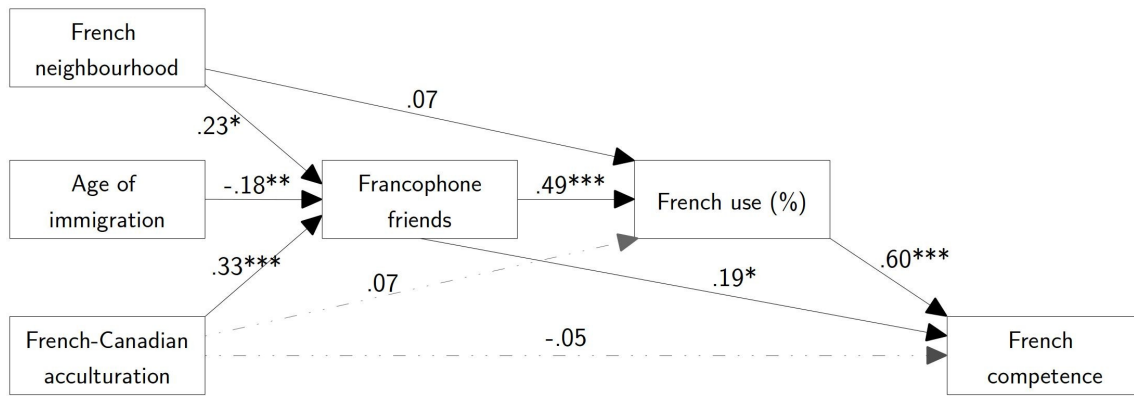


Figure 9. Standardized path coefficients of the hypothesized model

## Direct vs. Indirect Effects of Francophone Canadian Acculturation

Further supporting this study's hypotheses, the path coefficient between Francophone Canadian cultural orientation and French use was not statistically significant and removing that path did not change the proportion of explained variance in French use ( $R^2 = .29$  in both cases). Further, the indirect effect of VIA-FC scores on French use was  $\beta = 0.17$  and statistically significant ( $B = 1.00$ ,  $SD = 0.26$ ,  $p < .001$ ,  $95\% \text{ CI} = [0.53; 1.52]$ ), which is more than twice as large as the statistically non-significant standardized coefficient  $\beta = 0.07$  of the direct effect of VIA-FC on French use. These results suggest that the number of Francophone friends fully mediated the relation between Francophone Canadian cultural orientation and French use. Similarly, the path coefficient between VIA-FC scores and perceived French competence was also statistically non-significant, and removing that path increased the proportion of explained variance in French competence by only 1% ( $R^2$  decreased from .50 to .49 when removing the path). In addition, the indirect effect of VIA-FC scores on perceived French competence was  $\beta = 0.21$  and statistically significant ( $B = 0.23$ ,  $SD = 0.06$ ,  $p < .001$ ,  $95\% \text{ CI} = [0.10; 1.35]$ ), compared to  $\beta = -0.05$  for the direct effect, which was not statistically significant. These results suggest that the relation between Francophone Canadian cultural orientation and perceived French competence is fully mediated by the intervening variables. Finally, dropping the paths between VIA-FC and French use and between VIA-FC and French competence resulted in a slight increase in goodness of fit (for the simpler model,  $\text{CFI} = .998$ ;  $\text{TLI} = .996$ ;  $\text{RMSEA} = .02$ ;  $\text{SRMR} = .03$ ;  $\chi^2(df = 6) = 6.27$ ,  $p = .39$ ; reduction in  $\text{AIC} = 2.73$ ; reduction in  $\text{BIC} = 8.34$ ).

## Alternative Models

To gather additional support for the hypothesized path configuration, two alternative path configurations shown in Figure 8 were tested by submitting them to lavaan. In line with newer formulations of Clément's social context model focusing on the relation

between language and identity, alternative model 1 considers the possibility that Francophone Canadian cultural orientation is an outcome rather than a predictor of perceived French competence. Fit indices for this model demonstrate a poorer fit to the data (CFI = .91; TLI = .81; RMSEA = .12; SRMR = .08;  $\chi^2(df = 7) = 20.17$ ,  $p = .005$ ; increase in AIC = 16.67; increase in BIC = 17.24) compared to the hypothesized model. Alternative model 2 simply exchanges the order of percentage of French use and Francophone friends, in line with the possibility that using French more often on a daily basis may lead to forming more friendships among Francophones. Here too, fit indices for this alternative model reveal a relatively poor fit to the data (CFI = .92; TLI = .81; RMSEA = .13; SRMR = .06;  $\chi^2(df = 5) = 16.03$ ,  $p = .007$ , increase in AIC = 8.00; increase in BIC = 2.40). By comparison, fit indices values were excellent for the hypothesized model. These results fully support the secondary hypothesis that the hypothesized path configuration would fit the data better than alternative configurations.

### **Discussion**

The present study tested the overarching hypothesis that experience with the L2 mediates the relation between cultural orientation toward the mainstream cultural group and subjective competence in the L2, among migrants. The path analysis results, based on a sample of relatively recent immigrant students to Montreal speaking L2 French fully supported this hypothesis.

The positive zero-order correlation between mainstream orientation and L2 competence vanished in the full mediation model, and the indirect effect between these two variables through L2 social contact and L2 use was statistically significant. In simple terms, these findings mean that participants with a more positive outlook toward Francophone Canadians formed more numerous friendships with Francophones, which were then associated with using French more often during the day. In turn, using French more

frequently was associated with a perception of greater skills and comfort in French.

Obviously, this tripartite relation between mainstream orientation, L2 experience and L2 competence is in some ways a “Catch-22” situation. Having experience with the L2 is linked to greater L2 competence, but competence is required in the first place to be able to use the L2 and form social ties with speakers of that language. Considering bi-directional causal links between these variables provides a plausible solution to this scenario (see also Trofimovich & Turuševa, 2015 for a similar argument). Once migrants reach a minimum level of L2 proficiency, they can start socially interacting in the mainstream community. As they practice the L2, they become more competent using the L2, which affords further social interactions. Similarly, a positive orientation toward the mainstream ethnolinguistic group can provide the motivation to socially participate in that group. As migrants are in contact more frequently with speakers of the L2 and become more proficient in the L2, they may gradually develop a sense of affiliation with members of that group. In turn, these feelings of belonging may fuel further social participation in the mainstream group.

As noted earlier, the conceptual model guiding this study is different from Clément's (1980) social context model (whereby L2 confidence predicts identity) largely because mainstream cultural orientation and mainstream identity are two different constructs. However, they are far from incompatible and such bidirectional effects could provide a way to integrate them. Greater identification with the mainstream group at later time points may be an outcome of the serial mediation tested here, which may in turn lead to more positive attitudes and more motivation to socially engage in that group, motivation being an important component of cultural orientations. Longitudinal data would be necessary to provide evidence for such feedback loops over time. In particular, longitudinal designs that follow migrants very shortly after arrival could help clarify the temporal relation between variables. Such designs are resource-intensive and therefore not always an option, but they

represent an important future research direction.

The results show that the number of Francophone friendships was associated with perceived French competence, both indirectly through French use and through a direct link. As such, these results establish the unique importance of friendship as a form of social contact, independently of its potential effects on L2 use. The suggestion that friendship provides a safe space to experiment with the L2, thereby reducing L2 anxiety, is a plausible explanation, but whether it is true and what other mechanisms are at play is an open empirical question. In a related vein, it would be important to examine whether characteristics of migrants' friendships moderate the positive L2 competence – L2 friendship link. For example, do migrants accrue more L2 benefits from more intimate friendships?

In future research, it will also be important to investigate more closely other forms of L2 social contact and whether they mediate the relation between L2 self positioning and L2 learning outcomes in similar ways. Indeed, friendship may not be a central concern for many migrants preoccupied with securing an income and taking care of their family. In this case, social ties with work colleagues and workplace L2 interactions may be more relevant. It would be important to understand how these variables contribute to L2 competence. More generally, unpacking the construct of L2 experience, as well as characterizing how its various facets are related to L2 learning outcomes, is essential. In spite of the centrality of L2 experience and social contact in the SLA literature, surprisingly little attention has been devoted to careful and detailed examinations of said contact (Harwood, 2010; Ranta & Meckelborg, 2013; Simpasivam & Clément, 2014). Yet, as noted by Harwood (2010), “ the specific linguistic and interactive dynamics of the contact situation *matter*” (p. 148, italics in the original).

In an attempt to categorize different forms of social contact within a coherent

framework, Harwood (2010) proposed that the different types of social contact fall along two orthogonal dimensions: namely, the extent to which the self is involved in the contact situation (e.g., being involved in an interaction vs. observing an interaction), and the richness of the contact experience (e.g., computer mediated interaction vs. face-to-face interaction). Different forms of L2 social contact may foster different aspects of L2 competence to different degrees, and Harwood's typology represents a promising starting point for future work aimed at unpacking the role of L2 experience. By distinguishing between language use and a specific form of social contact – L2 friendships – this study took a step in that direction.

Further, research in SLA to date has focused on the quantity, and to a lesser extent on the quality, of L2 social contact (Simpasivam & Clément, 2014). However, social network theory emphasizes that people are embedded in webs of social relations (Borgatti, Mehra, Brass, & Labianca, 2009) and that the *structure* of the system influences and place constraints on individual actors within it. In other words, a social network approach underscores the idea that beyond size, structure matters. Despite Milroy's (1987) related argument that social networks are ideally suited to study sociolinguistic phenomena, this approach has received surprisingly little empirical attention in areas related to L2 learning (Gallagher, 2012). As a case in point, in a study of immigrant student, my colleagues and I found that the degree of interconnectedness in migrants' L2 social network was associated with communication-related acculturative stress, whereas the size of their network was not (Doucerain, Shiri Varnaakhaasti, Segalowitz, & Ryder, under review), highlighting the importance of the *structure* of migrants' social relationships.

This study focused on L2 experience as a mechanism underlying the relation between L2 self positioning and L2 competence among migrants, but in future research it will be important to examine other potential moderators/mediators of this relation,

including constructs such as perceived discrimination, which are central to research on acculturation. Similarly, the social context within which L2 learning takes place plays an important role in shaping the learning process (MacIntyre & Charos, 1996), a concern that is also central to research on acculturation (Doucerain, Dere, & Ryder, 2013). To some extent, this study took into account the influence of the social context by controlling for the linguistic composition of the neighbourhood where participants lived and by selecting a research setting that maximizes the centrality of individual differences in mainstream cultural orientations, but a richer investigation of contextual influences would be desirable. With these goals in mind, the study of naturalistic adult L2 learning among migrants would greatly benefit from a better integration of SLA research in applied linguistics and research on acculturation in cross-cultural psychology, as these two fields emphasize different and complementary facets of a similar phenomenon. Unfortunately, both strands of research have remained largely separate, although becoming a successful speaker of the mainstream language is relevant to both. By focusing on L2 outcomes among migrants and on cultural orientations, a key construct in acculturation research, this study contributes to a limited body of work that attempts to bridge both lines of enquiry (e.g., Gallagher, 2013; Noels & Clément, 1996).

Despite this study's contributions, some limitations need to be discussed. First, compared to using a community sample, relying on a student sample limits the generalizability of the results. Indeed, the study focused on L2 friendships as a form of social contact, a more central concern for young adults – like the participants in this sample – than for people managing work and family responsibilities. It is unclear whether L2 friendships would contribute to L2 competence to the same extent in the latter case. In addition, the meaning of friendship differs across cultural contexts (Baumgarte, 2013). Given the cultural heterogeneity present in this sample, it is possible that different

participants used different criteria concerning what counts as a friend, thus introducing biases in the friendship numbers reported. A second limitation concerns the use of a cross-sectional design, which precludes any conclusions on the temporal order of effects. Given the present results, mainstream cultural orientation impacting L2 competence through its effect on L2 experience is just as possible as the opposite effect. Using a self-report measure of L2 competence is also limiting to some extent. Although perceptions of competence likely play a considerable role in migrants' communication behaviours, as argued by Clément and colleagues (Clément et al., 2003), objective aspects of language skills such as accent or fluency also determine to what degree a migrant's interlocutors will understand and be willing to pursue communication with the migrant. In future research, it would be important to include objective measures of L2 skills in conjunction with self-reported measures. Similarly, the measure of French use employed here was relatively crude. Participants are asked to estimate on average how often they use French daily, but it is unclear how accurate these estimates are. It would be desirable to use more sensitive methods in the future, such as for example a detailed language log administered over several days (e.g., Martinsen, Baker, Dewey, Bown, & Josephson, 2010).

Meanwhile, this study contributes to a body of work focusing on the role of social factors in SLA in general and on the role of learners self positioning with respect to the L2 ethnolinguistic group in particular. The results provide evidence of a positive link between migrants' mainstream cultural orientation and subjective L2 competence, and show that migrants' L2 experience mediates this relation. In addition, the present work underscores the importance of unpacking the relative contribution of various aspects of L2 experience to L2 learning, an area that should be explored further in future research. More broadly, this study contributes to the literature on naturalistic L2 learning among adult migrants, a context understudied in the field of SLA. This domain of enquiry would greatly benefit



from integrating SLA research in applied linguistics and research on acculturation in cross-cultural psychology, two research strands that unfortunately remain largely separate in spite of their complementarity.

## General Discussion

The present research examined the proposal that social participation in the mainstream cultural group mediates the relation between migrants' mainstream cultural orientation and language outcomes, conceptualized here in “linguistic adjustment terms”. Collectively, the results from six studies examining different aspects of mainstream social participation and language outcomes provided strong empirical support for this hypothesized model. In short, migrants with a more positive mainstream cultural orientation interact more and form more numerous friendships with members of the mainstream cultural group. They also tend to subjectively affiliate with this cultural group during social interactions more than migrants with a less positive mainstream cultural affiliation. In turn, more numerous and interconnected social ties in the mainstream cultural group are associated with more favourable mainstream language outcomes, including both proficiency and affective aspects. The following sections discuss the implication of these results, as well as important limitations and future directions.

The results reported in this dissertation hold important implication for migrants' L2 learning in naturalistic settings by providing insight into the role of mainstream social participation as a mechanism leading to positive L2 learning outcomes. They suggest that interventions or programs promoting migrants' social interactions and relationships with members of the mainstream cultural group could have positive L2 learning implications. In addition, the role of mainstream cultural orientation as an antecedent of both mainstream social participation and language outcomes could allow us to identify and support migrants at risk of poorer mainstream language outcomes.

The present dissertation focused on mainstream social participation as a mechanism underlying migrants' L2 language learning in naturalistic settings. As such, it represents an initial step in what is expected to become a larger program of research on the role of

social participation in acculturative changes more generally. Indeed, it is likely that mainstream social participation facilitates other aspects of cross-cultural adaptation. Most acculturation research has focused on explicit changes, such as for instance migrants' food preferences or self-professed cultural identification, at the expense of more implicit aspects, such as migrants' conformity to mainstream cultural norms. However, in keeping with social psychological accounts of cultural dynamics highlighting the role of daily social interactions in the transmission of cultural information (Kashima, 2014), mainstream social participation may play a critical role in fostering migrants' ability to “fit it” with the mainstream culture. Supporting this possibility, De Leersnyder and colleagues (2011) found that migrants who reported greater social contact with members of the mainstream cultural group showed greater emotional fit with the mainstream culture: i.e., the extent to which their personal pattern of emotional response in daily situations resembles the typical mainstream pattern. Characterizing more precisely the role of social participation in emotional acculturation and in other implicit acculturative changes is a promising direction for future research.

The directionality of the associations between mainstream cultural orientation, social participation and language outcomes was assumed based on a review of the literature discussing these constructs. However, only *Manuscript 2* used a longitudinal design showing that mainstream cultural orientation preceded social participation. The cross-sectional nature of the other manuscripts precludes inferences about the directionality of effects for other variables, which is an important limitation of the present research. As a matter of fact, however, bidirectional effects are more likely than a strict temporal order between cultural orientation, social participation, and language outcomes. During migrants' acculturation, a process extending over many years, feedback loops are likely at play, whereby the variables examined in this dissertation mutually reinforce one another.

Indeed, more confidence in using the mainstream language probably gives rise to more positive interactions generally, which in turn may lead to a greater sense of belonging to the mainstream group (in keeping with results from studies such as Noels et al., 1996), thus reinforcing a migrant's motivation to socially participate in that group, etc. Long-term longitudinal studies with a high frequency of observations would be necessary to observe such “virtuous cycle” effects. Although such study designs are resource-intensive, they represent an important direction for future research.

Of course, a basic proficiency level in the mainstream language is necessary to start the type of feedback loop just described. Below such a basic level, social participation, even in its simplest form, may not be possible. In the present research, this issue of minimal proficiency was avoided altogether by focusing on university students. *Manuscripts 2, 3, and 4* focused on social participation in the same language than the dominant language of the university that participants were attending, thus guaranteeing a relatively high level of proficiency in that language. In *Manuscript 5* the university and social participation languages were different, but university students are by definition highly educated and typically display good language abilities, thus departing from a randomly selected community sample. Although focusing on students ensured a relatively homogeneous sample in terms of language proficiency and socioeconomic status, it also represents an important limitation of the present research. Indeed, whether the results reported here would replicate in a more diverse community sample is an open question.

This issue of proficiency threshold for social participation raises a very interesting question regarding the relation between social participation and language outcomes. It is quite possible that different aspects of social participation are beneficial at different stages of L2 learning. For example, brief daily interactions with the bus driver or the cashier at the supermarket may be beneficial for developing basic proficiency in the L2. Once a

functional L2 proficiency level is achieved, the learning benefits from such interactions may be exhausted and other aspects of social participation may offer more learning potential. At this more advanced stage, forming deeper and long lasting relationships in the mainstream cultural group may offer an optimal environment supporting migrants' learning of more subtle sociolinguistic and pragmatic aspects of the mainstream language. In other words, social participation and language outcomes are both likely to be moving targets, interrelated through a pattern of links that reflect migrants' "stage" (broadly speaking) of cross-cultural adaptation, and what type of language learning is most at stake at a given moment. Mapping out these relations is a promising direction for future research, especially because a better understanding of these relations would hold important implications for the design of L2 learning interventions in naturalistic settings.

This discussion of the multifarious links between social participation and language outcomes is directly tied to the idea that social participation is not a unitary construct and that it needs unpacking in order to determine the relative contribution of its different facets to acculturative changes. This dissertation made a similar argument and took a step in that direction by examining various aspects of migrants' mainstream social participation, but it remains an initial exploration of this construct. Careful and detailed examinations of social participation have received little attention (Harwood, 2010; Ranta & Meckelborg, 2013; Simpasivam & Clément, 2014), and yet, as noted by Harwood (2010), "the specific linguistic and interactive dynamics of the contact situation *matter*" (p. 148, italics in the original). With the goal of organizing different types of social contact in a coherent framework, Harwood (2010) put forward a two dimensional typology. He proposed that the different types of social contact differ in: (1) the extent to which the self is involved in the contact situation (e.g., being involved in an interaction vs. observing an interaction); and (2) the richness of the contact experience (e.g., computer mediated

interaction vs. face-to-face interaction). As argued earlier, different types of social participation may foster different aspects of L2 learning, and Harwood's typology represents an interesting starting point for future research aimed at unpacking the role of social participation in acculturation.

Further, although the present dissertation focused exclusively on social participation in the mainstream cultural group, future research should also consider the role of social participation in the heritage group. Migrants can only have so many social interactions in a day and sustain so many social relationships, so participation in the mainstream group may be constrained to a large degree by the extent to which migrants maintain social ties in their heritage culture. Supporting this idea, past research has shown that acquisition of the mainstream language was inhibited by living in an ethnic enclave and having more relatives living nearby (Chiswick & Miller, 1996). In addition, migrants' heritage cultural background may also influence their social participation and resulting L2 outcomes through the types of cultural norms endorsed by the heritage group. For example, a migrant from a cultural group where extraversion is valued and promoted (e.g., from the United States) may more easily interact with members of the mainstream group than someone from a group emphasizing social restraint (e.g., from Japan). A number of other culturally specific norms and scripts are likely to also play a role in L2 learning and should be investigated. In the present research, relying on culturally heterogeneous samples precluded the examination of such influences from migrants' heritage background. In future research, it would be important to address this limitation and focus on immigrants with a homogeneous cultural background.

In a mirror fashion, the present research was limited by its exclusive focus on immigrants to Canada – and Montreal specifically. Broadly speaking, Canada is characterized by a pluralist immigration ideology and fairly positive attitudes toward

immigrants (Bloemenraad, 2012). This relatively favourable sociopolitical context is likely to encourage migrants' social interactions and social relationships with members of the mainstream cultural group more than other contexts. Thus, whether the present results would replicate in sociopolitical contexts where the dominant immigration ideology is less welcoming of immigrants is unknown. For example, in places where immigrants are not seen as legitimate members of the community, a positive mainstream cultural orientation may not predict greater mainstream social participation as it did in *Manuscript 2*.

At the more local level, the present research focused on individual processes and on the migrants' perspective, thus largely ignoring influences of the local context. *Manuscripts 3* and *5* did consider contextual influences to some degree, but only in rudimentary ways. Yet, characteristics of the local context, such as the types of environment in which migrants live and work, are likely to influence the extent and type of mainstream social interactions migrants have access to. For example, working for a firm with primarily co-national clients may severely limit how much migrants can use the mainstream language on a daily basis. Similarly, at the level of social interactions, migrants' motivations, orientations, competence, etc., are only part of the story. Interactions are by nature transactional and characteristics of the mainstream interlocutor will strongly influence how the interaction unfolds and how much L2 learning takes place during the interaction. For example, social interactions characterized by discriminatory comments from the mainstream interlocutor may increase negative affect in the migrant and thus hinder language learning. Alternatively, in an attempt to be friendly, the mainstream interlocutor may simplify her language to accommodate the migrant's perceived linguistic difficulties, thus depriving the migrant from an opportunity to learn genuine communication practices. The purely self-report nature of the methods used in this dissertation prevented examining these processes, which is an important limitation.

Future research would benefit from methods that can capture migrants' social interactions as they happen or from experimental designs aimed at observing these interactions in laboratory settings.

This last point highlights again the importance of methodological considerations in research on cross-cultural adaptation and L2 learning. In keeping with the argument advanced in *Manuscript 1* that we ought to go beyond self-report attitudinal scales in acculturation research, the present research used both longitudinal designs and a combination of innovative methods, namely a daily diary instrument and an egocentric social network approach. These methodological characteristics represent one of the strengths of this dissertation, but this research could nevertheless have pushed the methodological envelope further. For example, *Manuscript 5* could have used a log approach to quantify language use, and *Manuscript 4* could have investigated other structural characteristics of migrants' L2 network, such as the multiplexity of migrants' social ties. In that sense, this dissertation represents only an initial step in a program of research that seriously addresses methodological issues in acculturation research and a preliminary example of the shape such research efforts might take. When arguing in favour of methodological innovation, it is important to remember that the goal is not innovation for its own sake. Rather, remembering that new methods can yield results leading to “previously inconceivable theories” (Greenwald, 2012, p. 99), the goal in developing and using innovative methods in acculturation research is not only to address known limitations of the field but also to inspire new research questions and theories.

As noted in the general introduction, although research on SLA and on acculturation differ in their main outcome – L2 learning for SLA, adjustment for acculturation – many of the explanatory constructs and theoretical frameworks largely overlap across the two fields. In the present case, with the current conceptualization of language outcomes in



adjustment terms, even the outcomes were relevant to both SLA and acculturation researchers. Research on migrants' cross-cultural adaptation would greatly benefit from the integration of these complementary research fields. For example, social participation is likely to play a role in acculturative changes in general, but characterizations of social contact are much more developed in the SLA literature than in the acculturation literature. Similarly, perceived discrimination or personality variables such as the need for cognitive closure are likely to influence L2 learning, but they are studied much more intensely in acculturation research than in SLA research. By ignoring work conducted in the respective other field, acculturation and SLA researchers run the risk of repeatedly reinventing the wheel or overlooking important considerations. Through its focus on the role of social participation as a mediator of the cultural orientation-language outcomes link, the present research attempted to integrate these largely separate strands of research. As such, this dissertation contributes to a small body of work with similar goals (e.g., Noels et al., 1996; Gallagher, 2012) and provides an additional example of what research integrating SLA and acculturation elements might look like.

In summary, in spite of some important limitations, the six studies described in this dissertation collectively make a strong case for the role of migrants' social participation in the mainstream cultural group as a mechanism underlying the relation between their mainstream cultural orientation and L2 language outcomes. In the future, examining the role of social participation in acculturative changes beyond L2 learning may help us better understand the processes and mechanisms at the heart of migrants' cross-cultural adaptation.

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